


Landowner of offset site	Deep Lead Property Pty Ltd
Location and address of offset site	6165 Hamilton Highway, Cressy, Vic
Offset site number (if applicable)	C2017_1
Offset plan reference number	EPBC 2016 /7734
Responsible Authority	Trust for Nature, DoEE
Report #	Year 3
Signature	Paul Guest – Director- Deep Lead Property Ltd 
Date	28/11/2021
Details of works undertaken	Refer to detailed report provided: "PE_Cressy_Soho_EPBC2016-7734 _Annual_Report-Year 3

## Annual Management and Monitoring Report

Year 3: August 2020– August 2021  
North–Western Grassland (EPBC2016/7734)



Long Paddock Offset Site  
6165 Hamilton Highway, Cressy

Report prepared for Deep Lead Property Pty Ltd

**Annual Management and Monitoring Report**  
**Year 3: August 2020 – August 2021**  
**(EPBC2016/7734)**  
**6165 Hamilton Highway, Cressy**

Report by Emma Wilkin

Cover images: "Long Paddock" Offset Site, 6165 Hamilton Highway, Cressy, 2017

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**Acknowledgments of Country**

Practical Ecology acknowledges the Traditional Custodians of the land, the Wurundjeri Woi Wurrung people of the Kulin Nation, on which our office is located. We pay our respects to their Elders, past and present and emerging.

We also acknowledge the Traditional Custodians of the Lands on which we conduct our business throughout Australia. We pay our respects to their Elders, past and present and emerging, and the Aboriginal Elders of other communities who may be present on those lands.

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# 1. INTRODUCTION

Practical Ecology Pty Ltd was commissioned by Deep Lead Property Pty Ltd to undertake monitoring and associated annual reporting for Natural Temperate Grassland of the Victorian Volcanic Plains (NTGVVP) habitat offsets located at *Long Paddock Offset Site*, 6165 Hamilton Highway, Cressy.

The offset was created as part of infrastructure works undertaken by **Soho Living Pty Ltd**, requiring removal of vegetation that was identified NTGVVP as prescribed by the Department of Environment and Energy (DoEE) under the Environmental Protection and Biodiversity Conservation Act 1999 (EPBC Act) in relation to **referral 2016/7734**.

This report presents information of monitoring and works of the site for Year 3 of a 10-year management plan for Offset Management Zone 1 (OMZ-01), named the **Northwest Grassland**, located at the western edge of the broader offset property at Cressy,

The date of legal execution for the Offset Management Plan (OMP) for this site in **4<sup>th</sup> October 2018**. (Biosis 2018)

The requirements of annual reports state that submission to relevant authorities and stakeholders is required at least two months prior to the anniversary date of the execution of the OMP. As such, the reporting period for this site for Year 3 is **August 2020 – August 2021**.

**Table 1.** Summary of the targeted surveys

	Zone Name	Offset Management Zone	Size	Date of Legal Execution
Tier 1	Northwest Grassland (NWG)	OMZ-01	5 ha	4th October 2018
Tier 2A	Central East Grassland (CEG)	OMZ -05	29.1 ha	17 <sup>th</sup> April 2019
Tier 2B	Seasonal Herbaceous Wetland Two (SHW2)	OMZ -04	11.86 ha	17 <sup>th</sup> April 2019
Tier 2C	Seasonal Herbaceous Wetland One (SHW1)	OMZ -03	2.52 ha	17 <sup>th</sup> April 2019
Tier 3	Southwest Grassland (SWG)	OMZ -02	16 ha	26 <sup>th</sup> Sept 2020
	Far East Grassland (FEG)	OMZ -06		



Figure 1. Management area OMZ-01 (blue hatch) pursuant to Offset Agreement [EPBC 2016/7734]

## **2. METHODS – SITE MANAGEMENT**

The following methods for monitoring and works have been implemented in response directions stated in the OMP (Biosis 2018) for the site Offset Management Zone 1 (OMZ-01) located within the Long Paddock Offset Site at Cressy. Actions stated within the OMP are required to be completed annually, unless otherwise stated, with methodology and monitoring to be applied within an adaptive management framework.

### **2.1 Record keeping**

The site logbook is an online record of times and dates that landowners, contractor, consultants or other relevant parties that have visited the site for the purposes of implementing management or monitoring actions within the offset property.

This logbook is maintained by the landowners through regular correspondence with contractors, and can be accessed directly by approved personal to record important information relating to site management. Typical entries include date, name of personnel on site, activities being completed, general observations of flora or fauna, weather, presence of standing water, comment on biomass, grazing progress etc.

This logbook plays an important role in recording completed works on the site, and is especially useful to record general field observations over time that can be investigated further as required.

### **2.2 Fencing**

The fence along the Hamilton Highway denoting the northern boundary of the site is partially stone wall; while the rest of the boundaries are constructed of wire with sheep netting.

Stock and vehicle proof fencing was in place for the perimeter of the entire 75 ha property at the time of property purchase and remains functional.

Landowners have committed to restoring the boundary fence in sections, as well as to introducing internal fencing to enable pulse grazing and rotation as required in all OMP's for management of biomass at the site.

#### **2.2.1 Offset Management Zone Demarcation**

On-site demarcation of OMZs is necessary to define the areas of the site to which varying OMPs apply, as shown in Appendix 2: Map 1

Given the susceptibility of SLL and GSM to predation by birds, the amount of on-site marking of OMZs has aimed to minimise bird perching opportunities. The OMZs across the site, have not been fenced. Instead, the intersections of the OMZs with boundary fencing has been marked with short (approx. 30 cm high) star pickets at the boundaries of each management area. A yellow plastic cap has been



placed on the top of each star picket to allow for easier visual observation; the purpose of each has also been labelled with a cattle tag.

## 2.3 Weed Control

Weed management is required to be conducted by a suitably qualified contractor. The nominated contractor for the Long Paddock Offset Site is Seed2Leaves Pty Ltd.

Basic principles for weed management at the site are as follows;

- Careful Spot spraying will be default method for treatment within the site to minimise off target damage
- All weed control is to be conducted under appropriate conditions, in line with best practice protocols
- No off-label use of herbicide is permitted
- All contractors are required to complete a daily work record, identifying species targeted, herbicide type, rate and amount, and works areas, as well as diary/logbook entries as standard

### 2.3.1 Woody Weeds

- Woody weeds are treated as soon as possible, after identification, to reduce opportunity for maturity/flowering.
- Cut and paint method may be implemented any time of year, as appropriate of size/life cycle of species.
- Where spot spraying is required for woody weeds, this occurs in Spring

### 2.3.2 Herbaceous and Grassy Weeds

Where possible, main methods of control are a combination of grazing and ecological burns, as best practice, to limit the requirement of herbicide use within the site.

If herbicide is required, spot spraying is permitted, and can occur in late Winter/early Spring.

## **3. METHODS –MONITORING**

### **3.1 Site visits**

The site is visited at least quarterly by the landowners or management staff. Quarterly site visits may be combined with other monitoring or management actions. The following activities must be undertaken at each quarterly visit;

- walk of boundary fencing to assess any signs of damage or unauthorised entry of people or stock
- general observations are to be recorded during site boundary walks. This includes locations and notes as appropriate regarding;
  - woody or herbaceous weed infestations– species and location
  - estimates of percentage cover of inter-tussock space
  - signs of pest animals, or other tracks scats, or signs of predation
  - signs of erosion, pugging, damage to vegetation

#### **3.1.1 Grazing progress monitoring**

The site is checked regularly at times where stock is present on site. Notes are taken regarding general site condition, grazing progress, signs of trampling, selective or overgrazing, pugging etc. Photos are also used as evidence of site condition during time of grazing, though the key measure of grazing success is through of review of biomass monitoring results from across the extent of the offset property.

### **3.2 Weed and Biomass Monitoring**

#### **3.2.1 Weed monitoring**

Weed monitoring is conducted annually in Spring and involves inspection of the entire offset area for woody weeds by foot. All infestations or individual woody weeds are identified to species level and mapped with a GPS. Locations of woody weeds are then supplied to the weed management contractor/landholder for treatment with subsequent monitoring will revisit previously mapped infestations to evaluate the success of weed control, as well as inspecting the entire offset site for new infestations.

During the survey, information on herbaceous weed species is also recorded, including the mapping of species and areas suitable for targeted treatment (such as spot spraying, estimates of cover of herbaceous weed species. This information is then supplied to the weed management contractor/landholder for treatment and scheduled into the works plan for the site.

### 3.2.1 Vegetation monitoring quadrats

10 monitoring quadrats have been established for monitoring within OMZ-01, with south-east corner permanently marked with pin-tags, as well as GPS located. Quadrats are 5 x 5 m in size and located in areas where significant weed control works are required.

During the survey, the following data is recorded:

- Percentage total vegetation cover
- the percentage cover of inter-tussock spaces
- the average height of vegetation and the cover of native and exotic life-forms

Each of the vegetation monitoring quadrats also act as permanent photo points (refer Appendix 2, Map 2) located to adequately characterise the current vegetation condition, and facing each of the four points of the compass (N, S, E & W).

### 3.2.2 Biomass monitoring

This methodology is additional to that outlined in the OMP. It utilises over 100 (2x2 meter) quadrats that are placed at approximately 50m intervals along entire length the 75ha property.

There are two systems in place to measure biomass at each quadrat. The use of both systems gives more depth to the data collected and a clearer picture of how the property is changing and if management actions are successful in fulfilling their objectives.

#### Indicator species (Lunt 2003)

Lunt's system has been written specifically for the degraded grasslands in the western basalt plains of Melbourne. The three species chosen from this area as indicator species are Lemon Beauty-head *Calocephalus citreus*, Common Everlasting *Chrysocephalum apiculatum*, and Scaly Buttons *Leptorhynchus squamatus*, all of which occur within the offset sites. Through measuring the abundance of these species over the quadrats, it will show where native and exotic grasses have not out-competed native herbs. This serves as an indicator of sufficient inter-tussock space for biodiversity and species abundance. The goal is to attain a score of 3 on the Braun-Blanquet scale or 25-50% cover of indicator species.

#### Inter-tussock space.

The percentage of bare ground present will be separated into five categories: 1-20%, 20-40%, 40-60%, 60-80%, and 80-100%. The objective range that must be maintained across the grassland over time is 20-40% bare ground with closer to 40% being the desirable goal. If the amount of bare ground reaches 50% pulse grazing should halt. This measurement of bare ground provides a clearer assessment of what areas should be targeted for biomass reduction and when mapped can show areas where controlled burns are a higher priority.

## 3.1 Fauna Monitoring

### 3.1.1 Golden Sun Moth

Golden Sun Moth (GSM) *Synemon plana* monitoring is undertaken to observe the efficiency of biomass reduction management actions by recording the number of individuals observed during survey event. The objective is to confirm that the population is self-sustaining, and that management actions being undertaken for the species are adequate.

Monitoring events are to occur in Years 2, 4, 6, 8, and 10 following original baseline surveys in the 18/19 flying period. The results of the baseline survey will form a robust set of data to be compared ongoing monitoring events over the 10-year period. **GSM Surveys were conducted in Year 3, as surveys were not completed in Year 2 period.**

The monitoring of Golden Sun Moth is undertaken in accordance with the EPBC Act 'Significant impact guidelines for the critically endangered Golden Sun Moth' (DEWHA 2009) during the flying season, typically commencing from late October onwards within western Victoria, or as identified in correspondence through the Ecological Consultant Association (ECA) Victoria GSM flight diary.

Adequate survey requires effort over at least four suitable days, at approximately weekly intervals during the following conditions;

- Warm to hot day where ambient temperatures are  $\geq 20^{\circ}\text{C}$  by 10:00 hrs;
- Surveys undertaken during the warmest part the day, typically between 10:00–14:00 hrs;
- Weather conditions are clear or mostly cloudless sky;
- Still or relatively still wind conditions during the survey period; and
- A period of at least two days since rain.

Once presence is established, surveys focus on determining the relative distribution of the species on the site

The offset site is surveyed using 50 m transect intervals across the entire offset site. Transects are recorded using a handheld GPS and a waypoint is taken for each location where Golden Sun Moth are observed. Observations between male and female Golden Sun Moths are recorded, along with any incidental observations during other site visits.

### 3.1.1 Striped Legless Lizard

The monitoring of Striped Legless Lizard (SLL) *Delma impar* is required to be undertaken in accordance with the EPBC Act ‘Referral guidelines for the vulnerable Striped Legless Lizard, *Delma impar*’ (DSEWPaC 2011).

A total of 6 separate monitoring tile grids have been established within the offset site. Tiles are retained on site with grids installed a minimum of one – two month prior to the initial survey/checks (approx. July/August). Each tile grid consists of an array of 50 tiles, at 5-metre spacing between tiles, arranged in a grid of 10 tiles by five transects. Tiles are then removed on completion of the survey period.

Tile grids are checked a total of six (6) times between September–December in Years 1 and 2 to collect baseline data. Morphological data is collected for all individuals captured at the offset site to inform DoEE of the population structure at the site. This data includes;

- a photograph of the dorsal head–scale detail to categorise individuals at the site (i.e., repeat captures or new individuals).
- location details (grid & tile number)
- snout–vent length measurement (mm)
- tail length measurement (mm)
- point of autotomy (mm from snout) (if present)
- weight (g); and
- sex (if possible)

Year	SLL Season	Code
1	2020	A
2	2021	B
3	2022	C
4	2023	D
5	2024	E
6	2025	F
7	2026	G
8	2027	H
9	2028	I
10	2029	J

**Table 2.** Alpha-numeric Individual ID

The following cataloguing system was developed in consultation with Megan O’Shea (pers comm. 10/2020), as an appropriate authority on SLL data collection. All observed lizards are assigned an encounter number. This includes any animals that are observed outside of tile surveys, or those that escape capture. Therefore, the total encounter number is representative of all SLL observed within the broader offset property, e.g E0002.

Animals that are captured and processed, where individual characteristics are identified, are assigned an ID number. ID numbers are an alpha–numeric number, which represent the year in which animal was initially processed, along with an ID number (see Table 2 above).

Surveys are conducted under Practical Ecology WSIAEC (Animal Ethics) Unrestricted Access, and Scientific Fieldwork Procedures Licence (SPFL) 20407. All surveys are undertaken by experienced and qualified zoologists’ familiar with the biology and appearance of the species, with competency formally assessed by Megan O’Shea.

## 4. RESULTS

### 4.1 Record Keeping

#### 4.1.1 General observations

The key general observations that relate to OMZ-01 during Year 3 are summarised in the following table. Refer Appendix 3 for all log book entries in the Year 3 management period.

**Table 3.** Key observations Year 3 – OMZ-01

16 <sup>th</sup> March –7 June 2020	708 sheep on site
1 <sup>st</sup> , 12–13 <sup>th</sup> , October 2020 3 <sup>rd</sup> , 9 <sup>th</sup> , 17 <sup>th</sup> , 26 <sup>th</sup> , 30 <sup>th</sup> November 2020 17 <sup>th</sup> December 2020	Phalaris Control
23 <sup>rd</sup> December 2020 12 <sup>th</sup> , 18 <sup>th</sup> , January 2021	Thistle Control
22 <sup>nd</sup> May – 16 <sup>th</sup> July 2021	985 Sheep on site – removed due to lack of feed

#### 4.1.2 Pest Animals

Observations of pest animals are generally recorded in the property log book as record of pest animals occurring on site.

There were no recorded sightings of pest animals at OMZ-01 within the Year 3 management period. There were no signs of active or inactive rabbit warrens, or areas that could be seen an intensely browsed. There are also no areas of rubbish, or surface harbour within the site.

Foxes have been observed within the neighbouring area, none have been observed within the property boundary. Individual hares are sometimes sighted, but are not found to be creating disturbance or impact to site values.

### 4.2 Fence condition

Stock and vehicle proof fencing was in place for the perimeter of the entire 75 ha property at the time of property purchase. Surveys of the property boundary and existing fence were conducted during several site visits. There has been no evidence of any trespassing by vehicles or people on foot, and no signs of unpermitted stock access outside of the grazing period within the Year 3 period.

## 4.3 Weed and Biomass monitoring

### 4.3.1 Weed monitoring

A site walkover of the entire property was conducted 24<sup>th</sup> November 2020. Field observations during the site walkover are as follows;

Woody Weeds –no woody weeds are present within OMZ-01

Grassy and Herbaceous Weeds

- Wet areas of the site prone to patches of dense **Toowoomba Canary-grass** *Phalaris aquatica* infestations. Phalaris control conducted October and November 2020 has greatly reduced area of infestation. Spot Spraying is now required as retreatment of problem areas, and to individual clumps that occur sporadically through the site
- **Large Quaking Grass** *Briza maxima* is ubiquitous across the site, occurring at varying cover from 10%–30%.
- **Yorkshire Fog** *Holchus lanatus*, occurring in dense patches at both east and west ends of the site
- **Spear Thistle** *Cirsium vulgare*, present throughout, though sparse in from control conducted in 2019 (prior to offset agreement)

Data collected has been provided to site contractors and incorporated into an annual works plan for Year 4. This data is available on request.

### 4.3.2 Vegetation monitoring quadrats

Survey of vegetation monitoring quadrats were completed in Year 3. A total of 10 monitoring quadrats were established within the management area. Quadrat locations were determined through presence of high weed cover, and high biomass, as areas which required targeted management and may be used as indicators of the success of weed control and biomass management.

Quadrat locations are GPS recorded, and temporary pin tags were used to mark the location, to be followed up by installation of short star pickets as permanent markers.

Appendix 2 – Map 2 present the ID number and location of each monitoring quadrats. Appendix 4 presents the full data set for quadrat monitoring. Appendix 5 presents Quadrat photopoints– Year 3.

The following table provides a brief summary of the 2020 monitoring results

**Table 4.** Summary of results– Vegetation Quadrat monitoring – Year 3

	Average vegetation height (cm)	Average Inter-tussock space (%)	Average native vegetation cover (%)	Average exotic cover (%)	Average total vegetation cover (%)
OMZ-01	59	1–5	5–25	75–100	75–100

### 4.3.3 Biomass monitoring

A total of 7 quadrats are located within or on the boundaries of OMZ-01. A visual representation of results of this survey are presented in Appendix 2– Map 3.

**Table 5.** Biomass monitoring results

	High Biomass (1–20% inter-tussock space)	Acceptable Biomass (21–40% inter-tussock space)
Year 3	7 quadrats (100%)	0 quadrats (0%)

## 4.1 Fauna monitoring

### 4.1.1 Golden Sun Moth *Synemon plana*

No Golden Sun Moth were detected during the targeted surveys completed within the Year 3 monitoring period. GSM were however identified onsite, outside of the targeted survey times. The survey conditions are detailed in Appendix 4 and summarised in Table 6 below. As a population of Golden Sun Moth has been confirmed within the offset site, there is no requirement to check for species activity at a separate reference site.

**Table 6.** Summary of the targeted surveys

	SURVEY 1		SURVEY 2		SURVEY 3		SURVEY 4		Incidental Observation
Date	10/11/2020		14/12/2020		24/12/2020		12/1/2021		14/12/2020
Location	East	West	East	West	East	West	East	West	Eastern end (OMZ –06)
# Observed	0	0	0	0	0	0	0	0	8 males

### 4.1.2 Striped Legless Lizards *Delma impar*

The following table summarises the results of biometric survey of Striped Legless Lizard within the broader offset site. A total of 3 Offset Management Zones are required to be surveyed within the property, with a total of 8 tile grids surveys each year. Two tile grids are located within OMZ-01, named as grids 11A, 11B.



A total of 18 encounters were recorded across the property, and 10 animals were identified. Maps highlighting the encounter locations are presented in Appendix 2, Map 4 of this report. Biometric data and head-scale photos of identified animals are presented as Appendix 7 and Appendix 8.

All captured animals were recorded as new individuals, therefore there were no recaptures within this survey season.

No animals were captured within the OMZ-01 area, though individuals were recorded nearby and can be reasonably expected to occur within the OMZ-01.

**Table 7.** Summary of 2020 SLL records

Survey no	Date	Encounter #	Grid	Tile	Captured	New individual	Individual ID #
1	13/10/2020	E0001	10A	C4	yes	yes	A01
		E0002	10A	B5	yes	yes	A02
		E0003	10B	E2	yes	yes	A03
2	30/10/2020	E0004	10D	B4	yes	yes	A04
		E0005	10D	A4	yes	yes	A05
		E0006	10D	A4	no	-	-
		E0007	10D	C5	no	-	-
		E0008	2	A5	yes	yes	A06
3	10/11/2020	E0009	3	C4	yes	yes	A07
		E0010	10A	E3	no	-	-
		E0011	10D	I4	no	-	-
		E0012	1	C4	no	-	-
		E0013	1	J5	yes	yes	A08
4	18/11/2020	E0014	2	D1	no	-	-
5	26/11/2020	E0015	10A	E5	yes	yes	A09
		E0016	1	H2	no	-	-
6	3/12/2020	E0017	10D	H4	yes	yes	A10
		E0018	10D	D3	no	-	-

## 5. DISCUSSION

### 5.1 Non-compliance

The following required management actions were not completed by the due date within the Year 3 management period, and are therefore considered non-compliance against the OMP requirements.

**Action X.8** – Preparation and submission of annual report by due date

**Action X.9** – Review and update Annual Works Plan in consultation with TfN.

### 5.2 Biomass

The completion of Year 3 monitoring of the site has determined issues that relate to biomass management. The results of biomass monitoring have determined that grazing restrictions as required within the OMP may be potentially problematic, given that the use of ecological burns as a biomass management tool has not been implemented.

It is understood that prior to the purchase of the property for conservation, sheep grazed continually throughout the year and were permanently based at the site. Grazing restrictions for OMZ-01 require pulse-grazing only, and restrict grazing to occur between January 31<sup>st</sup> to September 31<sup>st</sup>. Given the historic grazing regimes, it may be the case that this site has adapted well to the presence of sheep on a permanent basis, and that removal of sheep at certain times of the year where there is high rainfall has led to dramatically increase biomass over a very short period.

Biomass monitoring was conducted throughout the extent of the broader offset property in order to inform any required changes to the current grazing schedule, and to provide evidence for adaptive management. Biomass is high overall across the site, with over half of the total property assessed area having high biomass (1–20% inter-tussock space). Seasonal factors are important to acknowledge, as this period was one of higher-than-average rainfall and warm weather consistent with a La Nina event. The combination of generally high biomass levels, narrowing burn windows, proximity to agricultural land, as well as additional considerations of wetland areas and key fauna species Golden Sun Moth and Striped Legless Lizard, all result in the requirement of an intricate and carefully considered burn plan. Such a burn plan has not yet been finalised for the site, though a draft has been completed to assist in the planning of a burn in Autumn 2022.

It is also understood that Infrastructure to support cell grazing is being planned by the landowner, including additional water points, and permanent fencing to concentrate sheep grazing and to allow for protection of re-establishing vegetation in response to future planned burns.

Discussions with Trust for Nature are recommended to enable adaptive management through changes to permitted grazing periods for the extent of the property, to allow for management to be responsive to seasonal conditions. Landowners will request permission to extend grazing periods within the property, under the proper supervision and guidance, in order to decrease biomass through extended grazing to improve overall site condition.

## 6. REFERENCES

Biosis (2018) *Copernicus Way EPBC Act (EPBC 2016/7734) Offset Management Plan: 6165 Hamilton Highway Cressy*. Melbourne.

Commonwealth of Australia (2012) *Environment Protection and Biodiversity Conservation Act 1999 Environmental Offsets Policy*. Commonwealth of Australia,.

DEWHA (2009) *Significant impact guidelines for the critically endangered golden sun moth (Synemon plana)*. Department of Environment, Water, Heritage and Arts, Canberra, ACT.

DSEWPaC (2011) *Referral guidelines for the striped legless lizard, Delma impar*. Department of Sustainability, E., Water, Population and Communities, Australian Government, Canberra.

## Appendix 1. Summary of required management actions – Year 3

Year no.	Action no.	Activity Description	Timing	Standard to be achieved	Achieved?	Comments
2-10	X.1	Maintain fences and gates around broader offset area and markers around offset site in good working order.	Continuous (inspection and management)	Potential threats (i.e., rabbits, domestic stock, unauthorised entry) excluded.	Y	Fencing is in place around the extent of the broader offset property. Future fencing to be installed for cell grazing
2-10	X.2	Undertake pulse grazing to reduce biomass. A minimum of three pulse grazing cycles are required within the grazing period, and one of these will occur immediately before the exclusion period (unless otherwise advised by the fire management plan). The maximum grazing length at any one time is four weeks with a minimum two-week rest period between grazing cycles. Vegetation cover will not be grazed below 50% and inter-tussock space will be maintained to at least 30%.	16th January – 31st July	Maintain an open tussock grassland with at least 30% cover of inter-tussock space.	Y	Infrastructure not yet in place to undertake pulse grazing. Sheep were on site from 22 <sup>nd</sup> May – 16 <sup>th</sup> June  Grazing regime to be discussed with TfN
2-10	X.3	Develop burn plan and undertake ecological burn of the offset site to reduce plant biomass and promote recruitment of native species. Ecological burns may be undertaken over 20% of the offset area at least ten times during 10-year management period.	Sep-Oct or March - May (or as specified in the burn plan)	Medium intensity burns over 20% of the 5.0 ha area. Some small areas within burn boundary left unburnt. No area to be burnt at a frequency of more than once every three years. Follow up weed control will be undertaken within the burn area in accordance with section 3.9. Burns must also be undertaken to generate a mosaic pattern of burnt and unburnt areas	Y	A Draft Burn Plan has been developed- however no opportunity to burn was available in the Year 3 period – A burn will be attempted in Autumn 2022. Sheep were therefore used as the main biomass reduction tool in Year 3  Draft Burn Plan map attached – Refer Appendix 2: Map 6.
2-10	X.4	Control pest animals (e.g., rabbits, hares, foxes and cats) within the offset and surrounding area (within 500m of offset site where possible).	Feb–Apr, Sep–Nov	No ground disturbance by pest animals within offset site. No active rabbit warrens present within offset site, minimal surface harbour for rabbits and hares present (but excluding natural harbour such as rocks)	Y	No control deemed necessary within Year 3 period. Standard achieved
2-10	X.5	Control all high threat grass / herb weeds before seed set using appropriate methods to ensure a reduction of existing weed levels. Monitor for new and emerging weeds and eliminate any found	July–Nov as detailed in the annual works plan	Minimise the occurrence of weeds with a reduction in total cover of weeds, including high threat weeds, beyond current levels. See Target percentage cover	Y	Weed control implemented in the Year 3 period  Refer site log book, Appendix 3
2-10	X.6	Qualified ecologist to undertake vegetation and SLL monitoring (including Habitat hectare assessment), and refine management actions based on results. Identify any new high threat weeds for priority control. Report to regulator as directed.	Oct-Nov monitoring Dec Reporting	Prepare standard report including results from photos and agreed performance measures outlined in Section 3.9.	Y	Biometric monitoring completed in Year 1 Refer Section 4.1.2, and Appendices 7 and 8
2-10	X.7	Undertake regular site inspections at a frequency to ensure management activities are conducted as prescribed. This will incorporate identification of any new weeds and evaluation of biomass conditions. These inspections will be conducted by the	Nov - Dec	Reporting of management activities as agreed. This can consist of a series of notes of observations made by the land owner during site inspections.	Y	Site inspections have been recorded in site log book- refer Appendix 3

Year no.	Action no.	Activity Description	Timing	Standard to be achieved	Achieved?	Comments
		land owner. TfN to participate in site inspections at least four times over offset period.				
2-10	X.8	Prepare annual report based on site inspections conducted throughout the year. Report to be provided to TfN, Soho and DoEE.	Nov	Report reviewing the success of management and level of implementation of OMP provided to TfN, DoE, and Soho.	N	Annual report not prepared for submission by August 2020
2-10	X.9	Review and update Annual Works Plan in consultation with TfN.	Dec	Following year's management tailored to current site conditions	N	No annual works plan was prepared or reviewed in the Year 2 period
2, 4, 6, 8 & 10	X10	Conduct GSM monitoring surveys	GSM flight season (November to December)	Report documenting the results of the survey and comparisons with past surveys	Y	Biomass too high- not completed in Year 2 due to high biomass  Surveys were conducted in Year 3, results of which are provided in this report

## Appendix 2. Maps

Map 1: Offset Management Zones– All

Map 2: Vegetation Monitoring Quadrats

Map 3: Biomass Monitoring Results

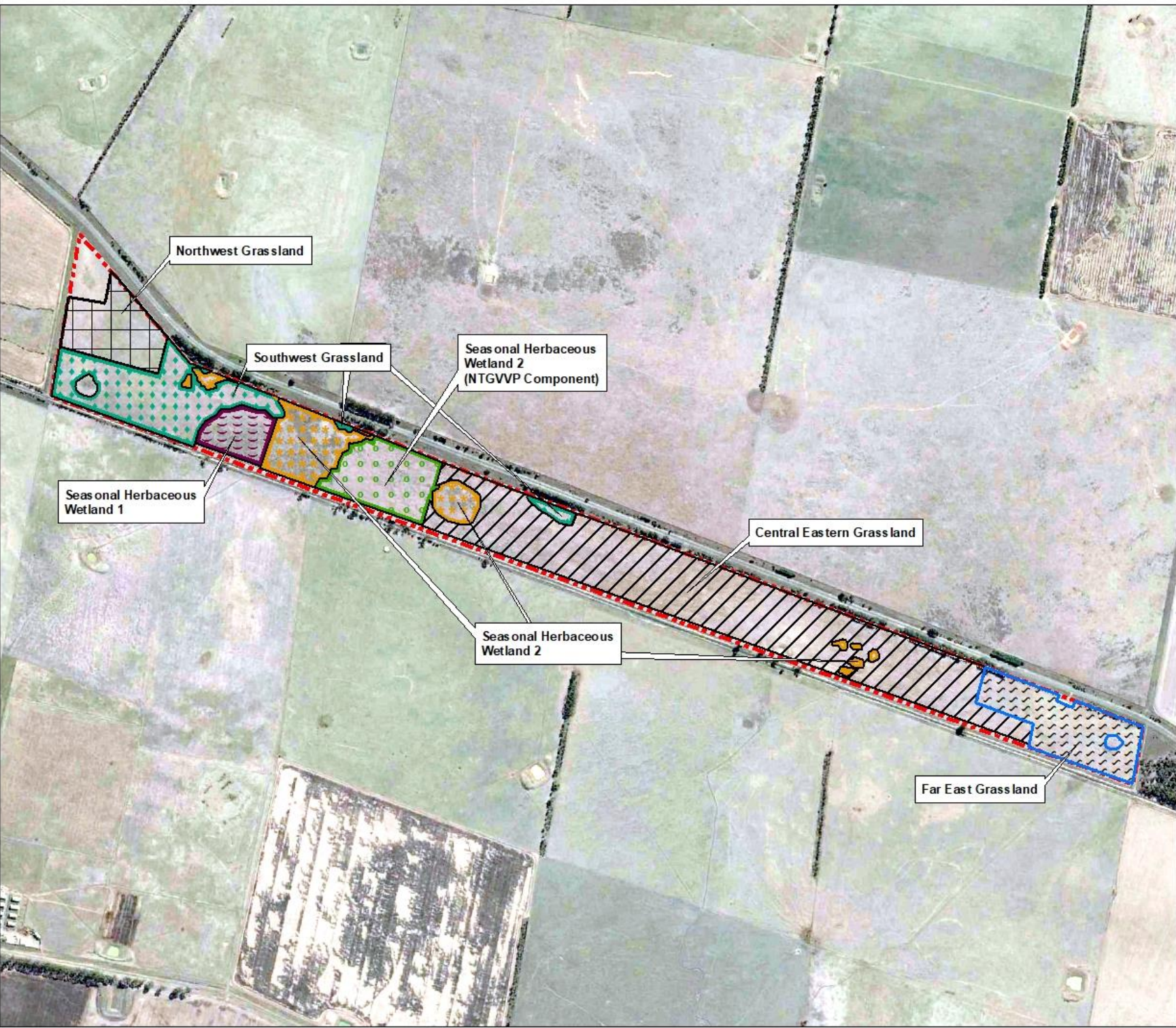
Map 4: Striped Legless Lizard Monitoring Results

Map 5: Draft Burn Plan






**Map 2. Offset Management Zones**

6165 Hamilton Highway, Cressy

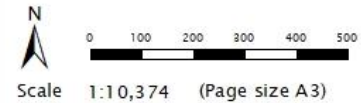


**Legend**

-  Subject site
-  Central Eastern Grassland
-  Far East Grassland
-  Northwest Grassland
-  Seasonal Herbaceous Wetland 1
-  Seasonal Herbaceous Wetland 2
-  Seasonal Herbaceous Wetland 2 (NTGVVP Component)
-  Southwest Grassland

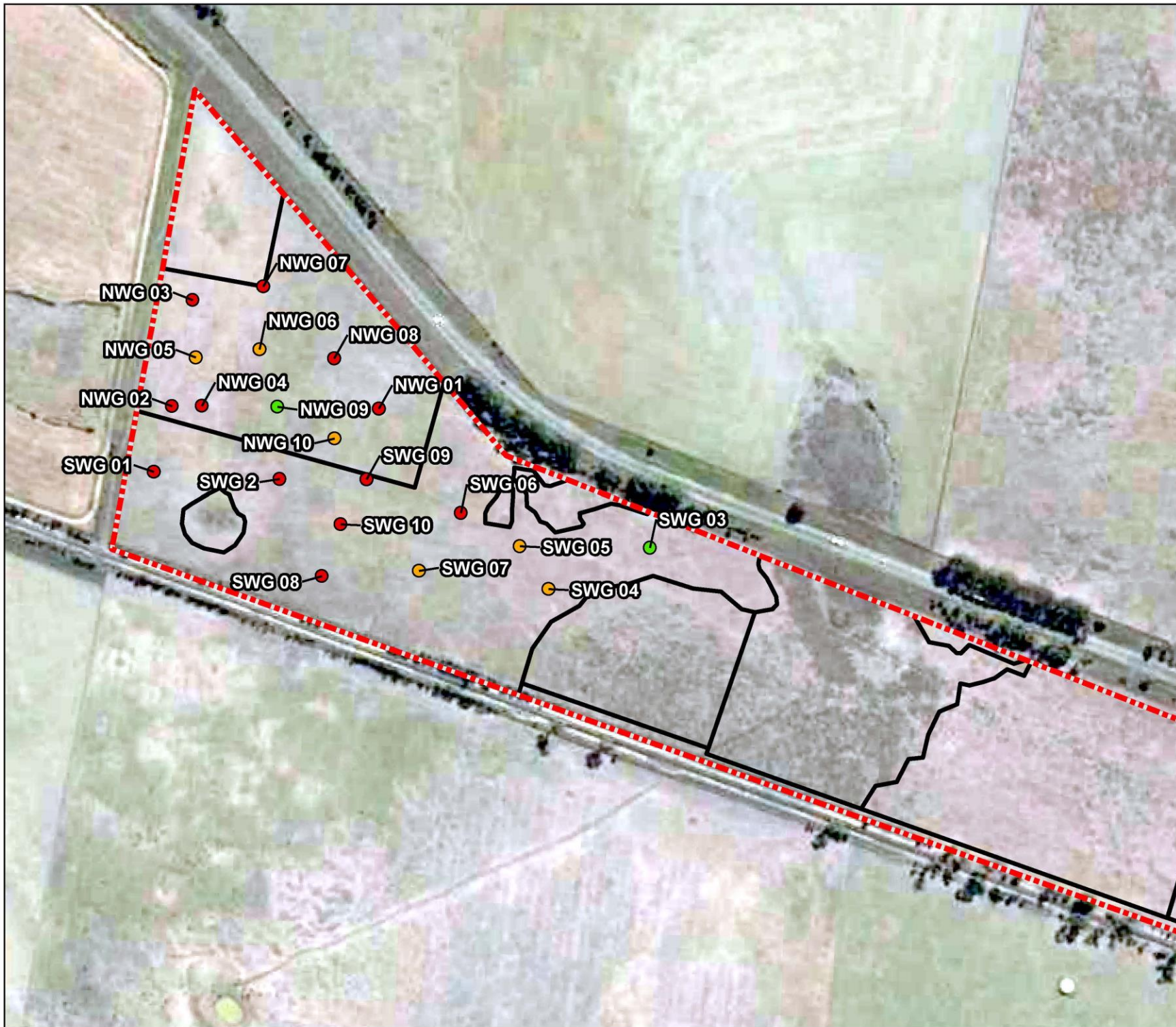
**Details**

Date: 30/01/2020  
 Aerial photography from Google Earth Pro (April 2015).  
 Base map data Copyright © The State of Victoria.



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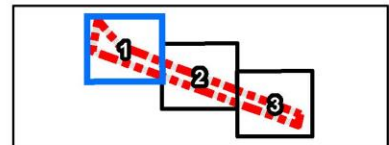


**Legend**

- Subject Site
- Parcels
- Contours (10m)
- Watercourse
- Offset Management Zones

**Native Vegetation Cover**

- 1-5
- 5-25
- 25-50



**Details**  
 Mapping by: Ali Nia  
 Date: 21/01/2022  
 Aerial photography from Google Earth Pro (April 2015).  
 Base map data Copyright © The State of Victoria.

N

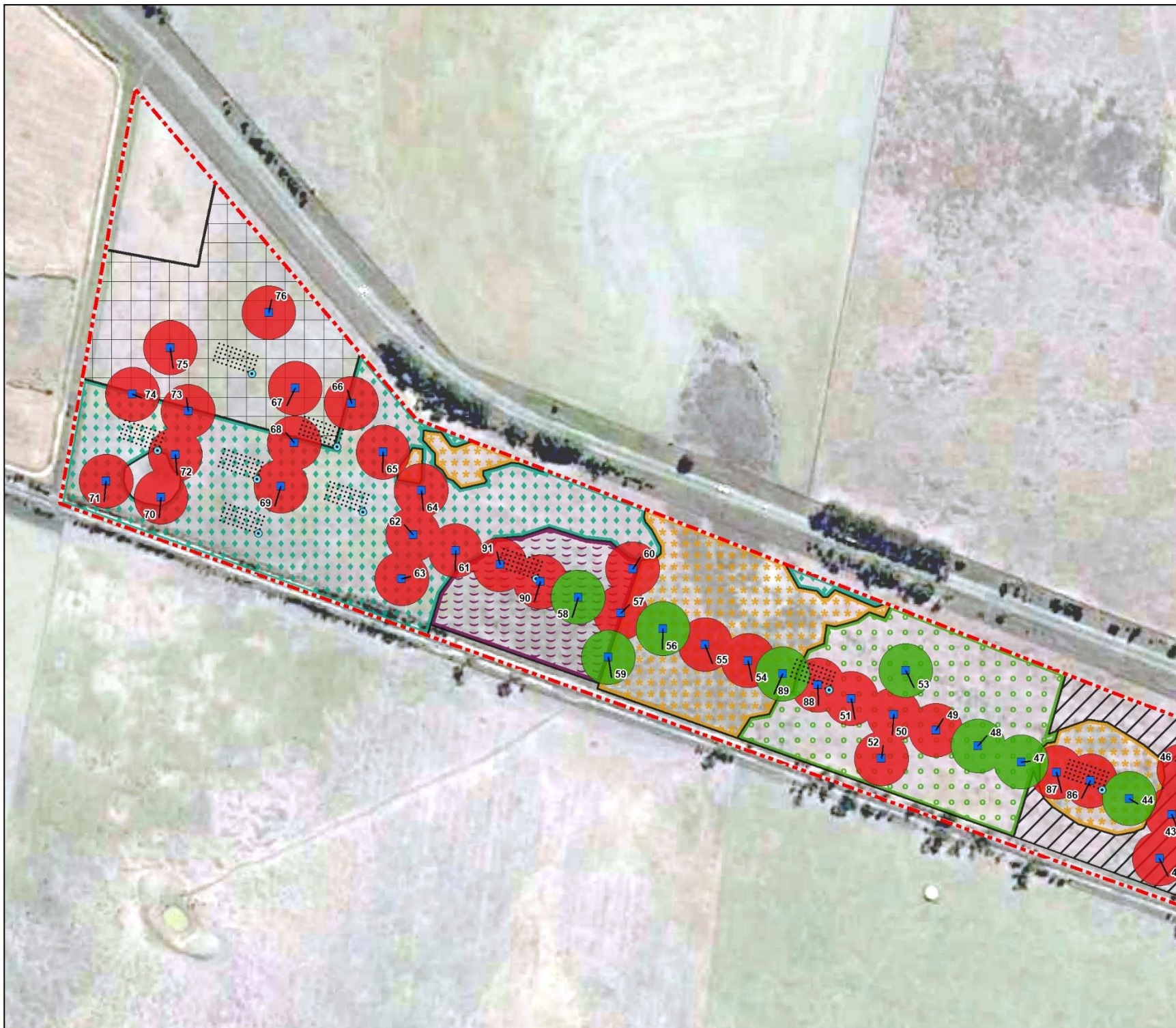
0 50 100 m

Scale: 1:3,660 (Page size A3)


**Disclaimer**  
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**Map 4. Monitoring Results:  
Intertussock Space**  
6165 Hamilton Highway, Cressy  
Map 1 of 3





**Legend**

-  Subject site








**Tiles**

-  Tile
-  SE corner tile (recorded on GPS)
-  Quadrat biomass

**Biomass cover**


-  1-20%
-  21-40%

**Management Zone**

-  Central Eastern Grassland
-  Far East Grassland
-  Northwest Grassland
-  Seasonal Herbaceous Wetland 1
-  Seasonal Herbaceous Wetland 2
-  Seasonal Herbaceous Wetland 2 (NTGVVP Component)
-  Southwest Grassland

**Details**

Date: 4/11/2020  
 Aerial photography from Google Earth Pro (April 2015).  
 Base map data Copyright © The State of Victoria.

  
 Scale 1:4,050 (Page size A3)



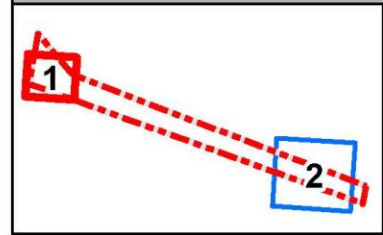


**Legend**

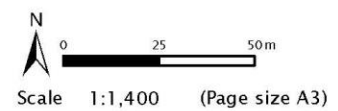
- Subject Site
- Contours (10m)
- Watercourse
- ▭ Parcels
- Striped Legless Lizard Tiles
- ▭ Offset Management Zones

**Striped Legless Lizard**

- Not Captured
- Captured



**Details**  
Date: 24/02/2021  
Version: 1  
Aerial photography from Google Earth Pro (April 2015).  
Base map data Copyright © The State of Victoria.

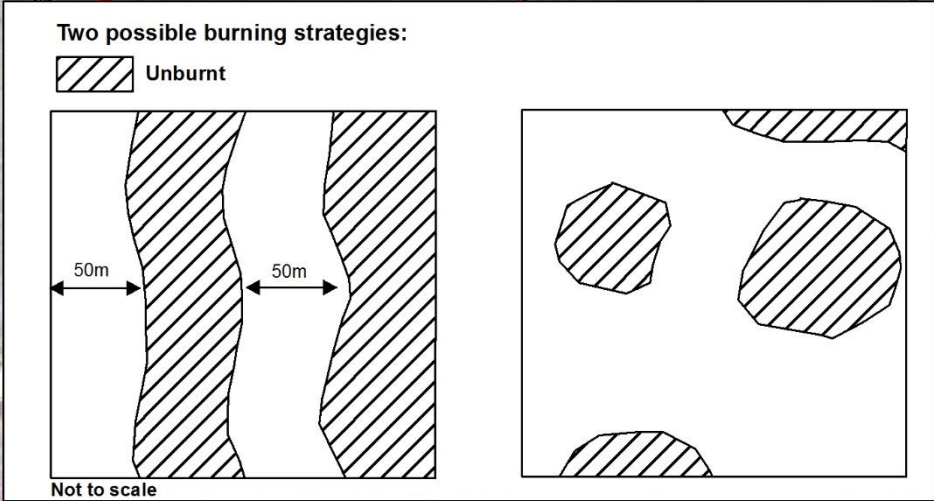
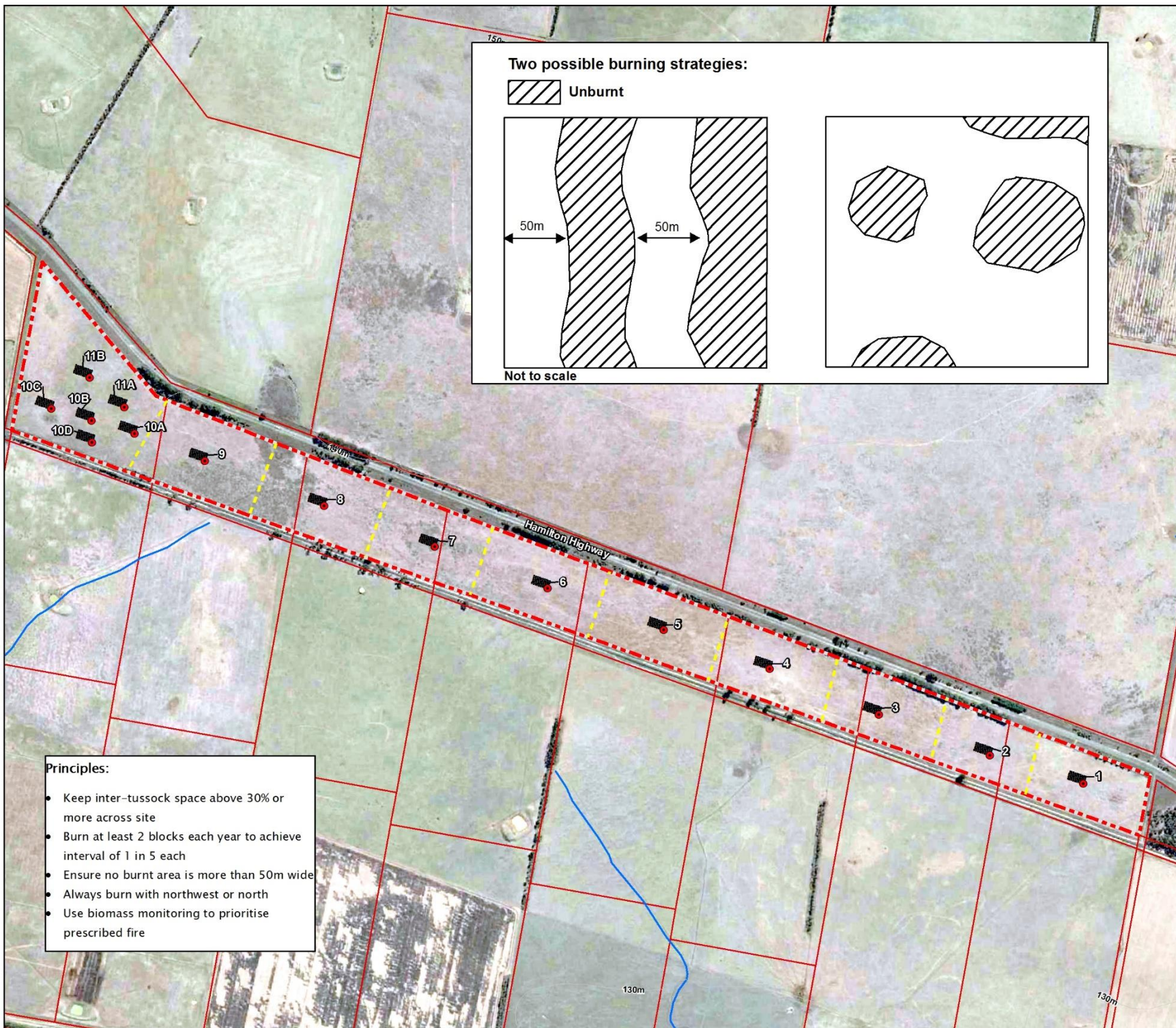


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p: (03) 9484 1555 e: enquiries@practicalecology.com.au



**Map 8. Fire Management Strategy**  
6165 Hamilton Highway, Cressy



- Principles:**
- Keep inter-tussock space above 30% or more across site
  - Burn at least 2 blocks each year to achieve interval of 1 in 5 each
  - Ensure no burnt area is more than 50m wide
  - Always burn with northwest or north
  - Use biomass monitoring to prioritise prescribed fire

**Legend**

- ▭ Subject site
- ▭ Parcels
- Contours (10m)
- Watercourse
- Tile
- SE corner tile (recorded on GPS)
- - - Approximate burn block boundaries

**Details**

Date: 8/03/2019  
Aerial photography from Google Earth Pro (April 2015).  
Base map data Copyright © The State of Victoria.

N  
0 100 200 300 400 500 m  
Scale 1:9,979 (Page size A3)

## Appendix 3. Log Book– Year 3

1-Oct-2020	Seed2Leaves	Phalaris – Spot Spraying
12-Oct-2020	Seed2Leaves	Phalaris – Spot Spraying
13-Oct-2020	Seed2Leaves	Phalaris – Spot Spraying
13 October 2020	Lincoln Kern, Megan O'Shea, Emma Wilkin, Amy Tipton, Alice Ewing	Biometric Assessment 1 of 6 for Striped Legless Lizards Training by Megan O'Shea. Checked all of grids in west end in Northwest and Southwest Grasslands (10 and 11s) plus grids 1, 2 and 3 in Far East Grassland
29-Oct-2020	Alice Ewing, Amy Tipton, Megan O'Shea	SLL 2/6, refer to data sheets/photos
3-Nov-2020	Seed2Leaves	Phalaris – Spot Spraying
9-Nov-2020	Seed2Leaves	Phalaris – Spot Spraying
9-Nov-2020	Alice Ewing, Amy Tipton	SLL 3/6, refer to data sheets/photos
10-Nov-2020	Alice Ewing, Emma Wilkin	GSM1/4 – biomass high through middle, drier and more open on edges closer to boundaries – good weather conditions for GSM
15-Nov-2020	Lincoln Kern	Inspected through most of the site. Could see lots of evidence of Phalaris spraying on either end. Biomass levels are quite high despite months of sheep grazing as you would expect with the high rainfall year.
16-Nov-2020	Emma Wilkin, Paul Guest	GSM 2/4
17-Nov-2020	Seed2Leaves	Phalaris – Spot Spraying
18-Nov-2020	Alice Ewing, Amy Tipton	SLL 4/6, refer to data sheets/photos
26-Nov-2020	Seed2Leaves	Phalaris – Spot Spraying
26-Nov-2020	Emma Wilkin	Biomass, Weed monitoring and monitoring quadrat
26-Nov-2020	Noemie Seck, Amy Tipton	SLL 5/6, refer to data sheets/photos
30-11-2020	Seed2Leaves	Phalaris – Spot Spraying
3-Dec-2020	Alice Ewing, Amy Tipton	SLL – 6/6, refer to data sheets/photos
14-Dec-2020	Emma Wilkin, Julian Drummond	GSM ¾, refer data sheets
17-Dec-2020	Seed2Leaves	Phalaris – Spot Spraying, slashed eastern gate entrance and parking
23-Dec-2020	Seed2leaves	Spot spray thistles
31-Dec-2020	Emma Wilkin, Amy Tipton	GSM 4/4 – refer data sheets
12-1-2021	Seed2leaves	Spot spray thistles
18-1-2021	Seed2leaves	Spot spray thistles
22-5-2021	Paul Bath	Sheep on site, approx. 985
14-7-2021	Emma Wilkin, Paul Guest, Harrison Guest, Daniel Casullo, Kallista Sears	Reinstalled tiles for SLL monitoring – biomass greatly reduced from grazing –some limited surface pugging in high traffic areas/sheep tracks
16-7-2021	Paul Bath	Sheep removed
16-8-2021	Emma Wilkin Paul Guest	Brief site visit to observe results after removing sheep – walked briefly around Eastern end, drove along boundary and stopped at several points to take photos/video as record of biomass/ vegetation condition – biomass greatly reduced – weed control now prioritised over the next month for Phalaris and Thistles now that site is too wet for continued grazing, and to ensure that weed cover does not increase with removal of browsing



## Appendix 4. Vegetation Monitoring Data – Year 3, November 2020

### North-West Grassland – OMZ 02

ID	date	CP	quad_no	avg_hgt_cm	int_tuss_1%	cov_nati_%	cov_exot_%	total_veg_%	Comments
NWG 01	26/11/2020	EW	1	50	1-5	1-5	75-100	75-100	<i>Hypochaeris, Cirsium, Bromus</i>
NWG 02	26/11/2020	EW	2	100	1-5	1-5	75-100	75-100	<i>Phalaris, Bromus</i>
NWG 03	26/11/2020	EW	3	80	1-5	1-5	75-100	75-100	<i>Phalaris, Bromus, Cirsium</i>
NWG 04	26/11/2020	EW	4	100	1-5	1-5	75-100	75-100	<i>Phalaris, Bromus</i>
NWG 05	26/11/2020	EW	5	40	1-5	5-25	75-100	75-100	<i>Cirsium, Lolium, Hypochaeris</i>
NWG 06	26/11/2020	EW	6	50	1-5	5-25	75-100	75-100	<i>Cirsium, Phalaris, Hypochaeris</i>
NWG 07	26/11/2020	EW	7	40	1-5	1-5	75-100	75-100	<i>Lolium, Bromus, Phalaris</i>
NWG 08	26/11/2020	EW	8	100	5-25	1-5	75-100	75-100	<i>Phalaris, Avena, Bromus</i>
NWG 09	26/11/2020	EW	9	30	1-5	25-50	50-75	75-100	<i>Cirsium, Phalaris</i>
NWG 10	26/11/2020	EW	10	40	1-5	5-25	75-100	75-100	<i>Phalaris, Cirsium, Hypochaeris</i>

## Appendix 5. Vegetation Quadrat Photopoints – Year 1, November 2020

### North-West Grassland (OMZ-01) – Quadrat 1



North



East



South



West



North-West Grassland (OMZ-01) – Quadrat 2



North



East



South



West

**North-West Grassland (OMZ-01) – Quadrat 3**



**North**



**East**





South



West

North-West Grassland (OMZ-01) – Quadrat 4



North



East





South



West

North-West Grassland (OMZ-01) – Quadrat 5



North



East





South



West

North-West Grassland (OMZ-01) – Quadrat 6



North



East





South



West

North-West Grassland (OMZ-01) – Quadrat 7





**North**



**East**



**South**

**West**

**North-West Grassland (OMZ-01) – Quadrat 8**





**North**



**East**



**South**

**West**

**North-West Grassland (OMZ-01)– Quadrat 9**





**North**



**South**

**East**



**West**

**North-West Grassland (OMZ-01) – Quadrat 10**





North



East



South



West



## Appendix 6. GSM 2020/2021 survey data

	SURVEY 1		SURVEY 2		SURVEY 3		SURVEY 4		Incidental Observation
<b>Observers</b>	Emma Wilkin, Alice Ewing		Emma Wilkin, Julian Drummond		Emma Wilkin, Amy Tipton		Emma Wilkin, Paul Guest		Emma Wilkin, Julian Drummond
<b>Date</b>	10/11/2020		14/12/2020		24/12/2020		12/1/2021		14/12/2020
<b>Survey area</b>	East	West	East	West	East	West	East	West	East and adjacent area
<b>Time start/finish</b>	14:37–15:25	11:50 – 13:45	12:59 –13:34	11:03–12.02	12:22–13:22	11:13–12:03	11:05–11:45	12:07–13:14	13:40
<b>Cloud cover (%)</b>	40	10	55	30	80	65	15	30	75
<b>Wind direction</b>	NW	NW	NE	N	SW	SW	SE	SW	N
<b>Avg Wind speed (km/h)</b>	4	8.5	20	15	35	40	15	10	25
<b>Air temperature (°C)</b>	30.4	28.5	29.4	26.4	17.4	14.5	26.9	22.2	27.7
<b>Relative humidity (%)</b>	30	39.5	23	38	48	86	45	66	25
<b>Conditions</b>	High cover invasive pasture grasses, ( <i>Holcus</i> , <i>Briza</i> ) as well as high cover <i>Themeda</i> , avg height to 1m tall in center of site, patches of <i>Poa</i> more frequent around wetland areas.		Vegetation drying out, cracking soils, biomass remains high through center of the site		Weather forecast indicated good conditions, however temperature and weather on site were not suitable survey conditions		Very dry, though height and density of vegetation still high (approx. 1m, 1–10% inter-tussock space through center of site, better on edges		Relatively poor conditions, cloud cover high (approx. 70%), and increasing, and wind speed/gusts increasing. High biomass through center of the site, better habitat conditions at boundaries as usual
<b>Other comments</b>	High quality GSM habitat within this site is generally occurring in dryer areas of site around boundaries		On completion of transects on this day (survey 2), high-quality areas outside of transects were checked.		Given poor conditions, all transects not completed, instead, high quality areas only were checked		-		Male GSM observed flying (being blown) in relatively high winds, around areas of high biomass. Interesting to observed species flying in this weather and in arounds of poor ground conditions
<b>Golden Sun Moths seen?</b>	0 males 0 females		0 males 0 females		0 males 0 females		0 males 0 females		8 males 0 females

## Appendix 7. SLL surveys 2020: Data

Encount	ID	Date	Grid_no	Tile_no	amb_deg	amb_hum_%	tile_deg	subs_deg	cavity_deg	subs_hum_%	SVL_mm	tail_mm	total_mm	auto_mm	weight_g	sex
E0001	A01	13/10/2020	10A	C4	16.6	66.4	19.3	15.6	18.4	82	77	160	237		4.3	M?
E0002	A02	13/10/2020	10A	B5	16.6	66.4	16.6	13.8	19	82	97	125	222	186	6.3	F
E0003	A03	13/10/2020	10B	E2	18.3	65	18.2	17.5	19.5	82	87	163	250		5.3	F
E0004	A04	30/10/2020	10D	B4	21.2	52.7	47	35.3	29.9	75.2	74	156	230		3.3	F
E0005	A05	30/10/2020	10D	A4	21.2	52.7	57.6	33.6	35.9	75.2	70	133	203		3.6	M?
E0006	-	30/10/2020	10D	A4												
E0007	-	30/10/2020	10D	C5												
E0008	A06	30/10/2020	2	A5	19.8	66	31.5	24	22.8	87.5	99	198	297	284	6.9	F
E0009	A07	30/10/2020	3	C4	19	65	21.9	20.6	20.5	85	75	163	238		4	M?
E0010	-	10/11/2020	10A	E3												
E0011	-	10/11/2020	10D	I4												
E0012	-	10/11/2020	1	C4												
E0013	A08	10/11/2020	1	J5	32	37	51	36	38	56	81	142	223		5	M
E0014	-	18/11/2020	2	D1												
E0015	A09	26/11/2020	10A	E5	24	49.8	42.6	18.8	31.1	68.5	98	192	290		9.4	F
E0016	-	26/11/2020	1	H2												
E0017	A10	3/12/2020	10D	H4	21.7	64	30.2	30.2	31.1	78.9	89	209	298		5.2	F

## Appendix 8. SLL surveys 2020: Head-scale photos



A01



A02



A03



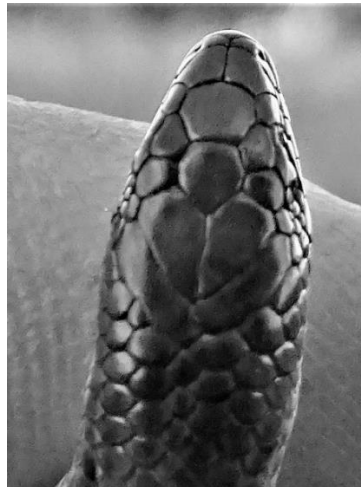
A04



A05



A06



A07



A08



A09



A10

