Ecocentric Environmental Consulting

2B / 73-85 Haines Street
North Melbourne VIC 3051

29th November 2024

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MONITORING OF TREE & SHRUB RECRUITMENT & CANOPY CONDITION FOR SWIFT PARROT OFFSETS

237 – 240 Old Glenorchy Road, Deep Lead (EPBC 2016/7809) Spring 2024 – Year 6

INTRODUCTION

Ecocentric Environmental Consulting was engaged to complete ecological monitoring on behalf of landowners Deep Lead Property Pty Ltd for EPBC biodiversity offsets located at 237-240 Old Glenorchy Road (Bush Broker Credit Site BB-3018) in Deep Lead, Victoria.

The offset was established in 2018 as part of infrastructure works undertaken by VicRoads which involved the removal of vegetation identified as foraging habitat of critically endangered Swift Parrot (EPBC 2016/7809).

The landowner is required to submit a report annually to DELWP (now DEECA) and DOEE (now DCCEEW) for each year of the ten year Offset Management Plan (OMP) (Biosis 2017). The annual report must include:

- Details of management actions, including on ground works, undertaken within the reporting period;
- Results of monitoring activities, including fence condition, weeds, pest animals and overstorey condition;
- Site photographs;
- Details of compliance or non-compliance with the schedule of management actions; and
- Details of compliance or non-compliance with performance targets.

This monitoring report has been completed to address the requirement for independent ecological monitoring of overstory condition within the Swift Parrot offset area and is to be submitted to DCCEEW and DEECA alongside the landowner's report. Annual assessment is required to monitor regeneration and overstory condition to inform ongoing management actions, with the aim to protect existing large trees and to ensure the ongoing replacement of key tree and shrub species over time.

AIM

The aim of the assessment is the collection of field data to determine site condition and to inform management actions in line with the following statement, as presented on Page 29 of the Landowner Agreement (BLA 2017), and in OMP section 3.9.4 *Tree and shrub recruitment and canopy condition*:

> *If the cover of immature canopy trees, understorey trees or medium shrubs (1 to 5 m tall) is greater than 20% higher than the EVC benchmark then the relevant species will be thinned to achieve a cover of approximately 5%. If the cover of either group is significantly less than 5% then action to encourage regeneration of Yellow Gum and other medium shrubs will be implemented by either addressing threats to regeneration or planting nursery stock to achieve a cover closer to 5%.*

PROJECT SCOPE

On-site monitoring of tree and shrub recruitment and canopy condition included the following:

- Vegetation Quality Assessment – Habitat Hectare Scoring in 6 permanent quadrats (30x30m).
- Photo points.

STUDY AREA

The study area is comprised of 4.5ha, the total area of Habitat Zones 1F and 1G, within a larger offset site. The area was selected for Swift Parrot offsets due to the presence of moderate to high quality habitat, including the prevalence of preferred foraging canopy trees Yellow Gum (*Eucalyptus leucoxylon*), Grey Box (*Eucalyptus macrocarpa*) with some occurrence of Yellow Box (*Eucalyptus melliodora*).

The property is located within the Wimmera Bioregion, with vegetation types having strong associations with the Goldfields Bioregion due to proximity and contains a mosaic of EVC 882_61 *Higher rainfall Shallow Sands Woodland* and EVC 283 *Plains sedgy Woodland.* The property and broader region have a history of extensive goldmining, with evidence including mullock heaps, open mine shafts, and other indications of significant historical soil disturbance.

Shallow Sands Woodland Habitat Zone 1G has a mid-story of generally sparse cover, predominantly *Acacia pycnantha*. Ground-story consists of ericoid-leaved shrubs including (*Acacia acinacea*) and Cranberry Heath (*Styphelia humifusa*) among others heathy species, as well as a range of graminoids, typically Wattle Mat-rush (*Lomandra filiformis*), Common Rapier-sedge (*Lepidosperma filiforme*), as well as several Common Tussock (*Poa* spp.), Wallaby-grass (*Rytidosperma* spp.) and Spear-grass (*Austrostipa* spp.) species. A high diversity of geophytes is also visible in Spring amongst a natural litter-dominated surface.

Plains Sedgy Woodland Habitat Zone 1F covers a small open area in the north-east section of the study area and features seasonally inundated depressions that contrast to the surrounding woodland. Canopy cover is sparse, and the shrub layer is generally absent within this zone. The groundstorey comprises a diverse mosaic of rushes and sedges, along with a range of geophytes and herbs.

Weed cover is generally low overall; Onion Grass (*Romulea rosea*) is present throughout, with higher cover in the Habitat Zone 1F. Weed species of note present in the woodland include Chickweed (*Stellaria media*), Annual Veldt-grass (*Ehrharta longiflora*) and Common Sow-thistle (*Sonchus oleraceus*). Many weed species recorded in previous years were not identified this year due to regionally dry conditions; most notable of these was Silky Plantain (*Plantago bellardii*) which was visually absent in this year's survey.

METHODOLOGY

HABITAT HECTARE ASSESSMENT

A Vegetation Quality Assessment is required in permanent plots (quadrats) within the Swift Parrot offset area. Six (6) 30x30 metre plots are established across the 4.5 ha offset site with one (1) quadrat in Habitat Zone 1F and five (5) quadrats established in Habitat Zone 1G. Plots are marked by permanent posts, placed in the South-West corner, and tagged with a plot number identifier – Swift Parrot Offset Quadrat (SPOQ).

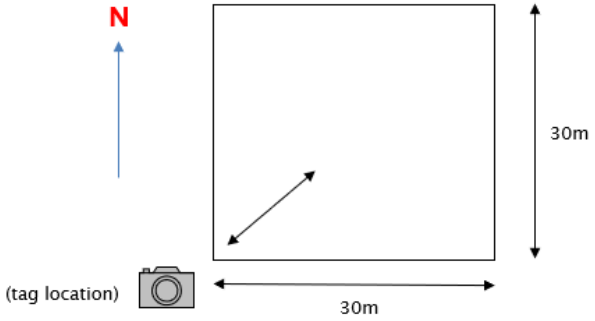
The Habitat scoring method is applied to the quadrats as directed by the OMP, and as outlined in the Vegetation Quality Assessment Manual – Guidelines for applying the habitat hectares scoring method (DSE 2004).

The plot assessment involves identification of all shrub and tree species within each plot, and estimation of cover of each species.

PHOTO POINTS

Photo points for each quadrat are taken annually in Spring and were taken at the time of the quadrat assessment on 15th October 2024. Photographs are taken from the south-west corner marker of each quadrat (Figure 1) looking in a north-easterly direction and including the corner marker post in the centre of the photograph. Photo points collected as part of this assessment are provided an Appendix 3 of this report.

Figure 1. Diagram of quadrat and photo point setup



RESULTS

HABITAT HECTARE SCORES

The assessments were conducted on 15th October 2024 by DEECA-accredited assessor Peter Gannon. Assessments were conducted within each of the 6 quadrats. Results are presented in Table 1 below.

Table 1. Habitat Hectare Assessment, results of Year 6 against 2020 baseline

Habitat Zone / Quadrat			SPOQ1		SPOQ2		SPOQ3		SPOQ4		SPOQ5		SPOQ6	
Bioregion			WIM		WIM		WIM		WIM		WIM		WIM	
EVC name (initials)			PSW		SSW		SSW		SSW		SSW		SSW	
EVC number			283		882_61		882_61		882_61		882_61		882_61	
EVC Conservation Status			DE		EN		EN		EN		EN		EN	
Size of quadrat (ha)			0.009		0.009		0.009		0.009		0.009		0.009	
Year			2020	2024	2020	2024	2020	2024	2020	2024	2020	2024	2020	2024
Site condition	Large Old Trees	10	0	0	10	10	9	10	10	10	10	10	9	10
	Canopy cover	5	5	3	2	5	4	5	3	5	3	5	5	5
	Understorey	25	15	10	10	15	10	15	10	15	15	15	15	15
	Lack of weeds	15	7	13	13	13	9	13	13	13	13	13	9	13
	Recruitment	10	0	1	3	3	10	3	5	3	3	3	10	3
	Organic litter	5	5	3	3	3	5	3	5	3	5	3	5	3
	Logs	5	0	0	3	3	3	3	5	5	5	5	2	2
	EVC standardiser	n/a	1	1	1	1	1	1	1	1	1	1	1	1
	Standardised score	75	33	**31**	45	**53**	51	**53**	52	**55**	55	**55**	56	**52**
Site condition	Patch size	10	19	19	19	19	19	19	19	19	19	19	19	19
	Neighbourhood	10												
	Distance to core	5												
Habitat quality score		100	52	50	64	72	70	72	71	74	74	74	75	71
Habitat score as above = #/100		1	0.52	**.50**	0.64	**0.72**	0.70	**0.72**	0.71	**0.74**	0.74	**0.74**	0.75	**0.71**

VQA VALUES – TREE AND SHRUB RECRUITMENT

The following table presents the percentage cover for each tree and shrub species within each quadrat, compared to the respective EVC benchmarks (SPOQ-02, SPOQ-03, SPOQ-04 and SPOQ-05: EVC 882_61 *Higher rainfall Shallow Sands Woodland*, and SPOQ-01: EVC 283 *Plains sedgy Woodland*). Values highlighted red indicate where the observed cover is less than the benchmark, and those highlighted green indicate where the observed cover is greater than the benchmark.

Table 2 provides the results of the VQA assessments for each of the plots (also discussed below).

Table 2. Habitat Hectare Assessment: percentage cover of tree and shrub species

	Plot no.	SPOQ-01	SPOQ-02	SPOQ-03	SPOQ-04	SPOQ-05	SPOQ-06
	EVC no.	283	882.61	882.61	882.61	882.61	882.61
Immature Canopy Tree (IT) > 5m							
Grey Box	*Eucalyptus microcarpa*	-	2%	2%	-	-	-
Yellow Gum	*Eucalyptus leucoxylon*	1%	3%	3%	10%	1%	5%
	Benchmark cover	**5%**	**5%**	**5%**	**5%**	**5%**	**5%**
	Observed cover	**1%**	**5%**	**5%**	**10%**	**1%**	**5%**
Understory Tree (T) > 5m							
(nil)	(nil)	-	-	-	-	-	-
	Benchmark cover	**na**	**5%**	**5%**	**5%**	**5%**	**5%**
	Observed cover	**-**	**0%**	**0%**	**0%**	**0%**	**0%**
Medium Shrubs (MS) 1- 5m							
Gold Dust Wattle	*Acacia acinacea*	-	-	-	-	-	-
Spreading Wattle	*Acacia genistifolia*	-	-	-	2%	-	-
Golden Wattle	*Acacia pycnantha*	-	10%	10%	8%	10%	10%
	Benchmark cover	**na**	**15%**	**15%**	**15%**	**15%**	**15%**
	Observed cover	**-**	**10%**	**10%**	**10%**	**10%**	**10%**
Small Shrubs (SS) 0.2m - 1m							
Gold Dust Wattle	*Acacia acinacea*	-	5%	-	1%	-	2%
Golden Wattle	*Acacia pycnantha*	-	5%	5%	3%	4%	8%
Spreading Wattle	*Acacia genistifolia*	-	-	-	1%	-	-
Cranberry Heath	*Styphelia humifusum*	-	-	5%	-	-	-
Peach Heath	*Lissanthe strigosa*	-	-	-	-	1%	-
	Benchmark cover	**5%**	**10%**	**10%**	**10%**	**10%**	**10%**
	Observed cover	**0%**	**10%**	**10%**	**5%**	**5%**	**10%**
Prostrate Shrub (PS) < 20cm							
Spreading Eutaxia	*Eutaxia microphylla*	0.5%	0.5%	0.5%	0.5%	-	-
Cranberry Heath	*Styphelia humifusum*	0.5%	0.5%	0.5%	0.5%	1%	1%
	Benchmark cover	**na**	**5%**	**5%**	**5%**	**5%**	**5%**
	Observed cover	**1%**	**1%**	**1%**	**1%**	**1%**	**1%**

The cover of immature canopy tree (IT) is 4% below benchmark in SPOQ-01 and SPOQ-04. Cover is 5% above benchmark in SPOQ-05. The remaining four quadrats present cover of immature canopy trees in line with the EVC benchmarks.

No understorey trees or large shrub (T) species have been recorded in any of the quadrats; the EVC 882_61 benchmark lists Drooping Sheoak (*Allocasuarina verticillata*) as a typical / representative species, whereas EVC 283 provides no such exemplar. There is no understorey tree benchmark requirement for EVC 283 / SPOQ-01.

Medium Shrubs cover was 5% lower than the benchmark cover for all quadrats in EVC 882.61 / SPOQ-02 to SPOQ-06. There is no medium shrub benchmark value for EVC 283 / SPOQ-01.

Small Shrubs cover was 5% lower than the benchmark cover for quadrats SPOQ-01, SPOQ-04 and SPOQ-05. The remaining three quadrats present cover in line with the EVC benchmarks.

Prostrate Shrubs cover was 4% lower than the benchmark cover for quadrats in EVC 882.61 / SPOQ-02 to SPOQ-06. There is no prostrate benchmark requirement for EVC 283 / SPOQ-01, however, this lifeform was recorded during the site assessment with 1% cover.

DISCUSSION

Habitat Hectare Scores indicate a trend of marginal improvement from the baseline scores. It is expected that further improvements will be made through ongoing weed control and facilitation of natural recruitment.

With regard to the requirement of either thinning or planting, understory trees and medium shrubs consistently presented at 5% below the benchmark. Given these figures are not considered significantly less than 5%, as is stated in the OMP as a trigger for action, there is currently no requirement for either thinning or planting.

While there are no understory trees recorded, this is not deemed to negatively impact the future habitat resources for Swift Parrot. Revegetation of Yellow Gum and Grey Box completed in previous years is evident, as is natural recruitment of both canopy species, albeit at a slow rate that is typical of the Wimmera bioregion. Browsing pressure on regeneration Eucalypts does not appear to be a present threat within the site; no rabbit or deer activity was recorded during the survey.

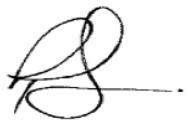
Management should continue to focus on weed control and ongoing management and monitoring of rabbits and other threats to enable to site to continue to naturally regenerate.

GENERAL OBSERVATIONS

- The property, and region in general, was observed to be very dry; rainfall totals recorded for this season's spring were below average.
- There was a noticeable reduction in weed cover throughout whole offset site from previous years; attributable in part to dry seasonal conditions, but also on-going weed control conducted by the landowners.
- There were no signs of recent rabbit activity, however, old warrens and scats were observed.
- Identification and numbering of large trees within the offset site is recommended for future monitoring and accounting of Swift Parrot canopy habitat.

Please call me if you have any queries.

Sincerely,



Peter Gannon

Ecocentric Environmental Consulting

ATTACHMENTS

A- References
B- Quadrat species list – indigenous
C- Quadrat species list – exotic
D- Monthly Rainfall Data - BOM
E- Photo points
F- Maps

LIMITATIONS

This report relies on contributions from several consultancies and information provided by the landowner. Findings contained herein are therefore based on the reports provided at the date of publication; Ecocentric will not be held accountable for post-publication variations associated with report updates from external consultancies, agencies, or parties.

This report assumes that the reader is familiar with the proposed development and its objectives, and the planning and financing context that brought about its instigation.

ATTACHMENT A: REFERENCES

Biosis (2017). *Old Glenorchy Road, Deep Lead, Victoria: Offset Management Plan*. Report for VicRoads.

Bureau of Meteorology (BOM) (2024) Monthly Rainfall (mm) STAWELL AERODROME [Data set] Bureau of Meteorology. http://www.bom.gov.au/jsp/ncc/cdio/weatherData/av?p_nccObsCode=139&p_display_type=dataFile&p_startYear=&p_c=&p_stn_num=079105

Brett Lane & Associates (2017). *Offset Management Plan for Credit Site BB-3018-LA01*. Prepared for Deep Lead Property Pty Ltd.

Deep Lead Property (2022). *BBA-3018 LA01 Annual Report – Year 5*. Prepared for Department of Environment, Land, Water and Planning (DELWP).

DSE (2004). *Native Vegetation: Sustaining a living landscape. Vegetation Quality Assessment Manual – Guidelines for applying the Habitat hectares scoring method. Version 1.3.* Victorian Government Department of Sustainability & Environment, Melbourne.

Practical Ecology (2020). *Swift Parrot Offset Monitoring Year 1. Old Glenorchy Road, Deep Lead*. Report prepared for Deep Lead Property Pty Ltd.

Practical Ecology (2021). *Swift Parrot Offset Monitoring Year 2. Old Glenorchy Road, Deep Lead*. Report prepared for Deep Lead Property Pty Ltd.

White Gums Australia Environmental Consulting (2016). *Flora Survey, Private Property, Od Glenorchy Road, Deep Lead, Vic.* Report prepared for Lincoln Kern Ecological and Bushfire Management Consultant.

ATTACHMENT B: QUADRAT SPECIES LIST – INDIGENOUS

Scientific name	Common name	SPOQ1	SPOQ2	SPOQ3	SPOQ4	SPOQ5	SPOQ6
Acacia acinacea	Gold Dust Wattle			X	X		X
Acacia genistifolia	Spreading wattle				X		
Acacia pycnantha	Golden Wattle		X	X	X	X	X
Acaena echinata	Sheep's Burr	X		X	X	X	
Arthropodium sp.	Chocolate-lily						
Arthropodium strictum	Chocolate Lily						
Asperula wimmerana	Wimmera Woodruff	X					
Austrostipa sp. 1	Spear Grass	X				X	X
Brachyscome dentata	Lobe-seed Daisy						
Bulbine bulbosa	Bulbine Lily						
Calocephalus citreus	Lemon Beauty-heads	X				X	
Caladenia sp.	Pink fingers						
Chamaescilla corymbosa	Blue Stars						
Chorizandra enodis	Black Bristle-brush	X	X		X	X	X
Convolvulus sp.	Pink Bindweed	X					
Crassula sp.	Crassula						
Cymbonotus preissianus	Austral Bears Ears						
Daucus glochidiatus	Native Carrot						
Dianella admixta	Black-anther Flax-lily	X	X	X	X	X	X
Drosera sp.	Sundew						
Eucalyptus leucoxylon	Yellow Gum	X	X	X	X	X	X
Eucalyptus microcarpa	Grey Box		X	X			
Eutaxia microphylla	Spreading Eutaxia	X	X		X		
Geranium sp.	Geranium sp.						
Goodenia pinnatifida	Cut-leaf Goodenia	X	X	X	X	X	X
Hibbertia sp.	Hibbertia sp.						
Hydrocotyle sp.	Pennywort			X		X	
Juncus sp. 1	Juncus	X					
Lagenophora stipitata	Common Lagenophora		X	X			X

Scientific name	Common name	SPOQ1	SPOQ2	SPOQ3	SPOQ4	SPOQ5	SPOQ6
Lepidosperma laterale	Variable Sword-sedge	X	X	X		X	X
Lepidosperma sp. 2	Sword-sedge 2		X	X	X	X	X
Leptorhynchos squamatus	Scaly Buttons	X	X				
Linum marginale	Native Flax	X					
Lissanthe strigosa	Peach Heath					X	
Lomandra filiformis	Wattle Matt-rush						
Microseris lanceolata	Yam Daisy						
Oxalis perennans	Grassland Wood-sorrel					X	
Plantago varia	Variable plantain						
Poa sp. 1	Poa sp 1						
Poa sp. 2	Poa sp 2						
Poa sp. 3	Poa sp 3						
Pterostylis sp.	Greenhood						
Rush 3.	Rush						
Rytidosperma caespitosum	Common Wallaby Grass					X	X
Rytidosperma sp. 2	Wallaby Grass	X				X	
Senecio quadridentatus	Cottony Fireweed			X	X	X	X
Senecio picridioides	Fireweed			X			
Senecio hispidulus	Rough fireweed				X		X
Schoenus apogon	Common Bog-sedge	X					X
Siloxerus multiflorus	Small Wrinklewort						
Styphelia humifusa	Cranberry Heath	X	X		X	X	X
Swainsona procumbens	Broughton Pea	X					
Thelymitra sp.	Sun orchid						
Thysanotus patersonii	Twining Fringe Lily						
Veronica plebeia	Creeping Speedwell		X	X		X	X
Vittadinia gracilis	Cottony New Holland Daisy	X				X	X
Wahlenbergia sp.	Bluebell				X		X
Wurmbea dioica	Early Nancy						

ATTACHMENT C: QUADRAT SPECIES LIST – EXOTIC

Scientific name	Common name	SPOQ1	SPOQ2	SPOQ3	SPOQ4	SPOQ5	SPOQ6
Aira sp.	Hairgrass				X		
Anthoxanthum odoratum	Sweet Vernal-grass						
Briza maxima	Large Quaking Grass				X		X
Briza minor	Small Quaking Grass						
Centurium erythraea	Common Centaury	X	X				
Cirsium vulgare	Spear Thistle	X					
Ehrhata longiflora	Annual Veldt-grass						
Hypochaeris radicata	Cats Ear				X	X	X
Plantago bellardii	Silky plantain						
Romulea rosa	Onion grass	X	X	X	X		
Rumex sp.	Dock						
Sonchus oleraceus	Common Sow Thistle						
Stellaria media	Chickweed				X		
Vulpia bromoides	Squirrel-tail Fescue						

*Note: Species lists include those that have been identified in previous surveys, but were not present at the time of 2024 survey (blank)

ATTACHMENT D: MONTHLY RAINFALL DATA - BOM

Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
2012	18.6	24.6	43.8	15.6	23.8	50.6	53.4	61.2	31.0	15.2	10.4	18.2	366.4
2013	0.0	50.2	3.4	13.2	24.2	56.6	82.8	68.6	41.8	57.0	9.2	10.2	417.2
2014	19.4	4.8	4.8	48.6	31.2	66.0	35.0	12.8	14.2	5.2	29.2	16.0	287.2
2015	66.4	10.8	10.6	24.2	26.6	46.8	48.4	15.8	42.8	1.6	19.8	14.6	328.4
2016	32.4	17.2	26.4	11.4	110.0	59.4	69.4	54.6	136.2	54.0	17.0	53.2	641.2
2017	31.6	13.4	23.8	59.0	62.0	4.0	57.8	75.0	31.8	46.8	33.6	24.8	463.6
2018	9.8	8.4	15.8	9.8	49.2	41.2	45.8	78.0	7.6	21.0	26.0	66.0	378.6
2019	2.4	22.2	4.2	1.4	133.0	77.6	44.4	43.4	23.4	9.8	21.0	1.8	384.6
2020	20.8	37.2	10.6	58.8	43.2	34.2	22.0	43.8	54.6	59.8	(35.8)	17.6	438.4
2021	110.4	3.2	32.0	8.2	36.4	91.6	67.8	47.6	35.8	63.6	48.6	4.6	549.8
2022	42.8	16.6	24.6	36.0	29.4	52.2	44.0	103.4	64.0	144.0	85.8	18.6	661.4
2023	3.0	15.4	25.4	58.2	16.2	104.6	49.2	27.0	20.8	19.8	39.8	78.0	457.4
2024	86.0	0.0	2.6	35.6	1.8	28.6	40.6	34.6	16.4	18.2			264.4*

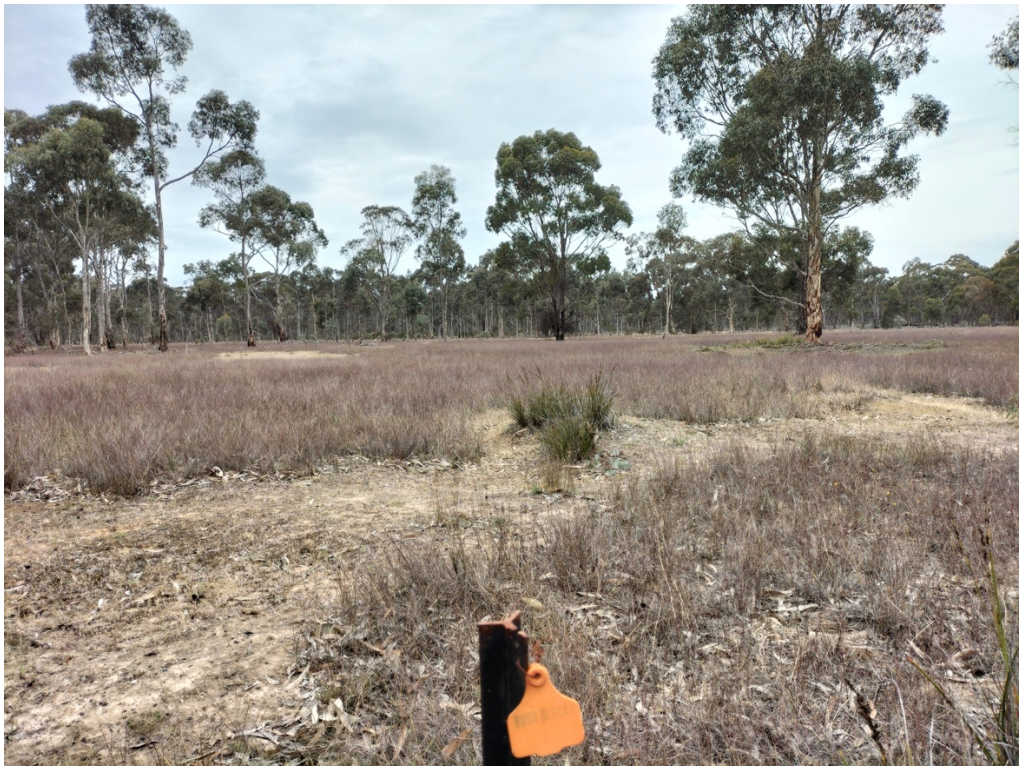
Data retrieved from Stawell Aerodrome, approx. 10km from Study Area

() missing data retrieved from weather station at Great Western, approx. 22km from Study Area

*Average to date

ATTACHMENT E: PHOTOPOINTS

SPOQ1 – 7th January 2020



SPOQ1 – 15th October 2024

SPOQ2 – 7th January 2020

SPOQ2 - 15th October 2024

SPOQ3 – 7th January 2020

SPOQ3 - 15th October 2024

SPOQ4 - 7th January 2020

SPOQ4 - 15th October 2024

SPOQ5 – 7th January 2020

SPOQ5 - 15th October 2024

SPOQ6 – 7th January 2020

SPOQ6 - 15th October 2024

ATTACHMENT F: MAPS

(overleaf)


SWIFT PARROT OFFSET SITE
Old Glenorchy Road, Deep Lead
Swift Parrot Offset Site
Property boundary (cadastre)
Offset monitoring quadrats
SPOQ1
SPOQ2
SPOQ3
SPOQ4
SPOQ5
SPOQ6
0
100
200 m
ecocentric
environmental consulting™
27 April 2023
1:4,000 @A4
GDA94VicGridl
ESRI public aerial