



EPBC Act Compliance Reporting (Year 2)

Stockyard Hill Wind Farm Pty Ltd

Prepared for Stockyard Hill Wind Farm Pty Ltd
21 August 2020

Document Control

Document:	EPBC Act Compliance Reporting (Year 2)
File Location:	I:\Projects\30042868N - Stockyard Hill Wind Farm\3. Outputs\Detailed Report\Final
Project Name:	Stockyard Hill Wind Farm Pty Ltd
Project Number:	30042868N
Revision Number:	2

Revision History

REVISION NO.	DATE	PREPARED BY	REVIEWED BY	APPROVED FOR ISSUE BY
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Issue Register

DISTRIBUTION LIST	DATE ISSUED	NUMBER OF COPIES
Stockyard Hill Wind Farm Pty Ltd	21 August 2020	1

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ASSUMPTIONS AND LIMITATIONS

Areas of impact to threatened EPBC Act-listed ecological communities are based on the mapping layers provided by SHWFPL from previous surveys undertaken by EHP (2014a, 2014b, 2016a, 2016b0) and the construction layout. Detailed on-ground assessment to quantify impacts to these communities was outside the scope of this assessment but general statements on the current condition and significance of impacts are outlined within this report. SMEC have had no direct communication with the Commonwealth Department of Agriculture, Water and Environment (DAWE) during preparation of this report.

Final impact calculations for Golden Sun Moth (*Synemon plana*) and Striped Legless Lizard (*Delma impar*) habitat and threatened ecological communities have been calculated based on the final construction layout. It was beyond the scope of this assessment to undertake targeted surveys for threatened species.

All referenced reports and information listed as attachments in this document are approved for use by SMEC. Documentation pertaining to site audit reports or written letters of approval provided by DELWP may be provided if written approval is obtained.

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Striped Legless Lizard

Attachment 1: Simon and Trish Tayler, offset management activities diary on site.

Attachment 2: SMEC 2020a. Striped Legless Lizard (*Delma impar*) population monitoring (Year 2), Stockyard Hill Wind Farm, Victoria. Prepared for Stockyard Hill Wind Farm Pty Ltd.

Attachment 3: SMEC 2020b. Native Vegetation Offset Register annual reporting and compliance BB-3036 LA01. Prepared for Simon and Trish Tayler, Monmot Farming, Victoria.

Golden Sun Moth

Attachment 4: SMEC 2020c. Golden Sun Moth Population Monitoring Summary Report (Year 2). Prepared for Stockyard Hill Wind Farm Pty Ltd.

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Acronyms

ACRONYMS	DESCRIPTION
DAWE	Commonwealth Department of Agriculture, Water and Environment (formally DoEE)
DELWP	Department of Environment, Land, Water and Planning
DoEE	Commonwealth Department of Environment and Energy
EPBC Act	Environment Protection and Biodiversity Conservation Act 1999
GIS	Geographic Information System
ha	Hectares
km	Kilometres
m	Metres
MNES	Matters of National Environmental Significance
NTGVVP	Natural Temperate Grassland of the Victorian Volcanic Plain
SHW	Seasonal Herbaceous Wetlands (Freshwater) of the Temperate Lowland Plains
sp.	Species (one species)
spp.	Species (more than one species)
subsp.	Subspecies
SHWEF	Stockyard Hill Wind Energy Facility

1 Introduction

1.1 Background

SMEC Australia Pty Ltd (SMEC) was engaged by Stockyard Hill Wind Farm Pty Ltd (SHWFPL) to provide a summary of compliance targets in accordance with the project conditions listed under the Commonwealth Environment Protection and Biodiversity Conservation Act 1999 (EPBC Act) and approval (EPBC 2016/7746). This report summarises impacts associated with the following:

1. Impact calculations for Striped Legless Lizard and Golden Sun Moth habitat using the final construction layout (in relation to EPBC Approval Conditions 1a and 1b);
2. Year 2 monitoring outcomes for the Striped Legless Lizard Offset Management Strategy (EHP 2018) (Condition 2b);
 - (a) Including outcomes of the state Department of Environment, Land, Water and Planning (DELWP) on-ground review and recommendations.
3. Year 2 monitoring outcomes for the Golden Sun Moth Offset Management Strategy (EHP 2017a) (Condition 3b);
 - (a) Including outcomes of the state DELWP on-ground review and recommendations.
4. A review and summary of impacts for other associated Matters of National Environmental Significance (MNES) identified during for the Stockyard Hill Wind Energy Facility (SHWEF) pre-approvals stage of the project in response to the final construction layout.

This report and associated assessments confirm compliance for the SHWEF has been met in accordance with EPBC Act approval (EPBC 2016/7746) to enable reliable reporting to DELWP, Pyrenees Shire Council and as relevant, to DAWE (formerly the Department of the Environment and Energy [DoEE]).

1.2 Project Approvals

As noted, the SHWEF is subject to approvals under Commonwealth jurisdictions as follows:

- EPBC Approval 2016/7746 granted under the EPBC Act.

Specific requirements of the approvals relating to impacts on native vegetation are outlined below.

1.2.1 Environment Protection and Biodiversity Conservation Act 1999

1.2.1.1 Threatened Species

The EPBC Act approval, EPBC 2016/7746, includes the following provisions for removal of threatened species habitat:

- Condition 1a requires; no more clearing than 42.16 ha of habitat for Striped Legless Lizard (*Delma impar*);
- Condition 1b requires; no more clearing than 1.57 ha of habitat for Golden Sun Moth (*Synemon plana*);
- Condition 2b requires the implementation of the 'Striped Legless Lizard Offset Management Strategy' (EHP 2018) for the secured offset site to compensate the loss of 42.16 ha of Striped Legless Lizard habitat; and
- Condition 3b requires the implementation of the 'Golden Sun Moth Offset Management Strategy' (EHP 2017a) for the secured offset site to compensate the loss of 1.57 ha of Golden Sun Moth habitat.

A review of impacts to other threatened species and communities as part of this assessment included Natural Temperate Grassland of the Victorian Volcanic Plain (NTGVVP), Seasonal Herbaceous Wetlands (Freshwater) of the Temperate Lowland Plains (SHW), White Sunray (*Leucochrysum albicans* var. *tricolor*), Spiny Rice-flower (*Pimelea spinescens* subs. *spinescens*) and Matted Flax-lily (*Dianella amoena*).

1.3 Scope of works

The objective of this scope is to confirm whether obligations for Conditions 1-3 of approval EPBC 2016/7746 have been met for the SHWEF. The following sections provide a summary of on-ground works implemented by SMEC, landholders and associated sub-contractors at each of the offset sites and associated management strategies.

Recent detailed on-site assessments have also been undertaken across the SHWEF which identified avoidance or total impacts to MNES identified as part of the project. An updated statement for each of these threatened species and communities is summarised in this report for DAWE's information.

2 Methods

2.1 Desktop Assessment

The following resources were reviewed as part of the desktop assessment:

- Relevant background reports and available spatial GIS layers, legislation and policies relevant to the study site and broader study area, including:
 - Aus Eco Solutions 2019. A1527 Year 1 Autumn Report. Prepared for Trish and Simon Tayler, Monmot Farming, Victoria.
 - DELWP 2019a. Monitoring Report BB-3036-LA01 (Year 1), 26 June 2019. Prepared by Greg Waddell for Simon and Trish Tayler, Monmot Farming, Victoria.
 - DELWP 2019b. Monitoring Report BB-3027-LA01 (Year 1), 27 June 2019. Prepared by Greg Waddell for David and Robyn Gerrard, Victoria.
 - DELWP 2020a. Letter (20 March 2020) – Native Vegetation Offset Register annual reporting and compliance BB-3036 LA01. Victorian Department of Environment, Land, Water and Planning, East Melbourne, Victoria.
 - DELWP 2020b. Letter (20 March 2020) – Native Vegetation Offset Register annual reporting results BB-3036 LA01 – Year 2. Victorian Department of Environment, Land, Water and Planning, East Melbourne, Victoria.
 - DELWP 2020c. Letter (17 March 2020) – Native Vegetation Offset Register annual reporting and compliance BB-3027 LA02. Victorian Department of Environment, Land, Water and Planning, East Melbourne, Victoria.
 - DEWHA 2011. Commonwealth Listing Advice on Natural Temperate Grassland of the Victorian Volcanic Plain. Department of the Environment, Water, Heritage and the Arts.
 - EHP 2014a. Preliminary Ecological Assessments for the Stockyard Hill Wind Farm, Victoria. Prepared for Stockyard Hill Wind Farm Pty Ltd.
 - EHP 2014b. Detailed flora investigations for the Stockyard Hill Wind Farm, Victoria. Prepared for Stockyard Hill Wind Farm Pty Ltd.
 - EHP 2016a. Biodiversity Assessments to Accompany an Application to Amend Planning Permit No PL-SP/05/0548, Stockyard Hill Wind Farm, Victoria. Prepared for Stockyard Hill Wind Farm Pty Ltd.
 - EHP 2016b. Biodiversity Assessment of the Roadside and Intersection Upgrades, Stockyard Hill Wind Farm, Victoria. Prepared for Stockyard Hill Wind Farm Pty Ltd.
 - EHP 2017a. Golden Sun Moth *Synemon plana* Offset Management Strategy for the Stockyard Hill Wind Farm. Prepared for Stockyard Hill Wind Farm Pty Ltd.
 - EHP 2017b. Matters of Environmental Significance for the proposed Stockyard Hill Wind Farm (Preliminary Documentation). Prepared for Stockyard Hill Wind Farm Pty Ltd.
 - EHP 2018. Striped Legless Lizard *Delma impar* Offset Management Strategy for the Stockyard Hill Wind Farm. Prepared for Stockyard Hill Wind Farm Pty Ltd.
 - SEWPaC 2011. Nationally Threatened Ecological Communities of the Victorian Volcanic Plain: Natural Temperate Grassland and Grassy Eucalypt Woodland. Department of Sustainability, Environment, Water, Population and Communities.
 - SEWPaC 2012. Commonwealth Listing Advice on Seasonal Herbaceous Wetlands (Freshwater) of the Temperate Lowland Plains. Department of Sustainability, Environment, Water, Population and Communities.
 - SMEC 2019. Striped Legless Lizard Population Monitoring (Year 1): Stockyard Hill Wind Farm Pty Ltd. Prepared for Stockyard Hill Wind Farm Pty Ltd.
 - SMEC 2020a. Striped Legless Lizard (*Delma impar*) population monitoring (Year 2), Stockyard Hill Wind Farm, Victoria. Prepared for Stockyard Hill Wind Farm Pty Ltd.
 - SMEC 2020b. Native Vegetation Offset Register annual reporting and compliance BB-3036 LA01. Prepared for Simon and Trish Tayler, Monmot Farming, Victoria.
 - SMEC 2020c. Golden Sun Moth Population Monitoring Summary Report (Year 2). Prepared for Stockyard Hill Wind Farm Pty Ltd.

- Establishment of a GIS mapping database incorporating site layout and associated vegetation mapping identified before the pre-approvals stage; and,
- Aerial imagery of the study area.

2.2 Site assessments

Site assessments comprised on-ground surveys by SMEC ecologists between 19-20 March and 9 and 14 of April 2020. The surveys covered parts of the SHWEF where MNES has been identified previously during detailed pre-approval assessments by EHP (2014a, 2014b, 2016a, 2016b, 2017b).

2.3 Nomenclature

2.3.1 Construction Footprint

SHWFPL provided a spatial GIS layer for the final construction footprint which included activities for the SHWEF onsite lands and local road and intersection upgrades. The revised construction footprint, as ground-truthed by SMEC and the civil works contractor, was utilised during the April 2020 site assessment to confirm impacts to MNES identified within the SHWEF.

The final construction footprint refers to all built infrastructure associated with the SHWEF and road and intersection upgrades and was used to quantify overall impacts to MNES as described below and summarised in Section 3.3.

2.3.2 Threatened Species and Communities

2.3.2.1 Threatened Species

Previous threatened species records and habitat mapping collected by EHP were used to confirm avoidance by the final construction footprint (EHP 2014a, 2014b, 2016a, 2016b). This included ground-truthing the presence of threatened flora species records through direct observations and/or mapping data loaded onto mobile hand-held device in the field.

2.3.2.2 Vegetation communities

Impacts to threatened EPBC Act-listed ecological communities were quantified by comparing mapped extents prepared by EHP (2016a, 2016b) with the final construction footprint. If an impact(s) to a mapped community extended past the proposed clearance area, it was assumed that the mapped community was homogenous with the same remnant patch of vegetation and impacts would extend to the limit of construction activities.

2.3.3 Legislation and Policy

2.3.3.1 Environment Protection and Biodiversity Conservation Act 1999

Impacts to the following listed threatened species and communities were investigated:

- Golden Sun Moth and Striped Legless Lizard;
- White Sunray, Spiny Rice-flower and Matted Flax-lily; and,
- Threatened ecological communities either known to be present (NTGVVP) or with the potential to be present (SHW).

3 Results

3.1 Striped Legless Lizard

3.1.1 Condition 1a - Striped Legless Lizard Habitat

Condition 1a of EPBC 2016/7746 approved up to 42.16 ha of Striped Legless Lizard habitat to be impacted. A review of impacts by the final construction layout was assessed against low-medium quality habitat identified during previous ecological assessments (EHP 2014a, 2014b, 2016a, 2016b). A total of approximately 41.40 ha Striped Legless Lizard habitat has been impacted. Provision of detailed mapping is available upon request from DAWE. In accordance with the approval, SHWFPL has minimised impacts to Striped Legless Lizard habitat by approximately 0.76 ha and is therefore compliant with Condition 1a of the approval EPBC 2016/7746.

3.1.2 Condition 2b - Striped Legless Lizard Monitoring

In accordance with Condition 2b of EPBC 2016/7746, SMEC was engaged by SHWFPL to implement the monitoring program for Striped Legless Lizard in Year 1 and 2 of the OMS (SMEC 2019, 2020a). As part of implementing the OMS, Aus Eco Solutions have also been engaged separately by the landowner to undertake direct seeding and rehabilitation works within the offset site. It is understood that all remaining management activities associated with the OMS are the responsibility of the landowner.

In accordance with the state-approved landowner agreement (BB-3036/LA01) endorsed by DELWP, on-ground auditing was conducted on 28 June 2019 to review progress against this plan. A summary of the findings and recommendations is presented below.

The following sections provide an overview of compliance with the OMS for Year 2 monitoring, and accompanying reports referenced in these sections are provided for information and review by DAWE as part of the SHWFPL compliance reporting period of Year 2 (2019/20).

3.1.2.1 Striped Legless Lizard species monitoring

While it is noted that detailed monitoring in Year 2 is not formally required within the OMS, as part of Year 1 monitoring (SMEC 2019), two additional areas were recommended for deployment of tile grids and species monitoring. The first includes an area of native vegetation immediately adjoining Tile Grid 3 (which is already known to support Striped Legless Lizard). The second location is an area where one Striped Legless Lizard was relocated during vegetation removals associated with construction activities along Dunnednets Road (SMEC 2020a). Overall, the objective of additional monitoring sites was to build an understanding of population dynamics and current site utilisation by the species to guide future management practices.

Monitoring was undertaken over three separate days across the offset site between October-December 2019 (Table 1). Weather conditions during monitoring events were considered suitable for the detection of Striped Legless Lizard. One Striped Legless Lizard was recorded on 22 October 2019 at Tile Grid 3 and is the location where the species has been detected during previous monitoring (SMEC 2019).

Table 1: Striped Legless Lizard monitoring survey results and weather conditions¹.

SURVEY NO.	SURVEY DATE	TIME OF SURVEY	SPECIES	TILE GRID	TOTAL	TEMP. (°C)	WIND SPEED	WIND DIRECTION
1	22-10-2019	10:30-12:30pm	SLL, LWS	TG3	1, 1	12.5	9 km	S
2	28-11-2019	10:00-13:30pm	FTD	TG5	1	14.2	6 km	SSW
3	10-12-2019	9:00-12:30pm	-	-	-	11.6	19 km	S

Note: Species acronyms, SLL = Striped Legless Lizard, LWS = Little Whip Snake, FTD = Fat-tailed Dunnart.

Footnotes: (1) Bureau of Meteorology: data sourced from Ballarat Aerodrome (Station 089002).

This individual was not able to be captured for detailed inspection and escaped into nearby vegetation. However, it was noted to have a light underside with faint stripes along the sides, and dark head colouration. These morphological observations identify this individual as a juvenile Striped Legless Lizard, and its presence within Tile Grid 3 suggests species recruitment is occurring within the offset site. No additional Striped Legless Lizard were observed during remaining monitoring events (Table 1).

Two additional monitoring grids (Tile Grid 6 and 7) were deployed in October 2019 within areas of potential habitat predicted to support Striped Legless Lizard (SEMC 2020a). While Striped Legless Lizard was not observed at these locations, it is expected these sites will have a higher likelihood of detecting the species between October-November 2020 as the sites will have undergone an adequate establishment period.

3.1.2.2 Striped Legless Lizard offset area vegetation management

Aus Eco Solutions are assisting with the management of the Striped Legless Lizard offset site through the implementation of native vegetation habitat improvements via direct seeding and on-ground monitoring events. Ongoing management commitments relating to the OMS and landowner agreement (BB-3036/LA01) for all management zones include:

- The maintenance and improvement of Striped Legless Lizard;
- Monitor all woody weeds <1% cover;
- Ensure weed cover does not increase beyond current level;
- Monitor for any new emerging weeds; and,
- Vegetation cover is maintained at greater than 70% throughout site.

The landowner will also aid with management objectives by:

- Controlling rabbits;
- Eliminate / monitor all weeds <1% cover (including woody weeds);
- Retaining all rocks, logs or fallen timber;
- No cropping, no drainage/hydrology alternation;
- No artificial stock feeding;
- No pasture improvements; and,
- Boom spraying within habitat zones (1B, 2B, 2F and 2G).

Four key management activities were undertaken in the reporting period, including grazing, pest plant management control via boom spraying and pest animal control. A controlled burn was proposed although approval was not obtained and subsequently was not undertaken. The following summarises the monitoring efforts undertaken by Aus Eco Solutions and the landowner (Aus Eco Solutions 2019).

Biomass density and stock grazing

Grazing was undertaken between 8-10 May 2019 at a stocking rate of 10 dry sheep equivalents per hectare (DES/ha). The grazing had a dual purpose of reducing the biomass and preparing the site for direct seeding trials by breaking up the dead crop stubble and allowing the direct seeder to operate unimpeded (Aus Eco Solutions 2019).

Pest plant management

The following management data was provided to SMEC by the landowner for pest plant management undertaken in this management period; A copy of herbicide types, quantity and associated photos and invoices are available at request of DAWE. A summary of the landowner diary with part of this information is provided as Attachment 1.

Control of herbaceous weeds by spot-spraying was undertaken by the landowner on 24 November 2019 with targeted pasture and crop species located on former cropping land within Zones 1B, 2B, 2F and 2G. Toowoomba Canary Grass (*Phalaris aquatica*) and Spear Thistle (*Cirsium vulgare*) were targeted using a combination of hand chipping and spot-spraying on 30 August and 8-10 September 2019 within Zones 1A, 1C, 1D, 2A, 2C, 2D and 2E.

Pest animal management

Follow-up European Rabbit (*Oryctolagus cuniculus*) warren fumigation was undertaken along the northern boundary of the reserve on 15 May 2019 and 24 June 2019. An additional European Rabbit warren was identified by DELWP on 28 June 2019 and was fumigated using phosphine as per product label instructions, and hand excavation of the warren.

Follow-up treatment was undertaken on 1 September 2019. Spotlight shooting was also undertaken on the 9 June 2019 resulting in culling of one Red Fox (*Vulpes vulpes*) and two European Rabbits. One additional Red Fox and two European Rabbits were shot on 20 July 2019.

Low pest animal activity has been observed on-site by the landholder who suggested that the Dunnets Road upgrade has increased the traffic and reduced numbers of pest animals on site (Aus Eco Solutions 2019).

Rehabilitation trials

Grazing worked well to prepare the site for direct seeding trials and before the stock entered the offset site, boom spraying was undertaken targeting broadleaf weeds species such as thistles. Herbicide selection was based on agronomist recommendations. Direct seeding was undertaken in May 2020 over four days within the previously cropped areas (Aus Eco Solutions 2019). As direct native seeding had not been undertaken previously, this acted as a trial to determine the most effective combination of seed to plant through the direct seeding unit. Detailed information on the species and quantity of seed trialled in May 2019 is provided within the Aus Eco Solutions report (2019). Further detail on the outcomes of this trial are discussed in Section 3.1.2.3 below.

3.1.2.3 DELWP Auditing

The offset has been secured under a DELWP landowner agreement (BB-3036-LA01). Stephanie Grylls of Aus Eco Solutions has assisted with on-ground rehabilitation works in Years 1 and 2 and annual reporting to assist with implementation and compliance with the management plans.

As part of meeting compliance targets outlined within the landowner agreement and OMS, a site assessment was undertaken by a DELWP monitoring officer (Greg Waddell) in June 2019, in which management recommendations were outlined within a summary letter (with accompanying mapping) (DELWP 2019a). In response to these recommendations, SMEC has prepared a short response to management recommendations raised by DELWP via further correspondence on 20 March 2020 to assist with meeting compliance under Year 2 of the landowner agreement (DELWP 2020a), specifically:

“Revegetation: Our monitoring officer noted that the species listed in your management plan would not be appropriate for the wetter areas of your site (1B, 2A, 2B) to meet the target of 55% native cover, and at least 5 species. While the overall objective of your management plan is to protect and enhance Striped Legless Lizard habitat, all management plan targets must be met.

You have not yet provided an alternative species revegetation list. Natural regeneration can be included in meeting your revegetation targets, and you may choose to only hand seed the required number of species accounting for the species naturally regenerated.

Please consult a grassland restoration specialist to obtain an appropriate seeding species list. Also determine that the seed is available, or make an arrangement to source seed, to be considered compliant for Year 2 of your agreement.”

SMEC assisted the landowner by providing a suitable response and recommendations to the information request outlined by DELWP on 20 March 2020 (DELWP 2020a), including:

- An alternative species list for rehabilitation works in Zones 1B, 2A and 2B, specifically areas subject to temporary inundation within these zones; and,
- A response from Stephanie Grylls regarding the proposed approach for rehabilitation planting schedules in Year 3 of the management program.

A summary of recommendations prepared by SMEC and Aus Eco Solutions are provided below to support compliance targets of the landowner agreement (BB-3036-LA01) for Year 2 of the monitoring program which was subsequently reviewed and approved by DELWP on 27 May 2020 (DELWP 2020b).

It is noted that the flora species recommended for wetter areas of the offset site will also relate to the OMS implementation and overall the objectives and comment by DAWE is sought as part of this compliance reporting period.

Alternative species list

It is acknowledged that understorey species previously identified within the landowner management plan and OMS for Zones 1A-2G will continue to be utilised in areas which are not subject to periods of temporary inundation, including:

- Common Tussock-grass (*Poa labillardieriei*);
- Slender Wallaby-grass (*Rytidosperma racemosum*);
- Kneed Spear-grass (*Austrostipa bigeniculata*);
- Rough Spear-grass (*Austrostipascabra*);
- Kangaroo grass (*Themeda triandra*); and
- Common Wheat-grass (*Anthosachne scabra*).

Based on DELWP's recommendation of an alternative species list and discussions with Stephanie Grylls (Aus Eco Solutions), the availability and recommended species listed in Table 2 will be utilised within Zones 1B, 2A and 2B for low-lying areas subject to temporary inundation.

Table 2: Alternative rehabilitation species list and availability for areas of temporary inundation in Zones 1B, 2A and 2B.

COMMON NAME	SPECIES NAME	AVAILABILITY	PLANTING METHOD
Common Tussock-grass	<i>Poa labillardieriei</i>	Seed, tube-stock	Natural regeneration, tube-stock
Australian Sweet-grass	<i>Glyceria australis</i>	Tube-stock or cells	Natural regeneration, tube-stock
Common Wheat-grass	<i>Anthosachne scabra</i>	Seed, tube-stock	Tube-stock
Common Blown-grass	<i>Lachnagrostis filiformis</i>	Tube-stock or cells	Tube-stock
Brown-back Wallaby-grass	<i>Rytidosperma duttonianum</i>	Tube-stock or cells	Tube-stock
Knotted Spear-grass	<i>Austrostipa nodosa</i>	Tube-stock or cells	Tube-stock

Suitability for Striped Legless Lizard

It is understood that the site has varying topography and that some low-lying areas may become temporarily inundated during extended periods of rainfall; however, establishing such areas with species listed in Table 2 is not considered to provide unsuitable habitat for Striped Legless Lizard in the long-term. Once established, the vegetation and alternative species recommended will provide valuable foraging or refuge habitat for the species within the offset site (SMEC 2020b).

While Striped Legless Lizard will be inactive or in a state of torpor at times when low-lying areas are wet (i.e. winter), the site contains a variety of micro-habitats between the rocky rises and higher areas of Zones 1B, 2A and 2B which can successfully support the species throughout the year. Alternatively, the importance of low-lying areas (once vegetated) may be particularly evident in periods of drought where more suitable micro-habitats or foraging resources may be located within these areas throughout the offset site (SMEC 2020b).

Numerous sites that are known to support Striped Legless Lizard consist of a variety of habitats across undulating plains and stony rises, which commonly include low-lying drainage areas supporting tussock grasses (*Poa* spp.) adjoined to temperate grasslands and rocky-rises. Therefore, this offset site provides an opportunity to enhance natural habitats for the species as part of the management actions proposed over the 10-year period (SMEC 2020b).

Planting schedules

It was apparent from recent site inspections between February and March 2020, that the offset site is showing preliminary signs of natural recruitment. It is also understood that the success of active rehabilitation works will be of highest priority in order to meet the native vegetation cover (55%) target within the landowner management plan (SMEC 2020b).

The current seeding plan for Year 3 is considered to be limiting with respect to direct seeding methods, as this can be very difficult to implement successfully (this method relies on numerous factors to ensure the seeds germinate). This may include environmental or site factors such as rainfall, ambient air and soil temperature, topography and general aspect of the land (SMEC 2020b). For example, direct seeding was trialled in May 2019 to test rehabilitation success within Zone 1B, an area that has partly been identified as a low-lying area of this zone. Given numerous high rainfall events occurred subsequent to this trial, the selected seed mix did not establish as anticipated. This is a great example of why seeding the entirety of available seeds in a single year is considered to be a high risk approach (and why trials were undertaken in Years 1 and 2). It is therefore recommended that direct seeding occurs within a selection of trial locations and soil types to minimise the potential loss of all seeds (and any associated financial implications) within a single event (SMEC 2020b).

It is considered that direct seeding of all available seeds is not warranted within a single event, particularly due to the observed level of natural regeneration within the offset site. This will minimise the total area required for direct seeding, so that any remaining seeds can be direct seeded into less vegetated areas and/or utilise more selective alternative species to establish low-lying areas of the offset site. It is therefore recommended that smaller areas (3-4 ha) are trialled to allow natural regeneration and onsite self-seeding to support the direct seeding methods utilised onsite (SMEC 2020b).

In response to recent correspondence from DELWP, and in addition to outcomes of the site audit in June 2019, these recommendations have been now been approved by DELWP. It is considered that once established, these alternative species will provide suitable habitat for Striped Legless Lizard into the future. Overall, the successful rehabilitation of Zones 1B, 2A and 2B will utilise more appropriate species, and will be undertaken in a strategic manner that builds on natural regeneration and selective trial sites to minimise the potential loss of viable seeds.

3.1.2.4 OMS Compliance

Table 3 summarises the management actions required for Year 2 of the OMS and date or reference document for completion.

Table 3: Management action summary for Year 2 OMS objectives.

YEAR	ACTION	MANAGEMENT ACTION	RESPONSIBLE AUTHORITY / PERSONNEL	TIMING OF ACTION	DATE COMPLETED
2	2.1	Undertake fencing repairs as required	Landowner (under SHWFPL supervision)	Ongoing as required	N/A – no fencing upgrades required in Year 2
2	2.2	Conduct site preparation works for weeds in Zones 1b, 1c, 2b and 3b	SHWFPL and Landowner	October-November	Refer to Section 3.1.2.2 above and Aus Eco Solutions (2019).
2	2.3	Monitor populations of pest plants and animals control works if required	SHWFPL and Landowner	After peak breeding season – late summer/early autumn	Refer to Section 3.1.2.2 above and Aus Eco Solutions (2019).

3.2 Golden Sun Moth

3.2.1 Condition 1b - Golden Sun Moth Habitat

As noted in Condition 1b, SHWFPL has approval to remove up to 1.57 ha of Golden Sun Moth habitat under EPBC 2016/7746. Based on the final construction layout there has been approximately 1.26 ha of Golden Sun Moth habitat impacted (Plate 1). In accordance with the approval, SHWFPL has minimised impacts to Golden Sun Moth habitat by approximately 0.31 ha and is therefore compliant with Condition 1a of the approval EPBC 2016/7746.

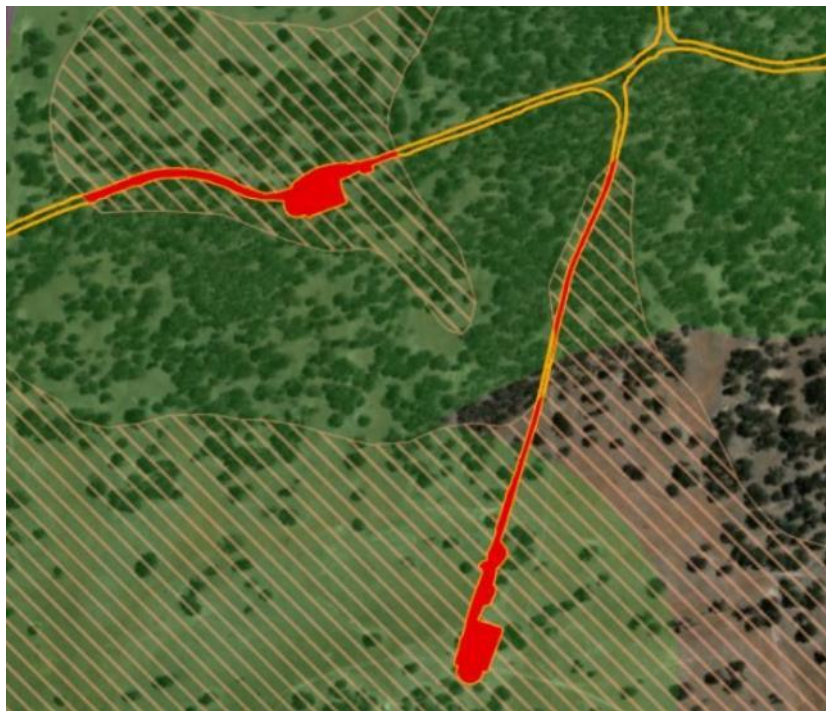


Plate 1. Overview of final construction layout (orange) overlapping Golden Sun Moth habitat (light orange hatching) and areas impacted (red) for the SHWEF.

3.2.2 Condition 3b – Golden Sun Moth Offset Management Strategy

In accordance with Condition 3b of EPBC 2016/7746, SMEC were engaged by SHWFPL to implement the monitoring program for Golden Sun Moth in Year 2 of the OMS (SMEC 2020c). It is understood that all remaining management activities associated with the OMS are the responsibility of the landowner.

In accordance with the state-approved landowner agreement (BB-3027/LA01) endorsed by DELWP, on ground auditing was conducted on 26 July 2019 to review progress against this plan (DELWP 2019b). A summary of the findings and recommendations are summarised below in more detail.

The following sections provide an overview of compliance with the GSM OMS for Year 2 monitoring, accompanying reports referenced in these sections are provided for information and review by DAWE as part of the SHWFPL compliance reporting period of Year 2 (2019/20).

3.1.2.1 Golden Sun Moth species monitoring

Monitoring was undertaken over four separate days across the offset site between 21 November 2019 and 9 January 2020 (SMEC 2020c). Weather conditions during monitoring events were considered suitable for the detection of Golden Sun Moth and no reference sites were visited as the species' presence has been previously confirmed on site.

A total of approximately 88 male Golden Sun Moth were recorded during monitoring events with the highest species emergences being detected on 10 and 18 December 2019 with 30 and 54 Golden Sun Moth recorded (Table 3; SMEC 2020c). Golden Sun Moth was observed across the entire offset site during monitoring events, although the high species emergences noted in previous years (>400+ individuals detected in 2018/19 by EHP), were not recorded during the 2019-20 monitoring season (SMEC 2020c).

Based on other shared monitoring data across Victoria (ECA 2020), this pattern of lower individual counts was noted at numerous sites. While there are likely to be a variety of factors influencing the population abundances between monitoring seasons, the current management activities are unlikely to be directly linked to the lower population numbers detected. Overall, the offset site continues to support a Golden Sun Moth population and is supported by high quality habitat for the species.

Landowner observations

The landowners were able to undertake opportunistic observations in addition to results detailed in Table 4. A total of approximately 261 male Golden Sun Moth were detected on three separate occasions by the landowners between 16-29 November 2019 (SMEC 2020c).

As surveys between 28-29 November 2019 were only one day apart, Golden Sun Moth numbers are considered to be associated with the same emergence period. However, these results indicate that a high number of Golden Sun Moth are still persisting across the offset site despite the consistently low numbers observed across other monitoring sites within Victoria (Note: these additional records are not shown on Figure 2 within SMEC 2020c).

Table 4: Golden Sun Moth observed by landowners with survey dates and weather conditions.

SURVEY NO.	SURVEY DATE	TIME OF SURVEY	TEMP. (°C)	WIND (KM/H) / DIRECTION	DAYS SINCE RAIN	TOTAL GSM*
1	16-11-2019	10:00-12:30pm	13	19 WSW	>1 day	1
2	28-11-2019	12:00-13:30pm	17	22 SSE	>1 day	101
3	29-11-2019	13:00-14:30pm	16	13 SW	> 2 days	159

Note: (*) Landowners have been trained by experienced ecologists in the correct identification of Golden Sun Moth through previous monitoring events and are therefore confident with the species appearance and ecology.

3.2.2.1 Vegetation management

The following sections summarise vegetation quality and management actions undertaken by the landowner in accordance with Year 2 requirements of the Golden Sun Moth OMS (EHP 2017a).

Access control

Internal perimeter fencing to the north and east of the offset site has been removed given a new offset site is now immediately adjoining the site. That is, the broader area consisting two adjoining offset sites on the property will be managed concurrently given required management practices, particularly rotational stock grazing, will overlap with respect to frequency and timing between the offset sites (SMEC 2020c). However, it is important to monitor the effectiveness of this approach in regard to biomass. The results of weed monitoring and biomass, including recommendations for improvements, are provided below.

Biomass density and stock grazing

The offset site provides excellent habitat for Golden Sun Moth as it contains areas with a high cover (>40%) of wallaby grasses, spear grasses, Kangaroo Grass and open ground, with available spaces to support breeding (Plates 1-3). Other native species include Blue Devil (*Eryngium ovinum*), Chocolate Lily (*Arthropodium strictum*), Bluebell (*Wahlenbergia* spp.) and areas supporting bryophytes and lichens (particularly in the east of the site).

Dominant weed species include Brown-top Bent (*Agrostic capillaris*), Bulbous Meadow-grass (*Poa bulbosa*), Yorkshire Fog (*Holcus lanatus*), Onion Grass (*Romulea rosea*), Soft Brome (*Bromus hordeaceus*), Sweet Vernal Grass (*Anthoxanthum odoratum*), Perennial Ryegrass (*Lolium perenne*), Hair-grass (*Aira* spp.), Cat's Ear (*Hypochaeris radicata*), Cape Weed (*Arctotheca calendula*) and other annual weedy grasses.

The following section discusses current vegetation cover within four separate zones (Zones 1-4) as identified within the offset site. Please refer to Figure 3 within SMEC 2020c for an indicative extent of each zone.

Zone 1

Zone 1 is located in the centre and south-west of the offset site. Zone 1 includes a shallow drainage line running east-west which flows to an artificial waterbody at the eastern edge of the offset site (SMEC 2020c). Overall, this zone had the highest level of biomass (70%) comprising pasture grasses including Brown-top Bent, Perennial Ryegrass, Bulbous Meadow-grass and Hair-grass. This zone will require focussed biomass reduction in March 2020 to increase the availability of open ground to 20-40% in accordance with the OMS, currently open ground is approximately 5%. It is recommended that stock is removed from low lying areas during periods of inundation to avoid soil pugging, and this is to be monitored by the landowner.

If required, temporary fencing should also be installed to focus stock grazing to areas within Zone 1 given the high biomass levels. If unsuccessful, adaptive management options such as burning will be discussed for April-May 2020 (SMEC 2020c).

Zone 2

Zone 2 is located along the northern extent of the offset site (SMEC 2020c). Similarly, this zone had a high level of biomass and will require focussed grazing management during March 2020.

Adaptive management options such as temporary stock fencing and burning will need to be reviewed in conjunction with Zone 1 to meet the objectives of the OMS. Overall, zone 2 had slightly higher levels of native tussock grass cover (30%) and open ground (10%), but pasture grasses still form the majority of ground cover (60%) within this zone (SMEC 2020c).

Zone 3

Zone 3 provides the highest quality vegetation for Golden Sun Moth and is located along the eastern boundary of the offset site (SMEC 2020c). This zone has a high cover of native tussock grass (40-50%) and open ground (25%) is typically within the preferred range for the species but will require some low intensity grazing to increase areas of open ground between March-August 2020. Overall, the cover of pasture grass is relatively low (25%) and can be maintained at current levels through the grazing regime proposed.

Zone 4

Zone 4 forms a shallow drainage line leading from the south-east corner of the offset site boundary into the artificial waterbody (SMEC 2020c). This zone has a similar cover of native tussocks (30%), pasture grass (60%) and open ground (10%) to Zone 2 and can be managed via direct crash grazing by stock. Given this area is immediately adjoining higher quality species habitat in Zone 3, it is recommended any high threat weeds are treated to minimise potential spread into areas of remnant vegetation adjoining the drainage line.

Summary

Based on the findings of the site assessment, stock grazing will need to be focussed within Zones 1 and 2 during March 2020. Temporary fencing may be required to retain animals within these zones to reduce biomass levels and increase the amount of open ground to the required levels (20-40%) and stocking rates may need to be increased if biomass cannot be reduced. If low lying areas within Zone 1 become inundated, this area must be avoided by stock using temporary fencing. Zones 3 and 4 will only require low intensity grazing and should be excluded to stock if areas of open ground increase to 40% or above (SMEC 2020c).

Weed control

Based on the site assessment, the management focus for high threat weed species will include ongoing treatment of Brown-top Bent, Sweet Vernal Grass, Cape Weed, Spear Thistle (*Cirsium vulgare*), Cat's Ear and Yorkshire Fog. Areas of pasture grass with high biomass will be managed by rotational stock grazing in March 2020. If biomass cannot be reduced by grazing it is recommended that burning is considered and implemented in autumn April-May 2020, particularly in Zone 1 and 2 (SMEC 2020c).

Weed control has been managed by the landowner during Year 2 of the OMS and is summarised within Gerrpart Holdings Pty Ltd (2020).

Pest animal control

European Rabbit burrows and warrens have been fumigated and collapsed. No further evidence of fox or pig activity has been observed in Year 2.

Pest animal control has been managed by the landowner during Year 2 of the OMS and can be reviewed within Gerrpart Holdings Pty Ltd (2020).

3.2.2.2 DELWP Auditing

To confirm progress of the Golden Sun Moth landowner agreement (BB-3027/LA01), on-ground auditing was conducted by a DELWP monitoring officer (Greg Waddell) on 26 July 2019 (DELWP 2019b; 2020c). A summary of the findings and recommendations are summarised below.

Fencing

The DELWP audit identified the northern boundary fence was somewhat old although no stock threats were identified from north of the offset site. It was suggested the fence be upgraded if stock become a threat to overgrazing the offset site.

Biomass density and stock grazing

Grazing pressure and vegetation height was noted in response to Eastern Grey Kangaroos (*Macropus giganteus*) on native grasses particularly. Recommendation was made to erect two 5m x 5m exclusion plots in grassy areas of the site to compare grazing versus non-grazing.

Pest plant management

It was noted that weeds were generally restricted to beneath tree canopies and dominated by annual grassy weeds. Scattered perennial high threat weeds requiring control included Clover (*Trifolium* sp.), Bulbous Meadow-grass, Spear Thistle, Brown-top Bent, Cat's Ear and Sweet Vernal Grass in the north-west corner of the offset site. Capeweed and Stork's-bill (*Erodium* spp.) in minor concentrated areas. One Horehound (*Marrubium vulgare*) plant requires control.

Pest animal management

A single inactive European Rabbit warren was identified and was recommended to be collapsed. All sighted warrens were fumigated and treated by the landowner as summarised in Gerrpart Holdings Pty Ltd (2020).

3.2.2.3 OMS Compliance

Table 5 summarises the management actions required for Year 2 of the Golden Sun Moth OMS and date or reference document for completion.

Table 5: Management action summary for Year 2 Golden Sun Moth OMS objectives.

YEAR	ACTION	MANAGEMENT ACTION	RESPONSIBLE AUTHORITY / PERSONNEL	TIMING OF ACTION	DATE COMPLETED
2	2.1	Conduct weed control	Landowner	Species dependent	Refer to Gerrard Holdings Pty Ltd (2020)
2	2.2	Monitor populations of pest animals and conduct control works if required	Landowner	After summer/early peak breeding autumn season - late	Refer to Gerrard Holdings Pty Ltd (2020)
2	2.3	Conduct monitoring for GSM	SMEC Australia	Two years after commencement of OMS	Refer to Section 4.1 of SMEC 2020c
2	2.4	Maintain fences	Landowner	As required	Refer to Section 4.2 of SMEC 2020c and Gerrpart Holdings Pty Ltd (2020)

YEAR	ACTION	MANAGEMENT ACTION	RESPONSIBLE AUTHORITY / PERSONNEL	TIMING OF ACTION	DATE COMPLETED
2	2.5	Monitor biomass density and implement stock grazing regime or develop ecological burn/ fuel reduction plan if appropriate	Landowner	Summer/Autumn	Refer to Section 4.3 of SMEC 2020c and Gerrard Holdings Pty Ltd (2020)
2	2.6	Monitor and assess works, and prepare two-year progress report	SMEC Australia	Two years after commencement of OMS	Refer to documented results contained within SMEC 2020c

3.3 Threatened Flora Species and Ecological Communities

The following sections summarises a review of impacts to the following EPBC Act-listed threatened flora species and ecological communities identified during previous detailed assessments (EHP 2014a, 2014b, 2016a ,2016b), and in regard to the final construction layout.

3.3.1 Threatened Species

White Sunray

White Sunray were previously recorded within the western road reserve of Stockyard Hill Road (south of Thompson Road) (Plates 2-3) (SMEC 2020d). The species was also recorded in the eastern road reserve of Eurambeen-Streatham Road (south of Eurambeen-Settlement Road) (Plates 4-5). It is confirmed that no direct impact to this species has occurred as a result of road and intersection upgrades for the SHWEF.



Plate 2. Records of White Sunray (green triangles) retained within the western road reserve of Stockyard Hill Road, Victoria.



Plate 3. Intersection widening extent at corner of Stockyard Hill / Beaufort-Carranballac Road (A, Taylor. 19 March 2020).

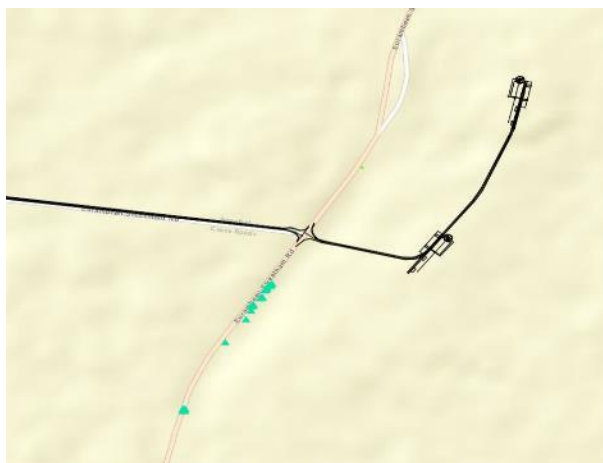


Plate 4. Records of White Sunray (green triangles) retained within the eastern road reserve of Eurambeen-Streatham Road, Victoria.



Plate 5. Intersection widening extent at Eurambeen-Streatham Road (A, Taylor. 9 April 2020).

Spiny Rice-flower and Matted Flax-lily

The presence of these species was not assessed during the current assessment as the disturbance footprint did not encroach on confirmed species records. Pre-construction mapping for Spiny Rice Flower was required by Permit Condition 10. The mapping was completed, a report submitted to DELWP and, satisfaction of the Minister obtained (EHP 2016a, 2016b).

3.3.2 Threatened Communities

3.3.2.1 Natural Temperate Grassland of the Victorian Volcanic Plain (NTGVVP)

Patches of NTGVVP have been previously mapped within the SHWEF, primarily within road reserves (EHP 2017). As part of its EPBC Act referral, SHWFPL proposed to remove 0.208 ha of NTGVVP as part of the SHWEF (0.08 ha) and external overhead powerline (0.128 ha) pre-construction layouts (EHP 2017a).

The extent of proposed removal of NTGVVP was not considered a significant impact under the EPBC Act Significant Impact Guidelines (EHP 2017, SEWPaC 2011), due to the removal of small patches of NTGVVP not leading to significant fragmentation of larger patches (EHP 2017).

Actual removals to NTGVVP increased to 0.121 ha as part of the final construction layout for the SHWEF, which is an increase of approximately 0.058 ha (Plates 6-7). However, there was a decreased impact of 0.012 ha to NTGVVP for road and intersection upgrades along Dunnets Road as a result of moving the road alignment north of the existing proposed construction footprint (Plates 8-9).

A summary of impacts to NTGVVP attributed to the SHWEF and road and intersection upgrades are summarised in Table 6 below.

Table 6: Comparison of proposed and final removals to NTGVVP as part of the final construction layout.

IMPACT LOCATION	IMPACT TRIGGER	PROPOSED NTGVVP REMOVAL (HA)	FINAL NTGVVP REMOVAL (HA)	CHANGE IN IMPACT (HA)
SHWEF	Cabling routes in North Group	0.051	0.109	+0.058
Road and Intersection	Dunnets Road	0.024	0.012	-0.012
Total impacts		0.08	0.121	+0.041

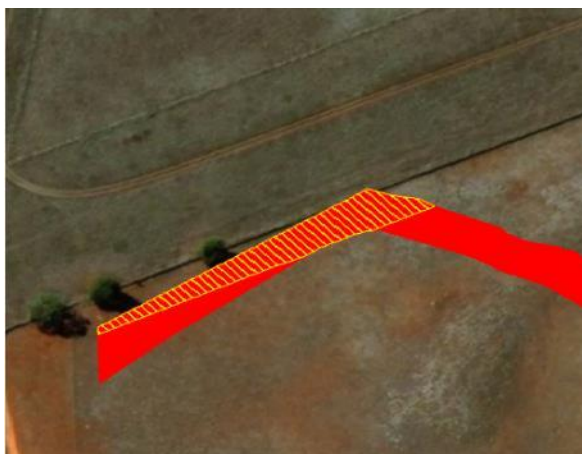


Plate 6. Previously mapped NTGVVP (red) and impacts shown by the disturbance footprint (orange hatching).



Plate 7. Impacts to NTGVVP by underground cabling route shown in Plate 6 (A, Taylor. 20 March 2020).

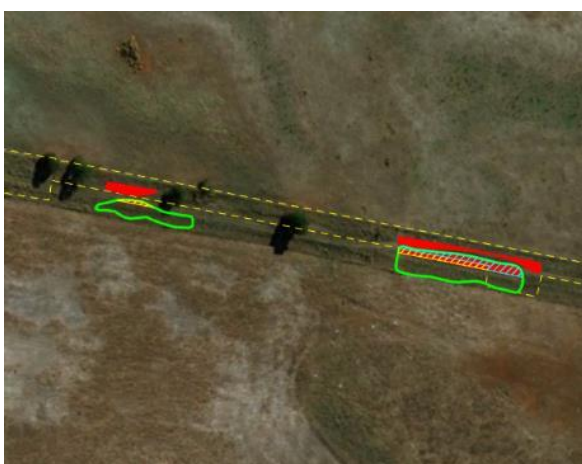


Plate 8. Mapped NTGVVP (green and red) removed by road works (yellow hatching) and overhead powerline (blue hatching) along Dunnets Road.



Plate 9. Avoidance of NTGVVP along Dunnets Road by micro-siting road alignment to north (A, Taylor. 14 April 2020).

Note: approximately 0.018 ha of NTGVVP within the final construction layout overlapped with the external 132 kV overhead powerline easement along Dunnets Road. This amount has not been incorporated as SHWEF actual removals for NTGVVP as it has been treated under a separate permit and associated conditions (Table 5).

Implications to NTGVVP

Impacts to NTGVVP are approximately 0.041 ha higher than proposed. The increased removal of NTGVVP is considered unlikely to constitute a 'significant impact' under condition thresholds the EPBC Act Significant Impact Guidelines (SEWPAC 2011). This is due to the marginal quality and small areas of NTGVVP removed within the SHWEF (that are connected to larger patches of linear NTGVVP). Overall, areas of NTGVVP impacted within the SHWEF do not support high native plant species richness with minimal weed invasion and are not considered to support threatened plants or animals.

Conversely, higher quality areas of NTGVVP along Dunnets Road that have been avoided are of higher quality and have the potential to support Striped Legless Lizard. Impacts to patches of NTGVVP along Dunnets Road have been minimised in response to micro-siting measures during construction.

3.3.2.2 Seasonal Herbaceous Wetlands (SHW) (Freshwater) of the Temperate Lowland Plains

Previous ecological assessments identified the potential for the SHW ecological community to occur in areas of Plains Grassy Wetland EVC. Areas of Plains Grassy Wetland (EVC 125) vegetation considered to potentially meet condition thresholds for SHW were not previously assessed against condition thresholds as impacts were not expected (2014a, 2014b).

Current site assessments undertaken by SMEC in March and April identified that one small area (approximately 0.065 ha) of Plains Grassy Wetland vegetation was impacted by the final construction layout between wind turbine sites 81-82 (Plate 10).

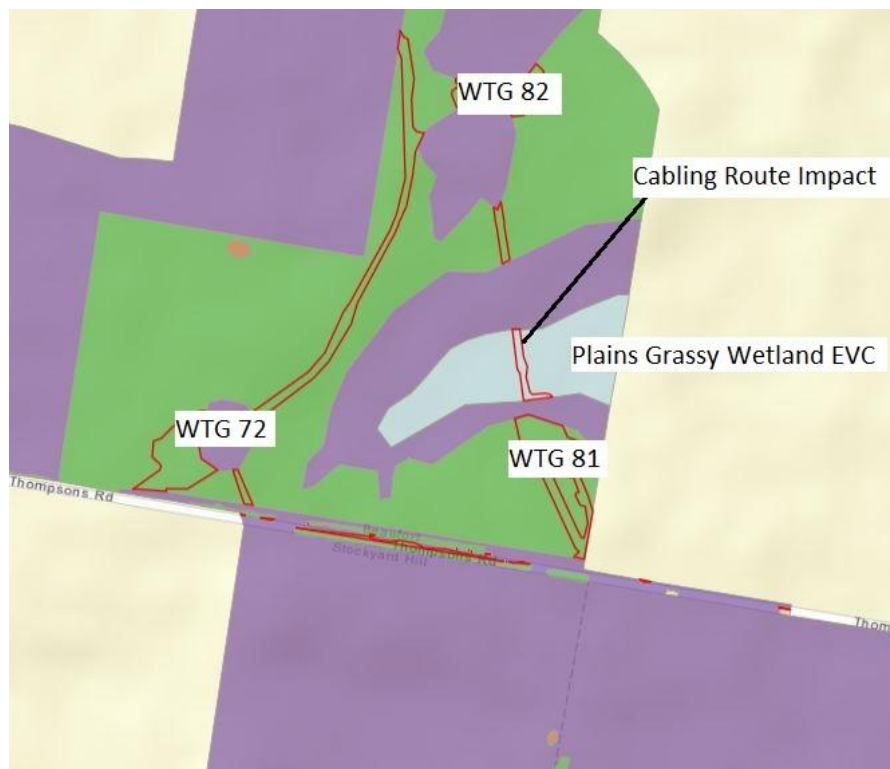


Plate 10. Plains Grassy Wetland EVC impacted by cable route in the East Group.

During the current assessment this area contained indicator species for SHW such as Brown-back Wallaby-grass (*Rytidosperma duttonianum*), Rush (*Juncus* spp.) and Tussock-grass (*Poa* spp.) (SEWPaC 2012). An assessment of Plains Grassy Wetland vegetation conducted against condition thresholds and diagnostic characteristics for SHW is presented below (SEWPaC 2012):

- Is the wetland consistent with the key diagnostic characteristics listed in SEWPaC 2012? - Yes;
- Is 50% or more of the total cover of plants in the ground layer of the wetland dominated by native species characteristic of the Seasonal Herbaceous Wetlands ecological community – No, patches of Plains Grassy Wetland ranged between 15-30% native cover and do not meet criteria to be considered SHW.

Based on the area of Plains Grassy Wetland not meeting condition thresholds to be considered SHW, this EPBC Act-listed ecological community is not considered present within this remnant patch of Plains Grassy Wetland EVC.

4 Summary

4.1 Summary

4.1.1 Impacts to Species Habitat – Condition 1

Based on site assessments undertaken by SMEC in March and April 2020 it is confirmed that proposed impacts to Striped Legless Lizard and Golden Sun Moth habitat have not been exceeded in accordance with Condition 1 of approval EPBC 2016/7746.

A total of approximately 41.40 ha Striped Legless Lizard habitat has been impacted. In accordance with the approval, SHWFPL has minimised impacts to Striped Legless Lizard habitat by approximately 0.76 ha.

A total of approximately 1.26 ha of Golden Sun Moth habitat has been impacted. In accordance with the approval, SHWFPL has minimised impacts to Golden Sun Moth habitat by approximately 0.31 ha.

4.1.2 Monitoring – Conditions 2 and 3

Monitoring requirements for Striped Legless Lizard and Golden Sun Moth outlined within respective OMSs have been completed to a satisfactory level for Year 2, and in accordance with Condition 2 of the approval EPBC 2016/7746.

4.1.2.1 Striped Legless Lizard

While it is noted that detailed monitoring in Year 2 is not formally required within the Striped Legless Lizard OMS, as part of Year 1 monitoring (SMEC 2019), two additional areas were recommended for deployment of tile grids (Tile Grid 6 and 7) and species monitoring. While Striped Legless Lizard was not observed at these new locations, it is expected these sites will have a higher likelihood of detecting the species between October-November 2020 as the sites will have undergone an adequate establishment period. One individual Striped Legless Lizard (juvenile) was recorded at Tile Grid 3 and Year 3 monitoring will aim to confirm and quantify population dynamics at the offset site.

In response to recent correspondence from DELWP, and in addition to outcomes of the site audit in June 2019, all recommendations have been now been approved by DELWP for implementation. It is considered that once established, alternative flora species suited to wetter conditions will provide suitable habitat for Striped Legless Lizard into the future. Overall, the successful rehabilitation of Zones 1B, 2A and 2B will utilise more appropriate species, and will be undertaken in a strategic manner that builds on natural regeneration and selective trial sites to minimise the potential loss of viable seeds.

All required actions outlined within the Striped Legless Lizard OMS for Year 2 have been fulfilled satisfactorily based on the information and works undertaken at the offset site.

4.1.2.2 Golden Sun Moth

Management actions in accordance with the endorsed Golden Sun Moth OMS were undertaken for Year 2 by SMEC and the landowner. Results of Golden Sun Moth population monitoring indicate the offset site is currently supporting the species with approximately 88 Golden Sun Moth detected during four separate monitoring events. In addition, up to 159 Golden Sun Moth were detected in a single opportunistic observation by the landowner. While population numbers are lower than Year 1 monitoring, overall population counts across Victoria in 2019 were low and are therefore not considered to be associated with current management practices within the offset site.

Overall, the site has a high level of biomass which will need to be reduced by rotational stock grazing in March 2020. Weed species identified by the DELWP audit will be targeted and managed accordingly by the landowner with support and guidance by SMEC in Year 3 of the Golden Sun Moth OMS implementation.

All required actions outlined within the Golden Sun Moth OMS for Year 2 have been fulfilled satisfactorily based on the information and works undertaken at the offset site.

4.1.3 Threatened Species and Communities

Actual removals to NTGVVP are approximately 0.121 ha as part of the post-construction layout. While an increase of 0.041 ha has resulted from construction activities, the impacts are considered minimal given the total size of areas impacted. There were no additional impacts to other threatened species and communities listed under EPBC Act.

5 References

- Aus Eco Solutions 2019. A1527 Year 1 Autumn Report. Prepared for Trish and Simon Tayler, Monmot Farming, Victoria.
- DELWP 2019a. Monitoring Report BB-3036-LA01 (Year 1), 26 June 2019. Prepared by Greg Waddell for Simon and Trish Tayler, Monmot Farming, Victoria.
- DELWP 2019b. Monitoring Report BB-3027-LA01 (Year 1), 27 June 2019. Prepared by Greg Waddell for David and Robyn Gerrard, Victoria.
- DELWP 2020a. Letter (20 March 2020) – Native Vegetation Offset Register annual reporting and compliance BB-3036 LA01. Victorian Department of Environment, Land, Water and Planning, East Melbourne, Victoria.
- DELWP 2020b. Letter (20 March 2020) – Native Vegetation Offset Register annual reporting results BB-3036 LA01 – Year 2. Victorian Department of Environment, Land, Water and Planning, East Melbourne, Victoria.
- DELWP 2020c. Letter (17 March 2020) – Native Vegetation Offset Register annual reporting and compliance BB-3027 LA02. Victorian Department of Environment, Land, Water and Planning, East Melbourne, Victoria.
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- ECA 2020. Ecological Consultants Association of Victoria (ECA): ECA Victoria Golden Sun Moth flight updates for 2019/20 monitoring period. Available at: <https://ecavic.org.au/resources/gsm/>
- EHP 2018. Striped Legless Lizard *Delma impar* Offset Management Strategy for the Stockyard Hill Wind Farm. Prepared for Stockyard Hill Wind Farm Pty Ltd.
- EHP 2017a. Matters of Environmental Significance for the proposed Stockyard Hill Wind Farm (Preliminary Documentation). Prepared for Stockyard Hill Wind Farm Pty Ltd.
- EHP 2017b. Golden Sun Moth *Synemon plana* Offset Management Strategy for the Stockyard Hill Wind Farm. Prepared for Stockyard Hill Wind Farm Pty Ltd.
- EHP 2016a. Biodiversity Assessments to Accompany an Application to Amend Planning Permit No PL-SP/05/0548, Stockyard Hill Wind Farm, Victoria. Prepared for Stockyard Hill Wind Farm Pty Ltd.
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- EHP 2014b. Detailed flora investigations for the Stockyard Hill Wind Farm, Victoria. Prepared for Stockyard Hill Wind Farm Pty Ltd.
- Gerrpart Holdings Pty Ltd 2019. Management Plan BB-3027-LA02 Year 1 Report 2018. Prepared for the Department of the Environment, Land, Water and Planning.
- Gerrpart Holdings Pty Ltd 2020. Management Plan BB-3027-LA02 Year 2 Report 2019. Prepared for the Department of the Environment, Land, Water and Planning.
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- SEWPaC 2012. Commonwealth Listing Advice on Seasonal Herbaceous Wetlands (Freshwater) of the Temperate Lowland Plains. Department of Sustainability, Environment, Water, Population and Communities. Available at: <http://www.environment.gov.au/biodiversity/threatened/communities/pubs/97-listing-advice.pdf>
- SMEC 2019. Striped Legless Lizard Population Monitoring (Year 1): Stockyard Hill Wind Farm Pty Ltd. Prepared for Stockyard Hill Wind Farm Pty Ltd.

SMEC 2020a. Striped Legless Lizard (*Delma impar*) population monitoring (Year 2), Stockyard Hill Wind Farm, Victoria. Prepared for Stockyard Hill Wind Farm Pty Ltd.

SMEC 2020b. Native Vegetation Offset Register annual reporting and compliance BB-3036 LA01. Prepared for Simon and Trish Tayler, Monmot Farming, Victoria.

SMEC 2020c. Golden Sun Moth Population Monitoring Summary Report (Year 2). Prepared for Stockyard Hill Wind Farm Pty Ltd.

SMEC 2020d. Ecological Impact and Assessment Report. Prepared for Stockyard Hill Wind Farm Pty Ltd.

6 Attachments

Striped Legless Lizard

Attachment 1: Simon and Trish Tayler, offset management activities diary on site.

Attachment 2: SMEC 2020a. Striped Legless Lizard (*Delma impar*) population monitoring (Year 2), Stockyard Hill Wind Farm, Victoria. Prepared for Stockyard Hill Wind Farm Pty Ltd.

Attachment 3: SMEC 2020b. Native Vegetation Offset Register annual reporting and compliance BB-3036 LA01. Prepared for Simon and Trish Tayler, Monmot Farming, Victoria.

Golden Sun Moth

Attachment 4: SMEC 2020c. Golden Sun Moth Population Monitoring Summary Report (Year 2). Prepared for Stockyard Hill Wind Farm Pty Ltd.

Bushbroker Annual Report Land Owner Agreement - BB-3036 LA01									
Document Reference:	Year 2								
Site Progress:	Year 2 Report								
Land Owner:	Simon James William Tayler								
Land Owner Agreement:	BB-3036/LA01								
Site Code:	BB-3036/LA01-01								
Year	Active Management (refer to site Plan)	Zone Codes	Management Actions to be completed	Timing	Completed (Yes/No)	Method	Description of action	Supporting evidence of action being completed / comments / observations	Standard to be achieved
Two	BB-3036/LA01	1B,2B, 2F & 2G	Site Preparation: For each zone. 1. Prepare the site to ensure optimal establishment of the vegetation. 2. For area where planting will occur complete at least two cycles of weed elimination. 3. Collect seed on site and/or place order with local indigenous nursery. (Refer table 5 for species and Table 4 for minimum species diversity targets and minimum target coverage.	Year 1-2	Yes	Boom Spraying of Herbicide. No boom spraying to be undertaken once native grass is sown.	A trial of direct seeding (4HA) was under taken in preparation for further seeding in 2020. There had been two cycles of weed elimination in this area. This was conducted to determine the effective combination of seed for future plantings. Rocks were also removed from the site to outside of the offset area as required. Additional seed collected Summer 2018/2019 still in storage for planting.	Refer to Aus Eco Solutions Autumn Report 2019 (includes photos and detailed descriptions). Refer to AusEco Solutions Summer report 2018/2019 (includes photos and detailed description of planting). Seed invoice supplied from AusEcoSolutions provided with Year 1 Report.	To ensure greatest chance of survival, planting areas should have minimal or no weed cover. Avoid disturbing any existing native grasses. Minimum Target: 5% - Common Tussock Grass (Poa). Minimum Target: 50% Common Wallaby Grass, Slender Wallaby Grass, Knead Speer Grass, Rough-Spear Grass, Common Wheat Grass, Kangaroo Grass. To be achieved by end of 10year management plan and other locally indigenous Wallaby-grass or spear grasses may be included.
Two	BB-3036/LA01	All	Maintain Fencing around boundary of the entire site to the standards detailed in information sheet 12*standards for Management - Fencing.	Ongoing	Yes	Observation/Repair as required	Boundary fence inspected.	No repairs required.	Maintain Fencing around boundary of the entire site to the standards detailed in information sheet 12*standards for Management - Fencing.
Two	BB-3036/LA01	1B, 2B, 2F & 2G	Control of Herbaceous weeds - Onion Grass	Spring	Yes	Boom Spray. No boom spraying to be undertaken once native grasses are sown.	Boom Sprayed(second round), previously cropped areas not know to support SLL. 24/11/19 with Goldacres boomspray. Materials/Quantity, Glyphosate 450-2.5L/HA, Hammer 400 45mls/HA, FLX 400 adjuvant 250mls/HA, Ammonium sulphate 1kg/100lts, Water 120lts/HA, Wind West10kms/H, Temperature 19 degrees.	Photos/Invoices attached	No increase in cover beyond the cover listed in Table 9 (60%) for each zone for all herbaceous weeds. Minimise off-target damage (Avoid all native plants). <1%cover of all new and emerging high threat herbaceous weeds at the end of Year 10. October-November as a previously cropped area.
Two	BB-3036/LA01	1B, 2B, 2F & 2G	Control of Herbaceous weeds - Various pasture/crop grasses on former cropping land	Spring	Yes	Boom Spray. No boom spraying to be undertaken once native grasses are sown.	Boom Sprayed(second round), previously cropped areas not know to support SLL. 24/11/19 with Goldacres boomspray. Materials/Quantity, Glyphosate 450-2.5L/HA, Hammer 400 45mls/HA, FLX 400 adjuvant 250mls/HA, Ammonium sulphate 1kg/100lts, Water 120lts/HA, Wind West10kms/H, Temperature 19 degrees.	Photos/Invoices attached	No increase in cover beyond the cover listed in Table 9 (60%) for each zone for all herbaceous weeds. Minimise off-target damage (Avoid all native plants). <1%cover of all new and emerging high threat herbaceous weeds at the end of Year 10. October-November as a previously cropped area.

Two	BB-3036/LA01	1A, 1C, 1D, 2A, 2C, 2D, 2E	Control of Herbaceous weeds - Cape Weed	Spring	Yes	Spot Spray	Spot sprayed 30/8/19, 8/9/19, 9/9/19, 10/9/19. Materials/Quantity, Glyphosate 450/ 500mls/100lts, FLX 700 250mls/100lts, Wind 15kms/H SW , Temperature 15	Photos/Invoices attached	No increase in cover beyond the cover listed in Table 9 (65%) for each zone for all herbaceous weeds. Minimise off-target damage (Avoid all native plants). <1%cover of all new and emerging high threat herbaceous weeds at the end of Year 10. Not permitted October - February as normal active period for SLL.
Two	BB-3036/LA01	1A, 1C, 1D, 2A, 2C, 2D, 2E	Control of Herbaceous weeds - Spear thistle	Spring	Yes	Hand chipping and spot spray	Spot sprayed 30/8/19, 8/9/19, 9/9/19, 10/9/19. Materials/Quantity, Glyphosate 450/ 500mls/100lts, FLX 700 250mls/100lts, Wind 15kms/H SW , Temperature 15	Photos/Invoices attached	No increase in cover beyond the cover listed in Table 9 (65%) for each zone for all herbaceous weeds. Minimise off-target damage (Avoid all native plants). <1%cover of all new and emerging high threat herbaceous weeds at the end of Year 10. Not permitted October - February as normal active period for SLL.
Two	BB-3036/LA01	1A, 1C, 1D, 2A, 2C, 2D, 2E	Control of Herbaceous weeds - Toowoomba Canary Grass (Phalaris)	Spring	Yes	Spot spray	Spot sprayed 30/8/19, 8/9/19, 9/9/19, 10/9/19. Materials/Quantity, Glyphosate 450/ 500mls/100lts, FLX 700 250mls/100lts, Wind 15kms/H SW , Temperature 15	Photos attached	No increase in cover beyond the cover listed in Table 9 (65%) for each zone for all herbaceous weeds. Minimise off-target damage (Avoid all native plants). <1%cover of all new and emerging high threat herbaceous weeds at the end of Year 10. Not permitted October - February as normal active period for SLL.
Two	BB-3036/LA01	All	Strategic Grazing of sheep to reduce biomass (March to August) If cover falls below 70% sheep to be removed.	March-August	Yes	Crash Grazing	Grazing from 8/5/19-10/5/19 @ 10DSE/HA to reduce biomass and preparing site for direct seeding by breaking up the dead crop stubble to allow the direct seeder to operate unimpeded. Grazing from 19/8/19-24/8/19 @ 15DSE/HA to reduce biomass and preparing site for direct seeding by breaking up the dead crop stubble to allow the direct seeder to operate unimpeded.	Photos/Invoices attached	Vegetation maintained over 70%. No evidence of SLL reduction. Diversity native flora is maintained and enhanced. No evidence of increase in soil pugging. Crash grazing not permitted September to February. March to August only.
Two	BB-3036/LA01	All	Pest and animal Control: Rabbits & Foxes	Ongoing	Yes	Fumigation and hand collapse of rabbit burrows and fox dens	Fumigation completed on Northern Boundary on 15/5/2019 & 24/6/19.		No surface disturbance within the site. No active rabbit warrens to be present. No active dens to be present. No rubbish. Minimal artificial piles of logs and rocks.
Two	BB-3036/LA01	All	Pest and animal Control: Rabbits	September - January	Yes	Baiting	Baiting. Active rabbit warren identified by Greg Wadell 28/6/19 in NE corner of 1A completed 15/7/19. Fumigated with Phosphine as per product label and hand excavated. Fumigated again on 1/9/19 with Phosphine and hand excavated.	Photos attached in Aus Eco Year 1 summer report.	No surface disturbance within the site. No active rabbit warrens to be present. No active dens to be present. No rubbish. Minimal artificial piles of logs and rocks.
Two	BB-3036/LA01	All	Pest and animal Control: Rabbits	Ongoing	Yes	When baiting collect and dispose of carcasses to prevent poisoning of native predators.	Carcasses disposed of as required.		No surface disturbance within the site. No active rabbit warrens to be present. No active dens to be present. No rubbish. Minimal artificial piles of logs and rocks.

Two	BB-3036/LA01	All	Pest and animal Control: Rabbits & Foxes	Ongoing	Yes	Remove or dispose of surface harbour	Shooting on foot undertaken on 9/6/19 resulting in 1 fox and two rabbits, 20/7/19 2 rabbits and 1 fox.		No surface disturbance within the site. No active rabbit warrens to be present. No rubbish. Minimal artificial piles of logs and rocks.
Two	BB-3036/LA01	All	Pest and animal Control: Rabbits & Foxes	Ongoing	Yes	Monitor and control	Monitor and control	Baiting and shooting instigated when pests observed. Additional works undertaken by Goldwing along Dunned Road (Outside the habitat area) has significantly reduced rabbit numbers. Photo included.	No surface disturbance within the site. No active rabbit warrens to be present. No rubbish. Minimal artificial piles of logs and rocks.
Two	BB-3036/LA01	All	Pest and animal Control: New and Emerging pest animals	Ongoing	Yes	Monitor and control	Observation	None observed	Monitor and control New and emerging pests and animals
Two	BB-3036/LA01	All	Woody Weeds: Eliminate all high threat weeds.	Ongoing	Yes	Monitor and control	Monitor and control	None observed, confirmed in report provided to DELWP by Greg Waddell.	<1% cover of all woody weeds at the end of year 10.
I hereby declare that the supplied information is accurate and complies with reporting requirements under Section 6 - Obligations of the Landowner in the Bush Broker Land Owner Agreement.									
Signed:				Date:					
Simon Tayler									

17 January 2020
SMEC No. 30042115

Kathryn Czapnik
Senior Environmental Advisor
Goldwind Australia Pty Ltd
Level 4, 485 LaTrobe Street
Melbourne 3000

Dear Kathryn,

Re: Striped Legless Lizard (*Delma impar*) population monitoring (Year 2), Stockyard Hill Wind Farm, Victoria

SMEC Australia Pty Ltd (SMEC) was commissioned by Goldwind Australia Pty Ltd (Goldwind) to undertake additional Striped Legless Lizard (*Delma impar*) species monitoring as part of the Stockyard Hill Wind Farm Pty Ltd project (the project). The project was approved under the *Environmental Protection and Biodiversity Conservation Act 1999* (EPBC Act) by the Department of the Environment and Energy (DoEE) on 19 August 2018. It is understood that the DoEE post-approvals team have approved the 10-year Offset Management Strategy (OMS) subject to conditions (Approval Decision EPBC 2016/7746) (EHP 2018).

It is noted that detailed monitoring in Year 2 is not formally required within the OMS, however, as part of Year 1 species monitoring (SMEC 2019), two additional areas were recommended for deployment of tile grids and species monitoring. The first includes an area of native vegetation immediately adjoining Tile Grid 3 (which is already known to support Striped Legless Lizard). The second location is an area where one Striped Legless Lizard was relocated during vegetation removals associated with constructions activities along Dunnets Road.

Overall, the objective of additional monitoring sites is to build an understanding of population dynamics and current site utilisation by the species to guide future management practices.

Study sites

The offset site is south of Dunnets Road and covers 43 ha, approximately 180 km west of Melbourne and 35 km west of Ballarat (Figure 1). The property covers Lot 1 and Lot 2 on Title Plan 761464V. The offset site has historically been used for rotational grazing by sheep and cropping activities.

The offset site occurs within the Victorian Volcanic Plain bioregion, Pyrenees Shire Council municipality and Glenelg Catchment Management Authority (CMA) (DELWP 2020a). The offset site is zoned Farming Zone (FZ) within the Pyrenees Planning Scheme and an Environmental Significance Overlay – Schedule 1 (ESO1) applies for the protection and enhancement of water quality and water quality within the designated water supply catchment (DELWP 2020b).


Survey permits

Striped Legless Lizard monitoring was undertaken in accordance with a Research Permit approved by the Department of the Environment, Land, Water and Planning (DELWP) under the *Wildlife Act 1975* (Permit 10008716). All animal handling was in accordance with SMEC's Standard Operating Procedure (SMEC 2020), and Wildlife and Small Institutions Animal Ethics Committee (WSIAEC) approval 22.16.



FIGURE 1. Study Site Location



<p>FIG NO. 1 FIGURE TITLE Study Site Location</p>	<p>DATE 07/03/2019</p> <p>0 0.125 0.25 1:10,000 Km</p>	<p>PAGE SIZE A3</p> <p>COORDINATE SYSTEM GDA 1994 MGA Zone 55</p>	<p>© SMEC Australia Pty Ltd 2019. All Rights Reserved</p> <p><small>Disclaimer: While all reasonable care has been taken to ensure the information contained on this map is up to date and accurate, this map contains data from a number of sources - no warranty is given that the information contained on this map is free from error or omission. Any reliance placed on such information shall be at the sole risk of the user. Please verify the accuracy of all information prior to using it. This map is not a design document.</small></p>
<p>PROJECT NO. 30041817 PROJECT TITLE Striped Legless Lizard Offset Monitoring Site Stockyard Hill, Victoria</p>	<p>CREATED BY AE13763</p>	<p>SOURCES Esri, HERE, Garmin, © OpenStreetMap contributors, and the GIS user community, Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community</p>	 <p>Member of the Surbana Jurong Group</p>

Scope of works

The scope of works commissioned by Goldwind included:

1. Deployment of two (2) additional monitoring grids (Tile Grids 6 and 7) within areas having the potential to support Striped Legless Lizard;
2. Undertaking three (3) monitoring checks at Tile Grids 1-7 between October-December 2019 to better understand population dynamics within the offset site;
3. Liaison with the landowner to discuss current management objectives and future actions leading into Year 3 monitoring requirements; and,
4. Provision of a report outlining the results of monitoring activities and recommendations for management within the offset site.

Assumptions and limitations

The deployment of two additional tile grids (Tile Grids 6 and 7) was undertaken on 22 October 2019. This is considered a less favourable time given an establishment period of two months is typically recommended prior to species monitoring.

The timing of Striped Legless Lizard surveys was extended into December 2019. While this is not the proposed timing of surveys (October-November) under the OMS, it is still considered to be an appropriate time of year to detect the species using tile grid survey methodology.

Results

Monitoring was undertaken over three separate days across the offset site between October-December 2019 (Table 1). Weather conditions during monitoring events were considered suitable for the detection of Striped Legless Lizard. One Striped Legless Lizard was recorded on 22 October 2019 at Tile Grid 3 and the location where the species has been detected during previous monitoring (Figure 2, SMEC 2019).

Table 1: Monitoring survey results and weather conditions¹.

SURVEY NO.	SURVEY DATE	TIME OF SURVEY	SPECIES	TILE GRID	TOTAL	TEMP. (°C)	WIND SPEED	WIND DIRECTION
1	22-10-2019	10:30-12:30pm	SLL, LWS	TG3	1, 1	12.5	9 km	S
2	28-11-2019	10:00-13:30pm	FTD	TG5	1	14.2	6 km	SSW
3	10-12-2019	9:00-12:30pm	-	-	-	11.6	19 km	S

Note: Species acronyms, SLL = Striped Legless Lizard, LWS = Little Whip Snake, FTD = Fat-tailed Dunnart.

Footnotes: (1) Bureau of Meteorology: data sourced from Ballarat Aerodrome (Station 089002).

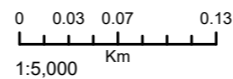


FIGURE 2. Striped Legless Lizard Monitoring (Year 2)



FIG NO. 2 **FIGURE TITLE** Striped Legless Lizard Monitoring (Year 2)

DATE
16/01/2020



PAGE SIZE
A3

COORDINATE SYSTEM
GDA 1994 MGA Zone 55

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PROJECT NO. 30042115

PROJECT TITLE Striped Legless Lizard Monitoring Site
Stockyard Hill, Victoria

CREATED BY AR15136

SOURCES World Imagery: Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

Unfortunately, this individual was not able to be captured for detailed inspection and escaped into nearby vegetation. However, it was noted to have a light underside with faint stripes along the sides, and dark head colouration. These morphological observations identify this individual as a juvenile Striped Legless Lizard, and its presence within Tile Grid 3 suggest species recruitment is occurring within the offset site. No additional Striped Legless Lizard were observed during remaining monitoring events (Table 1).

Little Whip Snake (*Parasuta flagellum*) and Fat-tailed Dunnart (*Sminthopsis crassicaudata*) were also observed during monitoring (Table 1, Plates 1-2). Other species observed within the offset site to date include Eastern Blue-tongue Lizard (*Tiliqua scincoides*) and House Mouse (*Mus musculus*) (EHP 2018, SMEC 2019).

Photographs of vegetation condition as of 28 November 2019 are presented in Appendix A.



Plate 1. TG3 – Little Whip Snake (A, Taylor. 22 October 2019).



Plate 2. TG5 – Fat-tailed Dunnart (A, Taylor. 28 November 2019).

Conclusion

Two additional monitoring grids (Tile Grid 6 and 7) were deployed in October 2020 within areas of potential habitat predicted to support Striped Legless Lizard. While Striped Legless Lizard was not observed at these locations, it is expected these sites will have a higher likelihood of detecting the species between October-November 2020 as the sites will have undergone an adequate establishment period.

One Striped Legless Lizard was recorded utilising habitat at Tile Grid 3 (which immediately adjoins Tile Grid 7). Interestingly, the Striped Legless Lizard observed is likely to be a juvenile based on the morphological features noted. This is an excellent results as it indicates species recruitment within the offset site, however, will need to be confirmed during Year 3 monitoring (in accordance with the OMS program). Two additional species were recorded within the offset site including Little Whip Snake and Fat-tailed Dunnart. No additional mammal, reptile or frog species were recorded.

Overall, weed and pest animal management will be ongoing and is actively being implemented by the landowner in accordance with the OMS. Biomass levels were approximately 70% between October-December 2019 but will need to be monitored and managed by the landowner once the reintroduction of grazing can return to reduce biomass levels over autumn and winter (March to August 2020).

Areas utilised for rehabilitation trials will be monitored for success in late summer / early autumn to confirm any corrective management options for Year 3 management items being supported by Aus Eco Solutions.

If you have any questions, please feel free to contact me.

Yours sincerely,



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References

EHP 2018. Striped Legless Lizard *Delma impar* Offset Management Strategy for the Stockyard Hill Wind Farm. Prepared for Stockyard Hill Wind Farm Pty Ltd.

DELWP 2020a. Native Vegetation Information Management system. Maintained by the Department of Environment, Land, Water and Planning, East Melbourne. Available at: <https://nvim.delwp.vic.gov.au/>

DELWP 2020b. Planning Schemes Online, Victorian Department of Environment, Land, Water and Planning, East Melbourne. Available at: <http://planning-schemes.delwp.vic.gov.au>

SEWPaC 2011a. *Referral guidelines for the vulnerable striped legless lizard, Delma impar*. Department of Sustainability, Environment, Water, Population and Communities, Canberra. Available at: <http://www.environment.gov.au/system/files/resources/e046c502-c7f1-485a-841d-0b4601fa01ff/files/striped-legless-lizard-referral-guidelines.pdf>

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SMEC 2019. Striped Legless Lizard Population Monitoring (Year 1): Stockyard Hill Wind Farm Pty Ltd. Prepared for Goldwind Australia Pty Ltd.

SMEC 2020 (V 4.0). Standard Operating Procedures Wildlife survey and handling: Animal ethics and welfare (Victoria). Melbourne, Victoria.



Appendix A – Monitoring Grid Photographs (November 2019)



Photograph 1. TG3 (A, Taylor. 28 November 2019).



Photograph 2. TG3 – ground cover (A, Taylor. 28 November 2019).



Photograph 5. TG7 (A, Taylor. 28 November 2019).



Photograph 4. TG7 – ground cover (A, Taylor. 28 November 2019).



Photograph 5. TG1 (A, Taylor. 28 November 2019).



Photograph 6. TG1 – ground cover (A, Taylor. 28 November 2019).



Photograph 7. TG2 (A, Taylor. 28 November 2019).



Photograph 8. TG2 – ground cover (A, Taylor. 28 November 2019).



Photograph 9. TG6 (A, Taylor. 28 November 2019).



Photograph 10. TG6 – ground cover (A, Taylor. 28 November 2019).



Photograph 11. TG4 (A, Taylor. 28 November 2019).



Photograph 12. TG4 – ground cover (A, Taylor. 28 November 2019).



Photograph 13. TG5 (A, Taylor. 28 November 2019).



Photograph 14. TG5 – ground cover (A, Taylor. 28 November 2019).

30 April 2020
SMEC No. 30042126

Simon and Trish Tayler
Monmot Farming
1972 Stockyard Hill Road
Stockyard Hill, VIC 3373

Dear Simon and Trish,

Re: Native Vegetation Offset Register annual reporting and compliance BB-3036 LA01

Thank you for contacting SMEC Australia Pty Ltd (SMEC) to provide supporting advice for your landowner agreement, in response to information provided by Kelsey Tucker (Native Vegetation Regulation) of the Department of Environment, Land, Water and Planning (DELWP) on 20 March 2020.

Background

It is understood that approximately 43 ha of your property has been placed under covenant as an offset site for the nationally listed Striped Legless Lizard (*Delma impar*). The offset has also been secured under a DELWP landowner agreement (BB-3036-LA01) and as part of approvals under the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC 2016/7746) for the Stockyard Hill Wind Farm Pty Ltd. The offset site will protect and improve the extent and quality of habitat for the species in accordance with the following guidance documents:

- DELWP 2018. Landowner Agreement BB-30306/LA01. Signed landowner agreement between Tayler's and DELWP; and
- EHP 2018. Striped Legless Lizard *Delma impar* Offset Management Strategy for the Stockyard Hill Wind Farm. Prepared for Stockyard Hill Wind Farm Pty Ltd.

These documents provide detailed management actions to support an extant population of Striped Legless Lizard over a 10-year management period through active rehabilitation, pest plant and animal control, biomass reduction and vegetation and species monitoring. SMEC have undertaken Striped Legless Lizard and vegetation monitoring as required in Years 1 and 2 of the program (SMEC 2018, 2019). Stephanie Grylls of 'AusEco Solutions' has also assisted with on-ground rehabilitation works in Years 1 and 2 and annual reporting to assist with implementation and compliance with the management plans.

As part of meeting compliance targets outlined within these guiding documents, DELWP will assist by monitoring the offset site at selected intervals. A site assessment was undertaken by a DELWP monitoring officer (Greg Waddell) in June 2019, in which management recommendations were outlined within a summary letter (with accompanying mapping) (Attachment 1). In response to these recommendations, SMEC have prepared a short response to management recommendations raised by DELWP via further correspondence on 20 March 2020 to assist with meeting compliance under Year 2 of the landowner agreement (Attachment 2), specifically:

***"Revegetation:** Our monitoring officer noted that the species listed in your management plan would not be appropriate for the wetter areas of your site (1B, 2A, 2B) to meet the target of 55% native cover, and at least 5 species. While the overall objective of your management plan is to protect and enhance Striped Legless Lizard habitat, all management plan targets must be met.*

You have not yet provided an alternative species revegetation list. Natural regeneration can be included in meeting your revegetation targets, and you may choose to only hand seed the required number of species accounting for the species naturally regenerated.

Please consult a grassland restoration specialist to obtain an appropriate seeding species list. Also determine that the seed is available, or make an arrangement to source seed, to be considered compliant for Year 2 of your agreement."

Scope of works

This letter provides a response and recommendations to the information request outlined by DELWP on 20 March 2020, including:

- An alternative species list for rehabilitation works in Zones 1B, 2A and 2B, specifically areas subject to temporary inundation within these zones; and
- A response from Stephanie Grylls regarding the proposed approach for rehabilitation planting schedules in Year 3 of the management program.

Recommendations

The following recommendations are provided to support compliance for Year 2 of the monitoring program and are to be submitted to DELWP for review and comment.

Alternative species list

It is acknowledged that understorey species previously identified within the landowner management plan for Zones 1A-2G (Table 5, Pg. 29), will continue to be utilised in areas which are not subject to periods of temporary inundation, including:

- Common Tussock-grass (*Poa labillardieriei*);
- Slender Wallaby-grass (*Rytidosperma racemosum*);
- Knead Spear-grass (*Austrostipa bigeniculata*);
- Rough Spear-grass (*Austrostipa bigeniculata*);
- Kangaroo grass (*Themeda triandra*); and
- Common Wheat-grass (*Anthosachne scabra*).

Based on DELWPs recommendation of an alternative species list and discussions with Stephanie Grylls (AusEco Solutions), the following species will be utilised within Zones 1B, 2A and 2B for low-lying areas subject to temporary inundation. Species and availability are confirmed below in Table 1.

Table 1. Alternative rehabilitation species list and availability for areas of temporary inundation in Zones 1B, 2A and 2B.

COMMON NAME	SPECIES NAME	AVAILABILITY	PLANTING METHOD
Common Tussock-grass	<i>Poa labillardieriei</i>	Seed, tube-stock	Natural regeneration, tube-stock
Australian Sweet-grass	<i>Glyceria australis</i>	Tube-stock or cells	Natural regeneration, tube-stock
Common Wheat-grass	<i>Anthosachne scabra</i>	Seed, tube-stock	Tube-stock
Common Blown-grass	<i>Lachnagrostis filiformis</i>	Tube-stock or cells	Tube-stock
Brown-back Wallaby-grass	<i>Rytidosperma duttonianum</i>	Tube-stock or cells	Tube-stock
Knotted Spear-grass	<i>Austrostipa nodosa</i>	Tube-stock or cells	Tube-stock

Suitability for Striped Legless Lizard

It is understood that the site has varying topography and that some low-lying areas may become temporarily inundated during extended periods of rainfall; however, establishing such areas with species listed in Table 1 is not considered to provide unsuitable habitat for Striped Legless Lizard in the long-term. Once established, the vegetation and alternative species recommended will provide valuable foraging or refuge habitat for the species within the offset site.

SMEC

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While Striped Legless Lizard will be inactive or in a state of torpor at times when low-lying areas are wet (i.e. winter), the site contains a variety of micro-habitats between the rocky rises and higher areas of Zones 1B, 2A and 2B which can successfully support the species throughout the year. Alternatively, the importance of low-lying areas (once vegetated) may be particularly evident in periods of drought where more suitable micro-habitats or foraging resources may be located within these areas throughout the offset site.

Numerous sites that are known to support the species consist of a variety of habitats across undulating plains and stony rises, which commonly include low-lying drainage areas supporting tussock grasses (*Poa* spp.) adjoined to temperate grasslands and rocky-rises. Therefore, this offset site provides a great opportunity to enhance natural habitats for the species as part of the management actions proposed over the 10-year period.

Planting schedules

The following information has been provided by Stephanie Grylls (AusEco Solutions) to inform proposed planting schedules within the offset site.

It is apparent from recent site inspections between February and March 2020, that the offset site is showing increased signs of natural recruitment. It is also understood that the success of active rehabilitation works will be of highest priority in order to meet the native vegetation cover (55%) target within the landowner management plan.

However, the current seeding plan for Year 3 is considered to be limiting, with respect to direct seeding methods, as this can be very difficult to implement successfully (as this method relies on numerous factors to ensure the seeds germinate). This may include environmental or site factors such as rainfall, ambient air and soil temperature, topography and general aspect of the land.

For example, direct seeding was trialled in autumn 2019 to test rehabilitation success within Zone 1B, an area that has partly been identified as a low-lying area of this zone. Given numerous high rainfall events occurred subsequent to this trial, the selected seed mix did not establish as anticipated. This is a great example of why seeding the entirety of available seeds in a single year is considered to be a high risk approach (and why trials were undertaken in Years 1 and 2). It is therefore recommended that direct seeding occurs within a selection of trial locations and soil types to minimise the potential loss of all seeds (and any associated financial implications) within a single event.

It is considered that direct seeding of all available seeds is not warranted within a single event, particularly due to the observed level of natural regeneration within the offset site. This will minimise the total area required for direct seeding, so that any remaining seeds can be direct seeded into less vegetated areas and/or utilise more selective alternative species to establish low-lying areas of the offset site. It is therefore recommended that smaller areas (3-4 ha) are trialled to allow natural regeneration and onsite self-seeding to support the direct seeding methods utilised onsite.

Conclusion

In response to recent correspondence from DELWP, and in addition to outcomes of the site audit in June 2019, this letter provides further guidance on an alternative species revegetation list for low-lying areas of Zones 1B, 2A and 2B. It is considered that once established, these alternative species will provide suitable habitat for Striped Legless Lizard into the future. Overall, the successful rehabilitation of Zones 1B, 2A and 2B will utilise more appropriate species, and will be undertaken in a strategic manner that builds on natural regeneration and selective trial sites to minimise the potential loss of viable seeds.

If you have any questions, please feel free to contact me.

Yours sincerely,



Andrew Taylor
Associate Scientist – Ecology
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References

DELWP 2018. Landowner Agreement BB-30306/LA01. Signed landowner agreement between Tayler's and DELWP; and
EHP 2018. Striped Legless Lizard *Delma impar* Offset Management Strategy for the Stockyard Hill Wind Farm.
Prepared for Stockyard Hill Wind Farm Pty Ltd.

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Attachment 1. DELWP Monitoring Report, Greg Waddell, 28 June 2019.

Attachment 2. DELWP correspondence, Kelsey Tucker, 20 March 2020, *Native Vegetation Offset Register annual reporting and compliance BB-3036-LA01.*



Stockyard Hill Wind Farm Pty Ltd

Golden Sun Moth Population Monitoring Summary Report (Year 2)

Prepared for Goldwind Australia Pty Ltd
4 February 2020

Document Control

Document:	Stockyard Hill Wind Farm Pty Ltd
File Location:	I:\Projects\30042106 - Stockyard Hill Wind Farm - Golden Sun Moth (Year 2)\03 Outputs\Reports\1 Draft
Project Name:	Golden Sun Moth Population Monitoring Summary Report (Year 2)
Project Number:	30042106
Revision Number:	1


Revision History

REVISION NO.	DATE	PREPARED BY	REVIEWED BY	APPROVED FOR ISSUE BY
1	4 February 2020	Andrew Taylor	Dan Weller	Jenna Forbes

Issue Register

DISTRIBUTION LIST	DATE ISSUED	NUMBER OF COPIES
Goldwind Australia Pty Ltd	4 February 2020	1

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Abbreviations

ACRONYMS	DESCRIPTION
CaLP Act	<i>Catchment and Land Protection Act 1994</i>
CMA	Catchment Management Authority
DELWP	Department of Environment, Land, Water and Planning
DEPI	Department of Environment and Primary Industries (now DELWP)
DoEE	Commonwealth Department of the Environment and Energy
EPBC Act	<i>Environment Protection and Biodiversity Conservation Act 1999</i>
ha	Hectares
km	Kilometres
LGA	Local Government Authority
m	Metres
OMS	Offset Management Strategy
SHWF	Stockyard Hill Wind Farm Pty Ltd
sp.	Species (one species)
spp.	Species (more than one species)

1 Introduction

1.1 Background

SMEC Australia Pty Ltd (SMEC) was commissioned by Goldwind Australia Pty Ltd (Goldwind) to undertake Golden Sun Moth (*Synemon plana*) habitat management and species monitoring at an offset site associated with the Stockyard Hill Wind Farm Pty Ltd project (the project). The project was approved under the *Environmental Protection and Biodiversity Conservation Act 1999* (EPBC Act) by the Department of the Environment and Energy (DoEE) on 19 August 2018. The project will consist of the construction of 149 approved wind turbines located approximately 35 km west of Ballarat, Victoria.

It is understood that the DoEE post-approvals team have approved the 10-year Offset Management Strategy (OMS) for Golden Sun Moth prepared by Ecology and Heritage Partners Pty Ltd (EHP 2017), subject to conditions (Approval Decision EPBC 2016/7746). The conditions outlined within the OMS and project approvals set out how impacts to Golden Sun Moth listed under Sections 18 and 18A of the EPBC Act will be mitigated and managed to acceptable levels.

This includes, but is not limited to, the following key criteria under Approval Decision EPBC 2016/7746:

1. *The approval holder must not clear more than: b. 1.57 ha of habitat for Golden Sun Moth. Without the prior written approval of the Minister.*
2. *To compensate for the loss of 1.57 ha of Golden Sun Moth habitat, the approval holder must:*
 - (a) *Secure the Golden Sun Moth offset with a covenant prior commencement of construction. The Golden Sun Moth offset must contain at least 9 ha of known Golden Sun Moth habitat; and*
 - (b) *Implement the Golden Sun Moth Offset Management Strategy for the secured Golden Sun Moth offset.*

Impacts pertaining to the project will therefore be managed through a 9 ha onsite offset site which is located on private property in the northern section of the project (the 'offset site') (Figure 1). Given the confirmed presence of Golden Sun Moth within the offset site between the 2011-12 and 2012-13 monitoring seasons (EHP 2014), the offset site provides an opportunity to enhance and manage long-term conservation objectives for the species.

1.2 Project Objectives and Scope

The broader objectives for the project are in accordance with the approved OMS which requires Goldwind and the landowner to complete the following (EHP 2017):

- *Protect and secure the environmental values of the site, ensuring that indigenous species survive;*
- *Maintain and enhance the biodiversity of the site by maintaining natural ecosystem processes;*
- *Maintain and if possible expand GSM populations and associated habitats;*
- *Control and if possible eliminate populations of pest plants and animals; and*
- *Achieve a high level of ecologically sound on-ground management.*

The objectives of Golden Sun Moth monitoring and implementation of the OMS in Year 2, included:

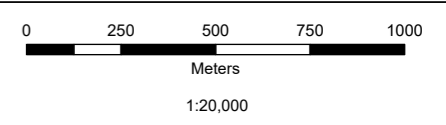
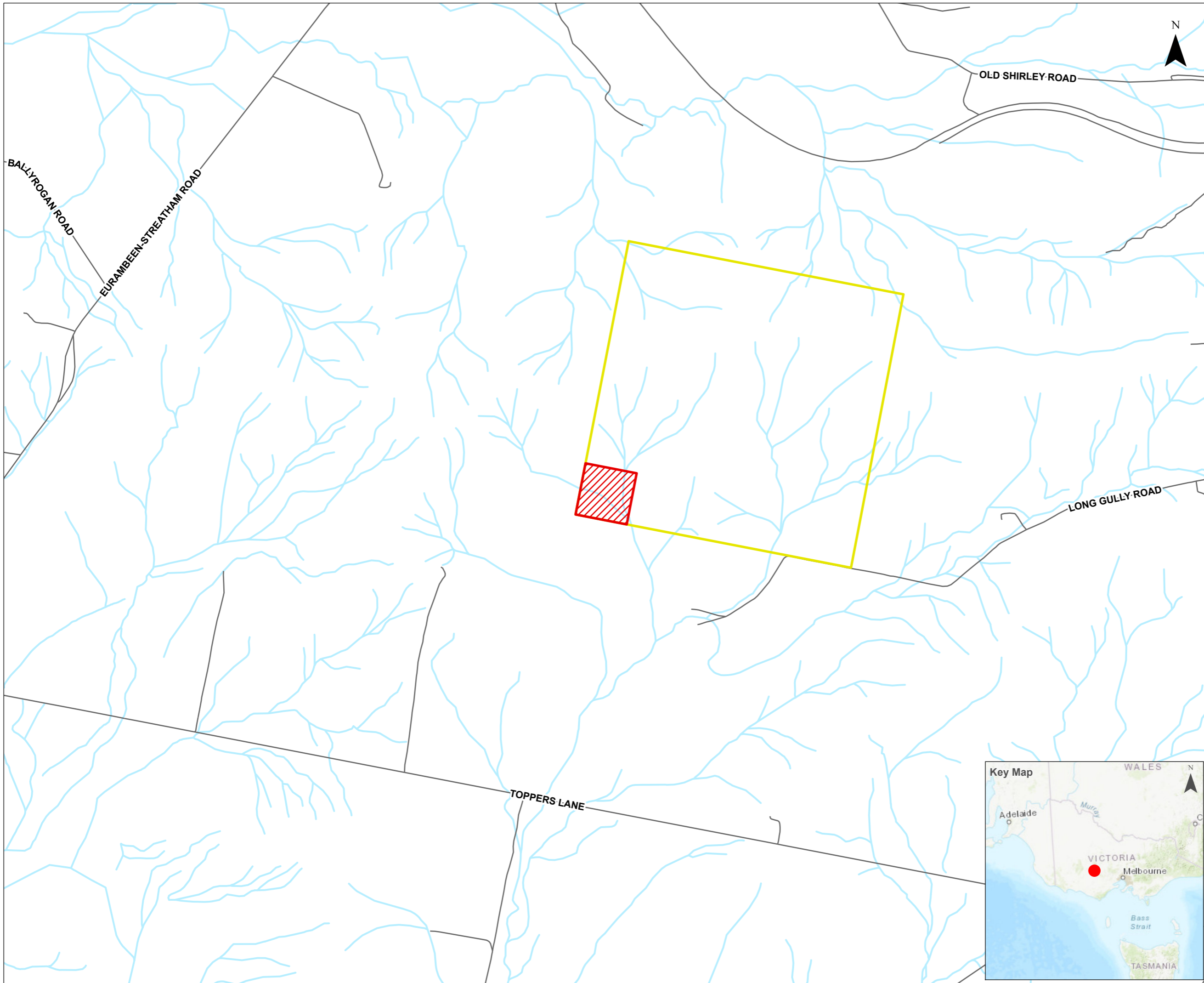
- Completion of Golden Sun Moth monitoring in accordance with suitable survey methodology;
- Providing advice on access control, biomass and grazing management regimes;
- Identifying areas of focused management activities with respect to pest plant and animals; and
- Provision of a Year 2 summary report detailing the monitoring results specific to the objectives of the OMS.

1.3 Offset site

The 9 ha offset site is located within private property (Crown Allotments 23A, 23B, 24A and 24B Parish of Eurambeen) and is situated within a broader 263 ha area of land within the northern project area. The offset site is located approximately 180 km west of Melbourne and 60 km west of Ballarat (Figure 1).

The offset site has historically been used for rotational grazing by sheep and comprises remnant vegetation patches of Grassy Woodland (EVC 175). The vegetation within the offset site also consists of scattered native trees and open understorey areas supporting native tussock grasses, including wallaby grasses (*Rytidosperma* spp.), Kangaroo Grass (*Themeda triandra*) and spear grasses (*Austrostipa* spp.).

The offset site occurs within the Central Victorian Uplands bioregion, Pyrenees Shire Council municipality and Glenelg Catchment Management Authority (CMA) (DELWP 2020a). The offset site is zoned Farming Zone (FZ) within the Pyrenees Planning Scheme and no planning scheme overlays apply to the offset site (although a Bushfire Management Overlay [BMO1] applies to vegetated areas within the broader property) (DELWP 2020b).



- Legend**
- Property Boundary
 - 9 ha Offset Site
 - Watercourse
 - Road

SOURCES:
1. Example Data © DELWP 2019
2. Basemap World Topographic Map: Sources: Esri, HERE, Garmin, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), (c) OpenStreetMap contributors, and the GIS User Community

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PROJECT NO: 30042106
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FIGURE TITLE: Golden Sun Moth Offset
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2 Golden Sun Moth

2.1 Conservation status

EPBC Act: Critically Endangered

FFG Act: Threatened

Victorian Advisory List: Critically Endangered

2.2 Description

The Golden Sun Moth is a medium-sized, diurnal moth with a wingspan up to 3.4 cm (DoEE 2020). In the female, the upper-side of the forewing is dark grey, and the hindwing is bright orange, while in the males the forewing and hindwing are dark brown (Image 1, DoEE 2020).



Image 1. Golden Sun Moth – male (left) and female (right) (Source: DEWHA 2009).

For much of their lifecycle Golden Sun Moth are underground in a larval stage, feeding on the roots of wallaby grasses (*Rytidospema* spp.), however, the species may also inhabit degraded grasslands dominated by the exotic Chilean Needle-grass (*Nassella neesiana*), a Weed of National Significance (WONS) (DoEE 2020). Adults emerge during summer to breed, with males flying approximately 1 m above the grass actively searching for a female (DoEE 2020). Adult moths generally survive for one to four days as they lack functional mouth parts (DoEE 2020).

2.3 Distribution

The distribution of Golden Sun Moth corresponds with native temperate grasslands across NSW, the ACT, Victoria and South Australia. Native grasslands once covered approximately 2,000,000 ha of south-eastern Australia, however, less than 1% of these temperate native grasslands remain. As a result, the remaining Golden Sun Moth populations are thought to be reduced and fragmented throughout their historical range (DoEE 2020).

2.4 Habitat

Golden Sun Moth persist in native temperate grassland and open grassy woodlands dominated by Wallaby-grasses within the species historical range throughout Victoria (DEWHA 2009). The most common native grasses in these systems are wallaby grasses, spear grasses (*Austrostipa* spp.), tussock grasses (*Poa* spp.), Weeping Grass (*Microlena* spp.), wire grasses (*Aristida* spp.) and Kangaroo Grass (*Themeda tirandra*) (DoEE 2020). Habitat containing a high cover ($\geq 40\%$) of suitable host plants combined with well drained and north facing sites with minimal shading are preferred by the species. Areas of bare or sparsely covered ground between grass tussocks (inter-tussock spaces) are important in helping males locate females during the breeding period (October-January) (DoEE 2020).

2.5 Key threats

The principal threats to the Golden Sun Moth include loss, degradation, modification and fragmentation of habitat through the following impacts (DEWHA 2009):

- Removal of vegetation;
- Inappropriate fire regimes;
- Weed invasion;
- Overstocking (causing loss of habitat plants);
- Changes to soil and plant structure;
- Increased nutrient loads);
- Changes to agricultural practices (e.g. fertiliser application, ploughing and overgrazing);
- Rank growth (loss of inter-tussock spaces); and
- Soil compaction.

3 Offset Management Strategy

The following section outlines detailed management and monitoring actions in accordance with the OMS for the identified Golden Sun Moth population. Overall, the implementation of the OMS will provide a net benefit to Golden Sun Moth within the offset site through the protection and active management of the existing population and associated habitat(s).

3.1 Mandatory Offset Site Actions

The following actions will be maintained for a mandatory period of 10-years in accordance with the OMS (EHP 2017):

- No cropping, no drainage/hydrology alteration;
- No use of boom sprayers;
- No rock removal or cropping;
- No artificial stock feeding within the offset area;
- Weed cover is managed in perpetuity to ensure it does not increase beyond the level attained at Year-10 of management;
- Pest animals are controlled in perpetuity to the level attained at year 10 of the management;
- GSM populations and habitat are maintained or improved; and
- Any proposed uses or development of the site which conflict with the landowner's commitments are not permitted under this plan.

3.2 Golden Sun Moth Monitoring

3.2.1 Survey permits

Golden Sun Moth monitoring was undertaken in accordance with a Research Permit approved by the Department of the Environment, Land, Water and Planning (DELWP) under the *Wildlife Act 1975* (Permit 10008716). All animal handling was in accordance with SMECs Standard Operating Procedure (SMEC 2020), and Wildlife and Small Institutions Animal Ethics Committee (WSIAEC) approval 22.16.

3.2.2 Survey methods

Golden Sun Moth monitoring was undertaken between 21 November 2019 to 9 January 2020 in accordance with the *Significant Impact Guidelines for the Critically Endangered Golden Sun Moth (*Synemon plana*)* (DEWHA 2009). All monitoring events were conducted during suitable weather conditions during the species known emergence period (October-January), specifically (DEWHA 2009):

- Warm to hot days;
- Between 10:00am-14:00pm;
- Clear or mostly cloudless sky;
- Still or nearly still wind conditions; and
- At least two days since rain.

Surveys were completed by SMEC ecologists experienced with the identification and ecology of Golden Sun Moth. Survey transects across the offset site were undertaken at an average intervals of approximately 50m. A total of four monitoring events were completed to confirm the species relative abundance and distribution across the offset site.

3.3 Access Control

The OMS outlines the requirement to implement appropriate fencing around the offset site to restrict stock access via an enclosed permanent post-and-wire fencing. Given the addition of new offset areas immediately adjoining the 9 ha offset site, the existing northern and eastern extent of this fence has been removed by the landowner. That is, the intention of managing biomass will be combined between the two offset sites with stock grazing to be undertaken concurrently (with a new boundary fence enclosing both offset sites). While this is the current approach by the landowner, actions and performance measures outlined within the OMS will need to be monitored annually and corrective actions implemented (i.e. temporary fencing in areas where biomass is too high) should the objectives of land management not be met in full. Currently, the direct removal of stock is being undertaken to avoid accidental or unauthorised access during Golden Sun Moth management periods (September to February).

3.3.1 Access Control Actions

Access control within the OMS is stated in accordance with the following:

- Maintain permanent fences surrounding the perimeter of the offset site. Any new fencing will be permanent post-and-wire fencing and constructed with minimal impact to the offset site (i.e. no stock piling of fencing materials or soil during construction); and
- Fence condition will be constantly monitored given that much of the broader property is still used for the controlled grazing of sheep. Any gaps or holes in fencing will be repaired immediately.

3.3.2 Performance Measures

Key performance measures within the OMS have the following targets to quantify the success of access control:

- Permanent stock-proof fencing maintained to prevent accidental or unauthorised access into the offset site from adjoining areas of the offset property.

3.4 Biomass Density and Stock Grazing

Current biomass reduction consists of low-intensity rotational grazing. The OMS notes that all sheep must be removed during the critical flowering/reproductive period for native species (September to February), with access permitted to reduce biomass during (March-August). No mosaic burns have been undertaken to date.

3.4.1 Biomass actions

Biomass control will proceed in accordance with the following:

- Ensure adequate grazing to reduce biomass to acceptable cover levels (i.e. 70%);
- Spell offset site containing Grassy Woodland areas from approximately late September through to late January; and
- An appropriate land manager/contractor will co-ordinate weed control works with the grazing regime.

3.4.2 Performance measures

The following key performance targets have been provided to measure the success of the biomass control:

- Vegetation cover is maintained at greater than 70% throughout the study area, and the space (i.e. bare ground) available for native flora species recruitment is between 20% and 40%;
- GSM populations are not reduced;
- An herb-rich diversity and open ground cover is maintained and enhanced;
- No evidence of an increase in soil pugging; and
- The maintenance of open structured Grassy Woodland community suitable for the ecological requirements of Golden Sun Moth.

3.5 Weed Control

Weed control work is currently being undertaken by the landowner. While the overall objective of the OMS is to eliminate or reduce all weed species to less than 1-5% cover, priority weeds within the offset site and immediately adjacent will be the focus of management. Priority weeds include woody weeds, all noxious weeds listed under the *Catchment and Land Protection Act 1994* (CaLP), or any other weed species considered to be high threat.

3.5.1 Weed Control Actions

The following key management actions will be undertaken to ensure success of the weed management program:

- Introduced Weeds. These will be mapped across the site, and monitored annually, to determine when eradication is required. Results will be used to evaluate eradication actions from previous seasons;
- Eliminate high threat environmental weeds (cover reduced to <1%) and control medium threat environmental weeds within all habitat zones (cover reduced to <5%);
- Identify new infestations of weed species and implement control as appropriate; and,
- Control all other weeds within all habitat zones (ideally at a reduced cover of current levels).

3.5.2 Performance Measures

The following key performance targets will be used to measure the success of the weed management program and include at a minimum:

- The reduction of high threat weed cover to <1%;
- The reduction of medium threat weed cover to <5%; and
- The maintenance of all other weeds ideally at a reduced cover to current levels.

3.6 Pest Animal Control

The OMS requires all vermin harbour (i.e. burrows) to be treated, particularly European Rabbits (*Oryctolagus cuniculus*), without disturbance to native vegetation or significant soil disturbance. The landowner will monitor pest animal use within the offset site whilst undertaking weed control works to determine if changes to management actions are required.

3.6.1 Pest Animal Actions

The following key management actions will be undertaken to ensure success of the pest animal program:

- Monitor the population of pest animals (namely rabbits, hares, feral cats and foxes) during weed control works and adapt management as considered appropriate (i.e. if an increase in pest animal activity is observed then a targeted pest animal control program should be implemented.);
- Identify potential harbour and burrows, and destroy if soil disturbance can be minimised and all native vegetation retained; and
- If necessary, undertake a pest animal control program (e.g. baiting, trapping and shooting of foxes, hares, rabbits or feral cats).

3.6.2 Performance Measures

The following key performance targets have been provided to measure the success of the pest animal management:

- No increase in pest animal activity from approval of this plan; and
- Minimal soil disturbance and no native vegetation loss from pest animal management activities.

3.7 Reporting

3.7.1 Progress Reports

Progress reports will be provided to the responsible authority at the end of years 2, 4, 6 and 10 of the program. Information to be provided in the progress report includes:

- A summary of management actions detailing activities completed during the reporting period (Table 4);
- Landowner monitoring and reporting forms (Section 3.7.2);
- A description of the specific monitoring results from ecological surveys undertaken (Section 4.1.1);
- Results of weed and pest animal control work (Gerrpart Holdings Pty Ltd 2020);
- Successful management tools (i.e. techniques used to control weed species, monitoring technique, etc.) (Gerrpart Holdings Pty Ltd 2020);
- Any problems or issues experienced (i.e. new infestation of weed species, etc.) (Sections 4.4 and Gerrpart Holdings Pty Ltd 2020);
- Any corrective actions and contingency measures where monitoring indicates that there has been a deterioration in the native vegetation or Golden Sun Moth population (Section 6.1); and
- Photographs showing evidence of works (Gerrpart Holdings Pty Ltd 2020).

3.7.2 Landowner Monitoring and Reporting

Information relating to access control, weed and pest animal control will be provided by the landowner within a stand-alone report (Gerrpart Holdings Pty Ltd 2020).

4 Results

4.1 Golden Sun Moth monitoring

4.1.1 Survey results

Monitoring was undertaken over four separate days across the offset site between 21 November 2019 and 9 January 2020 (Table 1). Weather conditions during monitoring events were considered suitable for the detection of Golden Sun Moth and no reference sites were visited as the species has been confirmed on site.

A total of approximately 88 male Golden Sun Moth were recorded during monitoring events with the highest species emergences being detected on 10 and 18 December 2019 with 30 and 54 Golden Sun Moth recorded (Table 1; Figure 2). Golden Sun Moth was observed across the entire offset site during monitoring events, although the high species emergences noted in previous years were not recorded during the 2019-20 monitoring season (Figure 2).

Based on other shared monitoring data across Victoria, this pattern of lower individual counts was noted at numerous sites. While there are likely to be a variety of factors influencing the population abundances between monitoring seasons, the current management activities are unlikely to be directly linked to the lower population numbers detected. Overall, the offset site continues to support a Golden Sun Moth population and is supported by high quality habitat for the species.

Table 1: Golden Sun Moth survey dates and weather conditions¹.

SURVEY NO.	SURVEY DATE	TIME OF SURVEY	TEMP. (°C)	WIND (KM/H) / DIRECTION	DAYS SINCE RAIN	TOTAL GSM
1	21-11-2019	10:00-11:30am	30	25 NW	>2 days	3
2	10-12-2019	13:30-15:00pm	18	28 S	>2 days	31
3	18-12-2019	11:00-12:30pm	31	28 N	> 2 days	54
4	09-01-2020	11:00-12:30pm	24	11 SE	>2 days	0

4.1.2 Landowner Observations

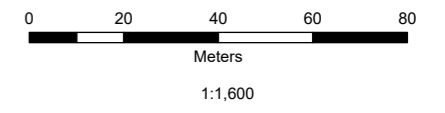
The landowners were able to undertake opportunistic monitoring in addition to results detailed in Table 2. A total of approximately 261 male Golden Sun Moth were detected on three separate occasions between 16-29 November 2019. As surveys between 28-29 November 2019 were only one day apart, Golden Sun Moth numbers are considered to be associated with the same emergence period. However, these results indicate that a high number of Golden Sun Moth are still persisting across the offset site despite the consistently low numbers observed across other monitoring sites within Victoria (**Note:** these additional records are not shown on Figure 2).

Table 2: Golden Sun Moth observed by landowners with survey dates and weather conditions¹.

SURVEY NO.	SURVEY DATE	TIME OF SURVEY	TEMP. (°C)	WIND (KM/H) / DIRECTION	DAYS SINCE RAIN	TOTAL GSM*
1	16-11-2019	10:00-12:30pm	13	19 WSW	>1 day	1
2	28-11-2019	12:00-13:30pm	17	22 SSE	>1 day	101
3	29-11-2019	13:00-14:30pm	16	13 SW	> 2 days	159

Note: (*) Landowners have been trained by experienced ecologists in the correct identification of Golden Sun Moth through previous monitoring events and are therefore confident with the species appearance and ecology.

¹ Bureau of Meteorology: data sourced from Ballarat Aerodrome (Station 089002)



- Legend**
- Golden Sun Moth Offset
- Golden Sun Moth Observations**
- November 21 2019
 - December 10 2019
 - December 18 2019
- Survey Transects**
- November 21 2019 (3 males)
 - December 10 2019 (31 males)
 - December 18 2019 (54 males)
 - January 9 2020 (0 indivs.)

SOURCES:
1. Example Data © DELWP 2019
2. Basemap, World Imagery: Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

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FIGURE NO: 2
FIGURE TITLE: Golden Sun Moth Monitoring (Year 2)
CREATED BY: ar15136
DATE: 30/01/2020
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PAGE SIZE: A3

4.2 Access Control

As noted in Section 3.3.1, internal perimeter fencing to the north and east of the offset site has been removed given a new offset site is now immediately adjoining the site. That is, the broader area consisting both offset sites will be managed concurrently given management practices, particularly rotational stock grazing, will overlap with respect to frequency and timing between the offset sites. However, it is important to monitor the effectiveness of this approach as biomass levels may be influenced over a greater area. The results of weed monitoring and biomass, including recommendations for improvements, are provided in Sections 4.3-4.5 below.

4.3 Biomass Density and Stock Grazing

4.3.1 Overall Habitat Quality

The offset site provides excellent habitat for Golden Sun Moth as it contains areas with a high cover (>40%) of wallaby grasses, spear grasses, Kangaroo Grass and open ground with available spaces to support breeding (Plates 1-3). Other native species include Blue Devil (*Eryngium ovinum*), Chocolate Lily (*Arthropodium strictum*), Bluebell (*Wahlenbergia* sp.) and areas supporting bryophytes and lichens (particularly in the east of the site).

Dominant weed species include Brown-top Bent (*Agrostic capillaris*), Bulbous Meadow-grass (*Poa bulbosa*), Yorkshire Fog (*Holcus lanatus*), Onion Grass (*Romulea rosea*), Soft Brome (*Bromus hordeaceus*), Sweet Vernal Grass (*Anthoxanthum odoratum*), Perennial Ryegrass (*Lolium perenne*), Soft Brome (*Bromus hordeaceus*), Hair-grass (*Aira* spp.), Cat's Ear (*Hypochaeris radicata*), Cape Weed (*Arctotheca calendula*) and other annual weedy grasses.



Plate 1: Golden Sun Moth (male) detected during 2019-20 monitoring season (A, Taylor 18-12-2019).



Plate 2: Native tussock grasses interspersed with introduced pasture grasses (A, Taylor 18-12-2019).



Plate 3: High quality Golden Sun Moth habitat with high cover of native tussock grasses and adequate bare open ground (i.e. between 20-40%) (A, Taylor 18-12-2019).



Plate 4: Areas in Zone 1 with a higher cover of introduced pasture grasses (A, Taylor 18-12-2019).

4.3.2 Biomass Density

The following section discusses current vegetation cover within four separate zones (Zones 1-4) as identified within the offset site. Please refer to Figure 3 for an indicative extent of each zone.

4.3.2.1 Zone 1

This zone is located in the centre and south-west of the offset site. Zone 1 includes a shallow drainage line running east-west which flows to an artificial waterbody at the eastern edge of the offset site (Figure 3). Overall, this zone had the highest level of biomass (70%) comprising pasture grasses including Brown-top Bent, Perennial Ryegrass, Bulbous Meadow-grass and Hair-grass (Plates 5-6). This zone will require focussed biomass reduction in March 2020 to increase the availability of open ground to 20-40% in accordance with the OMS, currently open ground is approximately 5%. It is recommended that stock is removed from low lying areas during periods of inundation to avoid soil pugging, this is to be monitored by the landowner. If required, temporary fencing should also be installed to focus stock grazing to areas within Zone 1 given the high biomass levels. If unsuccessful, adaptive management options such as burning will be discussed for April-May 2020.



Plate 5: Biomass observed within Zone 1.



Plate 6: Typical ground cover/biomass observed in Zone 1.

4.3.2.2 Zone 2

This zone is located along the northern extent of the offset site (Figure 3). Similarly, this zone had a high level of biomass and will require focussed grazing management during March 2020. Adaptive management options such as temporary stock fencing and burning will need to be reviewed in conjunction with Zone 1 to meet the objectives of the OMS. Overall this zone had slightly higher levels of native tussock grass cover (30%) and open ground (10%), but pasture grasses still form the majority of ground cover (60%) within this zone (Plates 7-8).



Plate 7: Biomass observed within Zone 2.



Plate 8: Typical ground cover/biomass observed in Zone 2.

4.3.2.3 Zone 3

This zone provides the highest quality vegetation for Golden Sun Moth and is located along the eastern boundary of the offset site (Figure 3). This zone has a high cover of native tussock grass (40-50%) and open ground is typically within the preferred range for the species (25%) but will require some low intensity grazing to increase this value between March-August 2020. Overall, the level of pasture grass is relatively low (25%) and can be maintained at current levels through the grazing regime proposed.



Plate 9: Biomass observed within Zone 3.



Plate 10: Typical ground cover/biomass observed in Zone 3.

4.3.2.4 Zone 4

This zone forms a shallow drainage line leading from the south-east corner of the offset site boundary into the artificial waterbody (Figure 3). This zone has a similar cover of native tussocks (30%), pasture grass (60%) and open ground (10%) to Zone 2 and can be managed via direct crash grazing by stock. Given this area is immediately adjoining higher quality species habitat in Zone 3, it is recommended any high threat weeds are treated to minimise potential spread into areas of remnant vegetation adjoining the drainage line.



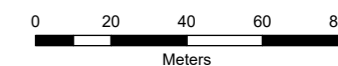
Plate 11: Biomass observed within Zone 4.



Plate 12: Typical ground cover/biomass observed in Zone 4.


4.3.3 Stock Grazing

Based on the findings of the site assessment, stock grazing will need to be focussed within Zones 1 and 2 during March 2020. Temporary fencing may be required to retain animals within these zones to reduce biomass levels and increase the amount of open ground to the required levels (20-40%) and stocking rates may need to be increased if biomass cannot be reduced. If low lying areas within Zone 1 become inundated, this area must be avoided by stock using temporary fencing. Zones 3 and 4 will only require low intensity grazing and should be excluded to stock if areas of open ground increase to 40% or above.



1:2,000

Legend
 Golden Sun Moth Offset

Vegetation Zone
 Zone 1

 Zone 2

 Zone 3

 Zone 4

SOURCES:

1. Example Data © DELWP 2019
2. Basemap, World Imagery: Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

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PROJECT: Stockyard Hill Wind Farm - Golden Sun Moth
PROJECT NO: 30042106
FIGURE NO: 3
FIGURE TITLE: Vegetation Management
CREATED BY: ar15136
DATE: 30/01/2020
VERSION: DRAFT 1
PAGE SIZE: A3

4.4 Weed Control

Based on the site assessment, the management focus for high threat weed species will include ongoing treatment of Brown-top Bent, Sweet Vernal Grass, Cape Weed, Spear Thistle (*Cirsium vulgare*), Cat's Ear and Yorkshire Fog. Areas of pasture grass with a high biomass will be managed by rotational stock grazing in March 2020. If biomass cannot be reduced by grazing it is recommended that burning is reviewed and implemented in autumn April-May 2020, particularly in Zone 1 and 2.

Weed control has been managed by the landowner during Years 1-2 of the OMS and is summarised within Gerrpart Holdings Pty Ltd (2019, 2020).

4.5 Pest Animal Control

Rabbit burrows and warrens have been fumigated and collapsed. No further evidence of fox or pig activity has been observed in Year 2.

Pest animal control has been managed by the landowner during Years 1-2 of the OMS and can be reviewed within Gerrpart Holdings Pty Ltd (2019, 2020).

4.6 Summary of monitoring

Table 3 outlines the monitoring results in response to targeted management objectives of the OMS.

Table 3: Summary of management objectives and recommendations.

MANAGEMENT OBJECTIVE	TARGET OBJECTIVE	YEAR 2 RESULT	RECOMMENDATIONS
Golden Sun Moth monitoring and vegetation quality	Undertake annual species monitoring over four separate occasions between October-January	Approximately 88 male Golden Sun Moth were recorded during 2019-20 monitoring events. Up to an additional 159 individuals were observed within a single survey by the landowner	Recommendations in Section 6.1 are aimed to improve habitat quality for the species.
Access control	Maintain existing and any new fencing to appropriate standards	Internal perimeter fencing has been removed and sheep are currently excluded directly to avoid unauthorised entry to offset site	Manage biomass levels in accordance with Section 4.3. If biomass levels are not within OMS parameters, introduce temporary fencing to reduce biomass levels
Biomass Density and Stock Grazing	Vegetation maintained to a level of 70% with areas of recruitment (bare ground) ranging between 20-40%	Zones 1,2 and 4 – recruitment targets not met Zone 3 – appropriate recruitment targets met	Focus biomass reduction in Zones 1 and 2 as a priority. Implement additional measures such as temporary fencing to focus grazing in these zones in March 2020. Burning may be required in April-May 2020 if biomass cannot be reduced to targets
Weed Control	Control and manage high threat weeds, remove woody weeds	Continue weed management on high threat weeds such as Spear Thistle, Cape Weed, Yorkshire Fog, Bent-top Grass, Cat's Ear and Sweet Vernal Grass to maintain (and reduce) current levels within the offset site No woody weeds found. Refer to Gerrpart Holdings Pty Ltd (2020)	Focus management efforts to high threat weeds include Brown-top Bent, Sweet Vernal Grass, Yorkshire Fog and Cape Weed; Spear Thistle must be maintained at <1% cover; and Cat's Ear should also be focussed on in Zones 1 and 2.
Pest Animal Control	Monitor and treat pest animals as required	Rabbit burrows and warrens have been fumigated and collapsed. No further evidence of fox or pig activity in Year 2. Refer to Gerrpart Holdings Pty Ltd (2020)	Continue monitoring pest animal activity in accordance with the OMS requirements
Reporting	Completion of a summary report for Year 2 monitoring	Refer to documented results contained within this report and Gerrpart Holdings Pty Ltd (2019, 2020) and EHP (2019)	Refer to Section 6.1

5 Management action summary

Table 4 summarises the management actions required for Year 1 and 2 of the OMS and date of completion.

Table 4: Management action summary for Year 2 OMS objectives.

YEAR	ACTION	MANAGEMENT ACTION	RESPONSIBLE AUTHORITY / PERSONNEL	TIMING OF ACTION	DATE COMPLETED
1	1.1	Check permanent fences surrounding the offset property are secure	Landowner	Within three months of this plan being approved by DoEE	March 2018
1	1.2	Conduct weed control	Landowner	Species dependent	Refer to Gerrard Holdings Pty Ltd (2019)
1	1.3	Monitor populations of pest animals and conduct control works if required	Landowner and relevant contractors	After peak breeding season - late summer/early autumn	Refer to Gerrard Holdings Pty Ltd (2019)
1	1.4	Conduct monitoring for GSM	EHP Pty Ltd	One year after commencement of OMS	Refer to EHP (2019)
1	1.5	Monitor biomass density and implement stock grazing regime or develop ecological burn/ fuel reduction plan if appropriate	Landowner	Summer/Autumn	Refer to Gerrard Holdings Pty Ltd (2019) and EHP (2019)
2	2.1	Conduct weed control	Landowner	Species dependent	Refer to Gerrard Holdings Pty Ltd (2020)
2	2.2	Monitor populations of pest animals and conduct control works if required	Landowner	After summer/early peak breeding autumn season - late	Refer to Gerrard Holdings Pty Ltd (2020)
2	2.3	Conduct monitoring for GSM	SMEC Australia	Two years after commencement of OMS	Refer to Section 4.1
2	2.4	Maintain fences	Landowner	As required	Refer to Section 4.2 and Gerrard Holdings Pty Ltd (2020)
2	2.5	Monitor biomass density and implement stock grazing regime or develop ecological burn/ fuel reduction plan if appropriate	Landowner	Summer/Autumn	Refer to Section 4.3 and Gerrard Holdings Pty Ltd (2020)
2	2.6	Monitor and assess works, and prepare two-year progress report	SMEC Australia	Two years after commencement of OMS	Refer to documented results contained within this report

6 Conclusion

Management actions in accordance with the endorsed OMS were undertaken for Year 2 by SMEC and the landowner. Results of Golden Sun Moth population monitoring indicate the offset site is currently supporting the species with approximately 88 Golden Sun Moth detected during four separate monitoring events. In addition, up to 159 Golden Sun Moth were detected in a single survey event by the landowner. While population numbers are lower than Year 1 monitoring, overall population counts across Victoria have typically been low and is therefore not considered to be associated with current management practices within the offset site.

Overall, the site has a high level of biomass which will need to be reduced by rotational stock grazing in March 2020. If required, it is recommended that temporary fencing is installed to focus stock grazing in Zones 1 and 2 as a priority. If unsuccessful, adaptive management options such as burning will be discussed for April-May 2020. Zone 3 has the highest quality vegetation for Golden Sun Moth and will require lower intensity stock grazing to maintain current biomass and recruitment levels. As Zone 4 is immediately adjoining higher quality Golden Sun Moth habitat in Zone 3, it is recommended any high threat weeds are treated to minimise potential spread into areas of remnant vegetation adjoining the drainage line.

Weed treatment for the offset site will need to continue focussing on high threat weeds such as Spear Thistle, Cape Weed, Yorkshire Fog, Bent-top Grass, Cat's Ear and Sweet Vernal Grass to maintain (and reduce) current levels within the offset site in subsequent years. Pest animals are currently being managed appropriately and will need to be monitored in subsequent years to avoid an increase in pest species numbers within the offset site.

6.1 Recommendations

Recommendations for each management action within the offset site are listed below:

6.1.1 Access Control

- If biomass targets cannot be met in Zones 1-4, it is recommended temporary fencing is installed to retain stock within designated areas; and,
- Temporary fencing may also be required in Zone 3 if biomass levels are adequate and stock need to be directly excluded from this zone.

6.1.2 Biomass Density and Stock Grazing

6.1.2.1 Zones 1 and 2

- Focus intensive biomass reduction in Zones 1 and 2 during March 2020;
- It is recommended that stock is removed from low lying areas during periods of inundation to avoid soil pugging; and,
- If biomass reduction is unsuccessful, adaptive management options such as burning will be discussed for April-May 2020.

6.1.2.2 Zones 3 and 4

- Biomass can be maintained in Zone 3 at current levels through the grazing regime proposed in March 2020; and,
- As Zone 4 has a higher cover of biomass and weed species and is immediately adjoining higher quality habitat in Zone 3, it is recommended any high threat weeds are treated to minimise potential spread into areas of remnant vegetation adjoining this zone.

6.1.3 Weed Control

- Focus management efforts to high threat weeds including Brown-top Bent, Sweet Vernal Grass, Yorkshire Fog and Cape Weed;
- Spear Thistle must be maintained at <1% cover; and
- Cat's Ear should also be focussed on in Zones 1 and 2.

6.1.4 Pest Animal Control

- Continue monitoring pest animal activity in accordance with the OMS requirements to maintain current levels within the offset site.

7 References

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