

MANZEENE AVENUE, LARA
YEAR 2 OFFSET MONITORING REPORT–
WARRAMBEEN OFFSET SITE

Manzeene Avenue Development Project Trust



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1. INTRODUCTION

Manzeene Avenue Development Project Trust Pty Ltd engaged Brett Lane & Associates (BL&A) to conduct an annual offset monitoring survey of an offset site at Warrambeen Estate, Shelford. This area is used as an offset for the permitted native vegetation removal at Manzeene Village, Lara and is subject to an offset monitoring plan prepared by Brett Lane & Associates (BL&A 2015).

A baseline monitoring of the offset site was undertaken in December 2015 for a 30 hectare area used as an offset in three stages. This report focuses on Stages 1 and 2 of the offset area.

This investigation was commissioned to collect year two data of the monitoring program of the offset site, including the condition of native vegetation, extent of weed cover in the offset site and the adequacy of fencing and grazing regimes. The data will be used in the monitoring and adaptive management of the offset site consistent with the Offset Management Plan (OMP) for this site (BL&A 2015).

Specifically, the scope of the investigation included:

- Estimation of overall weed cover and cover of each high threat [woody] weed species (refer to Table 11 of the OMP);
- Take photos at of photo points;
- Assessment of integrity of offset zone fencing;
- Assessment of level of grazing pressure;
- Monitoring of compliance with land-use commitments and other management commitments; and
- Monitoring of quality of NTGVVP.

This report is divided into the following sections:

Section 2 provides an overview of the characteristics of the study area and describes the sources of information including the background to the project.

Section 3 describes the methods used for the field survey and monitoring.

Section 4 presents the investigation results, describing the flora and fauna of the study area.

Section 5 discusses the implications of the management plan implementation, analysis of results and recommendations to improve the management process.

This investigation was undertaken by a team from BL&A, comprising Justin Sullivan (Senior Ecologist) and Inga Kulik (Senior Ecologist & Project Manager).

2. SITE DESCRIPTION AND BACKGROUND

2.1. Site Description

Stages 1 (4.9 ha) and Stage 2 (11.6 ha) of the offset site (Figure 1) are located in the northern part of a large property along the Rokewood-Shelford Road, in Shelford. They, along with a further area of grassland (Stage 3, 13.5 ha) form part of a 30 hectare area set aside for current and future offsets, which is in turn part of an extensive 195 hectare paddock.

The offset property is known as Warrambeen Gumley Land Trust and is located approximately 50 kilometres north west of Geelong. The offset property is bordered by Rokewood Shelford Road to the south, Lonies Road to the east and Gumley Mount Mercer Road to the west. The offset property operates as a sheep station as it has done for an extended period of time.

Large areas of native grassland exist in the area. The landowner of the offset property has indicated that there are over 500 hectares (including the offset sites) of native grassland within the Warrambeen Gumley Land Trust alone (Landowners, pers. comm. 2010).

The offset site lies within the Victorian Volcanic Plain bioregion and falls within the Corangamite catchment.

2.2. Background

This project was commissioned by Manzeene Avenue Development Project Trust Pty Ltd to provide annual data for the study area which is being used for native vegetation offset credits. The offset site is a requirement for the construction of the proposed Manzeene Village Development at Lara, under the Victorian *Biodiversity assessment guidelines* (DEPI 2013) and *Environment Protection and Biodiversity Conservation* (EPBC) Act 1999. The offset monitoring will include assessment against the requirements detailed by the offset management plan produced by Brett Lane & Associates (BL&A 2015).

The offset site within the Warrambeen property is secured as offset by Manzeene Avenue Development Project Trust Pty Ltd under Section 173 of the *Planning and Environment Act 1987*. The requirement of the Offset Security Agreement between Manzeene Avenue Development Project Trust Pty Ltd, City of Greater Geelong and the Landowners, is to undertake monitoring at the offset site in the years 1, 2, 5 and 10.

Offset Management Plan

The following assessments were undertaken by BL&A to gather monitoring data under the offset management plan:

- Flora surveys by a qualified Botanist, documenting the overall vegetation condition and percentage cover for weed species;
- Assessment of mapped vegetation against the criteria for the EPBC Act listed community *Natural Temperate Grasslands of the Victorian Volcanic Plain* (NTGVVP).

The offset management plan outlined the following management actions which need to be undertaken:

- *Pest Plant Control:* Herbaceous weed control to be undertaken regularly throughout the year using spot spraying technique. Focusing on elimination of woody weeds and high threat herbaceous weeds;
- *Pest Animal Control:* Monitor for signs of pest animal activity, taking action where required;
- *Access:* Regularly check integrity of fencing throughout the life of the management plan;
- *Biomass Control:* Strategically graze the study area (in winter if dry), generally spelling in spring/summer to maintain and enhance a herb-rich open ground cover and significant species populations every year. Avoid grazing in any ephemerally wet areas.
- *Monitoring:* Regularly monitor composition and trends of vegetation to assess management effectiveness and guide future management actions. Monitoring will occur in years 1, 2, 5 and 10, with a brief report prepared for years 1 and 2, and a more detailed monitoring report at the end of year five and year 10. This report establishes year one data for the annual monitoring program.

Methods employed to address the offset management plan requirements are presented in Table 1.

3. METHODS

3.1. Field methodology

Habitat hectare, weed-cover assessments and photo point monitoring was conducted on 30th November 2017. During this assessment, the areas of Stage 1 and Stage 2 supporting remnant native vegetation were inspected on foot.

Incidental records of threatened flora species were taken within all vegetation types and landforms whilst undertaking the habitat hectare and weed cover assessments. Specimens requiring identification using laboratory techniques were collected.

Photo points that were originally established in Stage 1 in March 2016 were again taken in the same direction at the time of the current survey (November 2017).

Photos were also taken in pre-established photo points in Stage 2. Photo point data from both stages is provided below in Table 1.

Table 1: Photopoint data

Stage 1		
Pole No.	Photo direction	Notes
145	S	
144	WNW	
143	S	
142	ESE	
146	SSE	(No pole)
Stage 2		
Pole No.	Photo direction	Notes
364	S	
365	E	
366	N	
363	SE	
302	SW	
367	W	
368	NW	

3.2. Offset management actions

BL&A have reviewed the offset management plan to ensure that the proposed methods, discussed below, correspond to the requirements of the offset management plans.

The management actions include:

- Access control and fencing;
- Biomass reduction;
- Pest plant control;
- Pest animal control; and
- Protection of significant flora and fauna.

Table 1 details the methods used for the offset site monitoring.

Based on this the following surveys were undertaken, discussed in the sections below:

- Habitat hectare assessment (including documentation of the introduced flora species occurring in the offset site); and
- Photo point maintenance.

Table 2: Monitoring methods

Monitoring actions	Relevant performance measures (as per OMP)	Monitoring method
Access control and fencing	Maintenance of existing fencing	Visual inspection to determine the condition of the fence
Biomass reduction	Appropriate stock grazing	Discussions with the landowner as to how stock was managed throughout the year (including when the grassland was rested from grazing)
	Maintenance of NTGVVP	Monitoring of vegetation to determined qualification as NTGVVP
Pest plant control	No increase in cover of any weed species	Visual inspection of site and through habitat hectare assessment
	No new weed species introduced	Visual inspection of site and through habitat hectare assessment
Pest animal control	Reduce the number of rabbits	Discussions with landowner as to how pest animals have been controlled
	Identify all rabbit warrens	Visual Inspection

3.2.1. *Habitat hectare and weed cover assessment*

Native vegetation is assessed using the habitat hectare method, which is a DELWP approved vegetation quality assessment method. Native vegetation is currently defined in the Victoria Planning Provisions as 'plants that are indigenous to Victoria, including trees, shrubs, herbs and grasses'. The *Biodiversity assessment guidelines* define native vegetation as belonging to two categories (DEPI 2013):

- Remnant patch; or
- Scattered trees.

The definitions of these categories are provided below, along with the prescribed DELWP methods to assess them.

Remnant patch

A remnant patch of native vegetation is either:

- An area of native vegetation where at least 25 per cent of the total perennial understorey plant cover is native; and/or
- Any area with three or more native canopy trees¹ where the canopy foliage cover² is at least 20 per cent of the area.

Remnant patch condition is assessed using the habitat hectare method (Parkes *et al.* 2003; DSE 2004) whereby components of native vegetation (e.g. tree canopy, understorey and ground cover) are assessed against an EVC benchmark. The score effectively measures the percentage resemblance of the vegetation to its original condition.

Scattered trees

The *Biodiversity assessment guidelines* define scattered trees as a native canopy tree² that does not form part of a remnant patch of native vegetation.

Scattered trees are counted, the species identified and their DBH (diameter at breast height or 1.3 metres above ground) measured or estimated.

The percentage cover of each weed species present within the offset site was recorded during the habitat hectare assessment. The condition of fencing and evidence of pest animals was also recorded at this time.

3.2.2. *Photo point maintenance*

Photo monitoring points were taken (see Figure 1), to get a representation of the vegetation types and condition within the study area. Photo points that were established in Stage 1 in March 2016 were again taken here. Photos were also taken in pre-established photo points in Stage 2.

¹ A canopy tree is a reproductively mature tree that is greater than 3 metres in height and is normally found in the upper layer of the relevant vegetation type.

² Foliage cover is the proportion of the ground that is shaded by vegetation foliage when lit from directly above.

3.3. Limitations of field assessment

The temporally constrained nature of the field assessments can result in a failure to record all species and life-forms because of the seasonal absence of some species. However, this limitation was not considered to undermine the current investigation, which was designed to provide an indicative, rather than exhaustive inventory of species in the study area.

The survey was undertaken in late spring, which is adequate to assess most of the features of this community.

4. ASSESSMENT RESULTS

4.1. Habitat hectare assessment

4.1.1. Habitat hectares

Evidence on site, including floristic composition and soil characteristics, suggested that *Heavier-soils Plains Grassland Heavier Soils* (EVC 132_61) was present within the study area (Figure 1).

Heavier-soils Plains Grassland (EVC 132_61) is described in the benchmark as “treeless vegetation mostly less than 1 m tall dominated by largely graminoid and herb life forms. Occupies fertile cracking basalt soils prone to seasonal waterlogging in areas receiving at least 500 mm annual rainfall” (see Appendix 3).

One remnant patch (referred to herein as Offset Zone Stages 1&2 (see Figure 1) comprising the abovementioned EVC is pertinent to this report (Table 3).

Table 3: Description of offset zone

Offset Zone	Bioregion	EVC	Description
Stages 1&2	VVP	<i>Heavier-soils Plains Grassland</i> (EVC 132_61) NTGVVP	A large continuous patch of very high quality native grassland that was dominated by a number of indigenous grasses and herbs. Tussock grasses, wallaby grasses, Kangaroo grass and Spear grass species were co-dominant across the area, with native herbs such as Scaly Buttons, Blue Devil, and Poison Lobelia common and widespread throughout the entire site. Recruitment area was moderately low, with moderate leaf litter presence. The area was gently undulating, with a number of basalt rocky rises. Introduced species were present, with Wild Oat and Yorkshire Fog providing the highest cover.

The habitat hectare assessment results for this habitat zone is provided in Table 4. More detailed habitat scoring results are presented in Appendix 2. With a habitat score of 61, the site is undoubtedly of very high quality and conservation value.

Table 4: Summary of habitat hectare assessment results

Offset Zone	EVC	Area (ha)	Habitat Score (out of 100)
Stages 1&2	Heavier-soils Plains Grassland (EVC 132_61)	16.5	61

4.1.2. Threatened species

Two state listed threatened flora species were recorded during the offset site monitoring; Small Milkwort (Photo 1) and Small Scurf-pea (Photo 2). While two plants of Small Milkwort were recorded, numerous Small Scurf-pea plants were recorded, namely in the western part of Stage 1. Small Milkwort is listed as threatened under the FFG Act and listed as vulnerable on the DELWP Advisory list. Small Scurf-pea is listed as threatened under the FFG Act and listed as endangered on the DELWP Advisory list.



Photo 1: Small Milkwort (*Comesperma polygaloides*) at the offset site



Photo 2: Small Scurf-pea (*Cullen parvum*) at the offset site

The analysis within the OMP (BL&A 2015) indicated that the additional listed flora species are likely to occur or have the potential to occur:

- Clover Glycine (Vulnerable – EPBC Act).
- Spiny Rice-flower (Critically endangered – EPBC Act).

These species were not recorded in the vegetation assessment.

4.1.3. Access control and fencing

The fencing was found to be of good quality, and is required to be maintained over the years to retain this standard. A fence surrounds the 195 hectare paddock, of which the offset site forms a portion, and no additional fence between different offset parties is required (as per BL&A 2015).

There appeared to be very little impact from vehicle access through the offset site, and people are discouraged from accessing the area unless it is absolutely necessary (Landholder pers. com., Dec 2016).

4.1.4. Biomass reduction

Discussions with the landholder found that the following grazing was undertaken at the site during Year 2:

- 2075 year 1 wethers grazed the site from 3.5.17 until 6.6.17
- 497 single ewes grazed the site from 12.6.17 until 28.8.17

Assessment of the site found that the current grazing pressure at the time of the survey was low.

4.1.5. Pest animal monitoring

Evidence of Rabbits at the offset site was low, however Rabbits have been recorded on the broader property.

4.1.6. Pest plant monitoring

Weed species currently contribute to approximately 35% of the vegetative cover in the offset site. Under the offset plan (BL&A 2015), to achieve site gain all weeds are required to be controlled such that their cover does not increase beyond original levels. In addition to this, there are obligations for land managers under the *Catchment and Land Protection Act 1994* with respect to eradicating regionally prohibited weeds and preventing the growth and spread of regionally controlled weeds. The pest plant species recorded on-site and their percentage cover at the time of the current survey are included in Table 5.

Five additional weed species were recorded in the offset site that were not previously recorded in Year 1. This included Barley Grass, Large Quaking-grass, Onion Grass, Sweet Vernal Grass and Toowoomba Canary Grass.

Weed cover levels of some weed species previously recorded were noted as having increased. This included Oat and Squirrel Tail Fescue, which both increased in cover. The cover of Clover was noted as having largely decreased.

While the cover and diversity of native grassland species at the offset site is still at a healthy level, the weed cover at the site seems to have increased since the Year 1 monitoring. Weed control methods must be implemented in the coming year to target particular species, namely Oat and Yorkshire Fog.

Table 5: Pest plant data year two

Common Name	Scientific name	Weed Category	Control under offset plan - Ensure cover does not increase beyond current level	% Cover	
				Year 1 (30 Nov 2016)	Year 2 (30 Nov 2017)
Barley Grass	<i>Hordeum vulgare</i>	Other weed	X	N/A*	<1%
Buck's-horn Plantain	<i>Plantago coronopus</i>	Other weed	X	<1%	<1%
Capeweed	<i>Arctotheca calendula</i>	Other weed	X	<1%	<1%
Cat's Ear	<i>Hypochoeris radicata</i>	Other weed	X	1%	1%
Clover	<i>Trifolium sp.</i>	High-threat weed	X	15%	2%
Hair Grass	<i>Aira sp.</i>	Other weed	X	1%	<1%
Large Quaking-grass	<i>Briza maxima</i>	Other weed	X	N/A*	<1%
Narrow-leaved Clover	<i>Trifolium angustifolium var. angustifolium</i>	Other weed	X	<1%	<1%
Oat	<i>Avena sp.</i>	Other weed	X	4%	20%
Onion Grass	<i>Romulea rosea</i>	Other weed	X	N/A*	<1%
Rough Dog's-tail	<i>Cynosurus echinatus</i>	Other weed	X	<1%	<1%
Rough Sow-thistle	<i>Sonchus asper s.l.</i>	Other weed	X	<1%	<1%
Saffron Thistle	<i>Carthamus lanatus</i>	Other weed	X	<1%	<1%

Common Name	Scientific name	Weed Category	Control under offset plan - Ensure cover does not increase beyond current level	% Cover	
				Year 1 (30 Nov 2016)	Year 2 (30 Nov 2017)
Soft Brome	<i>Bromus hordeaceus</i>	Other weed	X	3%	<1%
Spear Thistle	<i>Cirsium vulgare</i>	High-threat weed	X	<1%	<1%
Squirrel-tail Fescue	<i>Vulpia bromoides</i>	Other weed	X	<1%	5%
Sweet Vernal Grass	<i>Anthoxanthum odoratum</i>	Other weed	X	N/A*	<1%
Toowoomba Canary-grass	<i>Phalaris aquatica</i>	Other weed	X	N/A*	<1%
Wimmera Rye-grass	<i>Lolium rigidum</i>	Other weed	X	1%	1%
Wood-sorrel	<i>Oxalis sp.</i>	Other weed	X	<1%	<1%
Yorkshire Fog	<i>Holcus lanatus</i>	Other weed	X	1%	5%

*Weed species not previously recorded in the offset site. Bold % cover is where the cover of weed species has changed since Year 1.

4.1.1. Qualification as NTGVVP

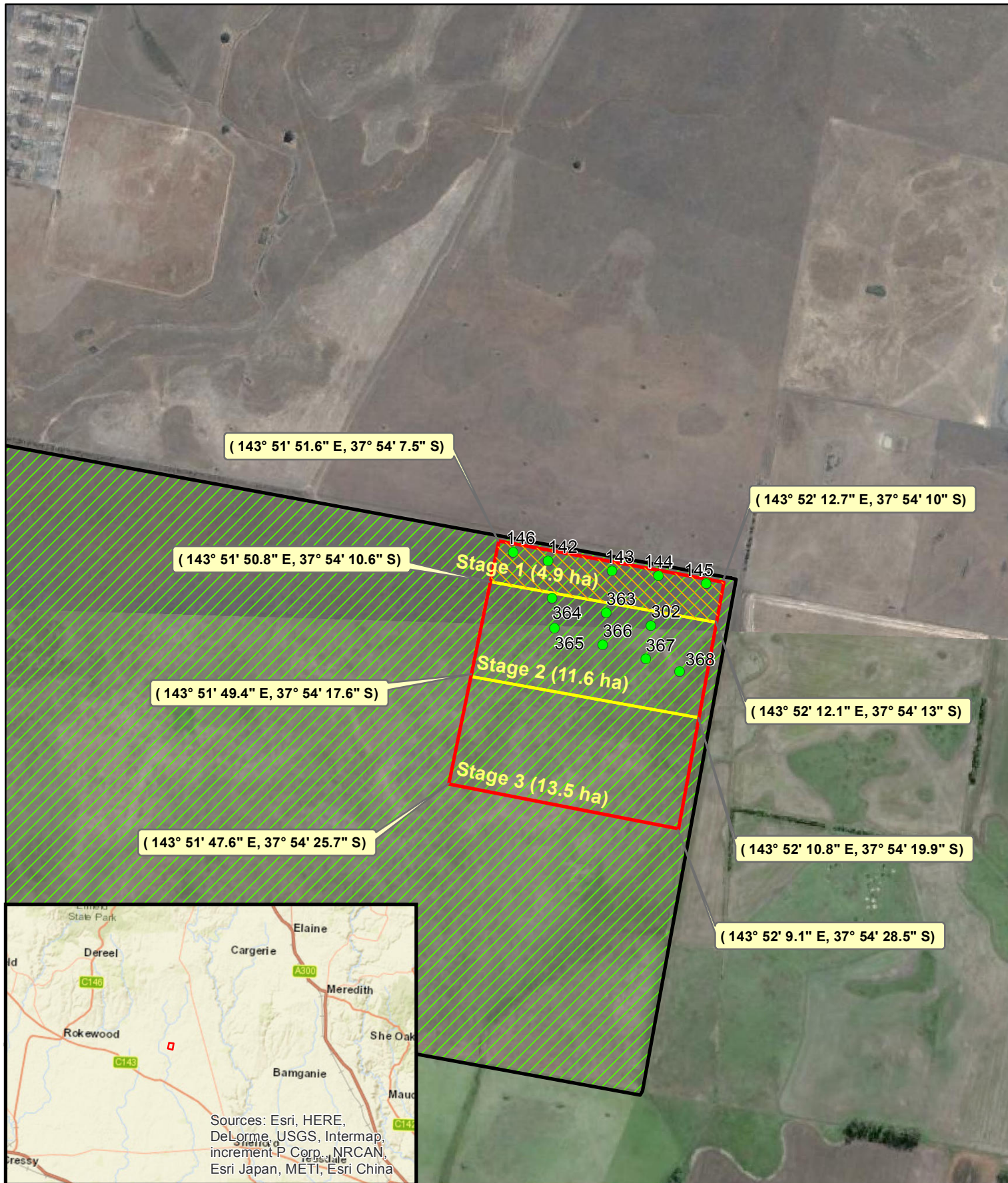
The entirety of the offset site qualified as *Natural Temperate Grasslands of the Victorian Volcanic Plain* (NTGVVP) at the time of year two survey as it met all the diagnostic features and two of the three condition thresholds from the listing advice (TSSC 2008), as detailed in Table 6.

Table 6: Qualification of offset site at NTGVVP

NTGVVP key diagnostic features (must meet all)	
Quaternary basalt soils within the Victorian Volcanic Plain bioregion.	Yes
At least one of the following grass genera is the dominant native species in the ground layer: Kangaroo-grass, Wallaby-grass, Spear-grass and/or Tussock-grass.	Yes
For a native vegetation remnant >1 hectare in size, the minimum contiguous size of a grassland patch is 0.5 hectare and the density of mature trees within the grassland patch should not exceed 2 trees per hectare.	Yes
NTGVVP condition thresholds (must meet at least one)	
The total perennial tussock cover represented by the native grass genera Kangaroo-grass, Wallaby-grass, Spear-grass and/or Tussock-grass is at least 50%.	Yes
The ground cover of native forbs (wildflowers) is at least 50% of total vegetation cover during spring-summer (September to February).	No
The cover of non-grass weeds is less than 30% of total vegetation cover at any time of the year.	Yes

4.2. Photo points

The images from the photo points are shown in Appendix 1. Photo monitoring points were taken in the area of Stage 1 and 2.



Legend

- Offset site
- Property boundary
- Stages
- Plains Grassland/ NTGVVP
- Photo points
- Study area

0 195 390 780 Metres

Figure 1: Offset Site

Project: Warrambeen Offset Site

Client: Manzeene Avenue Development Project Trust

Project No.: 11212

Date: 8/12/2017

Created By: M. Ghasemi / I. Kulik

BL&A

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- Experience
- Knowledge
- Solutions

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5. REFERENCES

- Brett Lane & Associates (BL&A) 2015, *Manzeene Avenue, Lara – Offset Management Plan* Report No. 11212 (4.4), prepared for Manzeene Avenue Development Project Trust.
- Brett Lane & Associates (BL&A) 2016, *Manzeene Avenue, Lara – Warrambeen Baseline Offset Monitoring* Report No. 11212 (6.0), prepared for Manzeene Avenue Development Project Trust.
- Department of Environment and Primary Industries (DEPI) 2013, *Permitted clearing of native vegetation: Biodiversity assessment guidelines* (dated September 2013), Department of Environment and Primary Industries, East Melbourne, Victoria.
- Department of Sustainability, Environment, Water, Populations and Communities (DSEWPaC) 2012, *Environmental Protection and Biodiversity Conservation Act 1999 – Environmental Offsets Policy*, Canberra, October 2012.
- Department of Sustainability and Environment (DSE) 2004, *Native Vegetation: sustaining a living landscape, Vegetation Quality Assessment Manual – guidelines for applying the Habitat Hectare scoring method (Version 1.3)*. Department of Sustainability and Environment, East Melbourne, Victoria.
- Threatened Species Scientific Committee (TSSC) 2008, *Commonwealth Listing Advice on Natural Temperate Grassland of the Victorian Volcanic Plain*, Department of the Environment, Canberra.

Appendix 1: Photo-point monitoring locations

Photo No.	Photograph	Photo direction and date	WP #	Notes
142 (Stage 1)		East South-east March 2016		Habitat Zone A EVC: <i>Heavier Soils</i> Plains Grassland (132_61)
		East South-east 30/11/2016	37° 54' 09" S, 143° 52' 02" E	Habitat Zone A EVC: <i>Heavier Soils</i> Plains Grassland (132_61)
		ESE 30/11/2017	37° 54' 09" S, 143° 51' 56" E (NOTE – This is the actual location of pole 142)	In Stage 1 EVC: <i>Heavier Soils</i> Plains Grassland (132_61) Spear Thistle and high cover of Wild Oat present

Photo No.	Photograph		Photo direction and date	WP #	Notes
143 (Stage 1)			South March 2016	37° 54' 09" S, 143° 52' 02" E	Habitat Zone A EVC: <i>Heavier Soils</i> Plains Grassland (132_61)
			South 30/11/2016		Habitat Zone A EVC: <i>Heavier Soils</i> Plains Grassland (132_61)
			S 30/11/2017		In Stage 1 EVC: <i>Heavier Soils</i> Plains Grassland (132_61)

Photo No.	Photograph		Photo direction and date	WP #	Notes
144 (Stage 1)			West North-west March 2016	37° 54' 09" S, 143° 52' 06" E	Habitat Zone A EVC: <i>Heavier Soils</i> Plains Grassland (132_61)
			West North-west 30/11/2016		Habitat Zone A EVC: <i>Heavier Soils</i> Plains Grassland (132_61)
			WNW 30/11/2017		In Stage 1 EVC: <i>Heavier Soils</i> Plains Grassland (132_61)

Photo No.	Photograph	Photo direction and date	WP #	Notes
145 (Stage 1)		South March 2016	37° 54' 10" S, 143° 52' 11" E	Habitat Zone A EVC: <i>Heavier Soils</i> Plains Grassland (132_61)
		South 30/11/2016		Habitat Zone A EVC: <i>Heavier Soils</i> Plains Grassland (132_61)
		S 30/11/2017		In Stage 1 EVC: <i>Heavier Soils</i> Plains Grassland (132_61)

Photo No.	Photograph			Photo direction and date	WP #	Notes
146 (Stage 1)				South South-east 30/11/2016	37° 54' 14" S 143° 51' 89" E	Habitat Zone A EVC: <i>Heavier Soils</i> Plains Grassland (132_61)
				SSE 30/11/2017 (Note – No pole exists at this location at 30/11/2017)	37° 54' 14" S 143° 51' 52" E	In Stage 1 EVC: <i>Heavier Soils</i> Plains Grassland (132_61) Spear Thistle and Wild Oat present
Stage 2						
302				SW 30/11/2017	37° 54' 13" S 143° 52' 06" E	In Stage 2 EVC: <i>Heavier Soils</i> Plains Grassland (132_61)

Photo No.	Photograph			Photo direction and date	WP #	Notes
363				SE 30/11/2017	37° 54' 12" S 143° 52' 01" E	In Stage 2 EVC: <i>Heavier Soils</i> Plains Grassland (132_61)
364				S 30/11/2017	37° 54' 11" S 143° 51' 56" E	In Stage 2 EVC: <i>Heavier Soils</i> Plains Grassland (132_61) High cover of Wild Oat present
365				E 30/11/2017	37° 54' 14" S 143° 51' 57" E	In Stage 2 EVC: <i>Heavier Soils</i> Plains Grassland (132_61) High cover of Wild Oat present

Photo No.	Photograph			Photo direction and date	WP #	Notes
366				N 30/11/2017	37° 54' 15" S 143° 52' 01" E	In Stage 2 EVC: <i>Heavier Soils</i> Plains Grassland (132_61)
367				W 30/11/2017	37° 54' 16" S 143° 52' 05" E	In Stage 2 EVC: <i>Heavier Soils</i> Plains Grassland (132_61) High cover of Wild Oat present
368				NW 30/11/2017	37° 54' 17" S 143° 52' 09" E	In Stage 2 EVC: <i>Heavier Soils</i> Plains Grassland (132_61)

Appendix 2: Detailed habitat hectare assessment results

Habitat Zone			Stage 1
Bioregion			VVP
EVC Number			132_61
Site Condition	Large Old Trees	/10	0
	Tree Canopy Cover	/5	0
	Lack of Weeds	/15	6
	Understorey	/25	15
	Recruitment	/10	6
	Organic Matter	/5	5
	Logs	/5	0
	Site condition standardising multiplier		1.36
	Site Condition subtotal		44
Landscape Context	Patch Size	/10	8
	Neighbourhood	/10	4
	Distance to Core	/5	5
Total Habitat Score		/100	61
Habitat score out of 1			0.61
EPBC Community			NTGWVP

Appendix 3: EVC Benchmarks

- EVC 132_61 (*Heavier Soils Plains Grassland*) – **VVP**

EVC/Bioregion Benchmark for Vegetation Quality Assessment

Victorian Volcanic Plain bioregion

EVC 132_61: *Heavier-soils* Plains Grassland

Description:

Treeless vegetation mostly less than 1 m tall dominated by largely graminoid and herb life forms. Occupies fertile cracking basalt soils prone to seasonal waterlogging in areas receiving at least 500 mm annual rainfall.

Life Forms:

Life form	# Spp	% Cover	LF code
Large Herb	2	5%	LH
Medium Herb	12	20%	MH
Small or Prostrate Herb	4	5%	SH
Large Tufted Graminoid	1	5%	LTG
Medium to Small Tufted Graminoid	13	40%	MTG
Medium to Tiny Non-tufted Graminoid	4	5%	MNG
Bryophytes/Lichens and Soil Crust*	na	20%	BL

* Note: treat as one life form in this EVC

LF Code	Species typical of at least part of EVC range	Common Name
SS	<i>Pimelea humilis</i>	Common Rice-flower
LH	<i>Rumex dumosus</i>	Wiry Dock
MH	<i>Calocephalus citreus</i>	Lemon Beauty-heads
MH	<i>Acaena echinata</i>	Sheep's Burr
MH	<i>Leptorhynchus squamatus</i>	Scaly Buttons
MH	<i>Eryngium ovinum</i>	Blue Devil
SH	<i>Solenogyne dominii</i>	Smooth Solenogyne
SH	<i>Lobelia pratioides</i>	Poison Lobelia
LTG	<i>Austrostipa bigeniculata</i>	Kneed Spear-grass
LTG	<i>Dichelachne crinita</i>	Long-hair Plume-grass
MTG	<i>Themeda triandra</i>	Kangaroo Grass
MTG	<i>Austrodanthonia caespitosa</i>	Common Wallaby-grass
MTG	<i>Elymus scaber</i> var. <i>scaber</i>	Common Wheat-grass
MTG	<i>Schoenus apogon</i>	Common Bog-sedge
MNG	<i>Microlaena stipoides</i> var. <i>stipoides</i>	Weeping Grass
MNG	<i>Thelymitra pauciflora</i> s.l.	Slender Sun-orchid
MNG	<i>Microtis unifolia</i>	Common Onion-orchid
SC	<i>Convolvulus erubescens</i>	Pink Bindweed

Recruitment:

Episodic/Fire or Grazing. Desirable period between disturbances is 5 years.

Organic Litter:

10% cover

EVC 132_61: *Heavier-soils* Plains Grassland - Victorian Volcanic Plain bioregion

Weediness:

LF Code	Typical Weed Species	Common Name	Invasive	Impact
LH	<i>Plantago lanceolata</i>	Ribwort	high	low
LH	<i>Cirsium vulgare</i>	Spear Thistle	high	high
LH	<i>Sonchus oleraceus</i>	Common Sow-thistle	high	low
MH	<i>Hypochoeris radicata</i>	Cat's Ear	high	low
MH	<i>Leontodon taraxacoides</i> ssp. <i>taraxacoides</i>	Hairy Hawkbit	high	low
MH	<i>Trifolium subterraneum</i>	Subterranean Clover	high	low
MH	<i>Plantago coronopus</i>	Buck's-horn Plantain	high	low
MH	<i>Trifolium striatum</i>	Knotted Clover	high	low
MH	<i>Trifolium dubium</i>	Suckling Clover	high	low
LTG	<i>Phalaris aquatica</i>	Toowoomba Canary-grass	high	high
LNG	<i>Holcus lanatus</i>	Yorkshire Fog	high	high
MTG	<i>Romulea rosea</i>	Onion Grass	high	low
MTG	<i>Vulpia bromoides</i>	Squirrel-tail Fescue	high	low
MTG	<i>Briza minor</i>	Lesser Quaking-grass	high	low
MTG	<i>Bromus hordeaceus</i> ssp. <i>hordeaceus</i>	Soft Brome	high	low
MTG	<i>Briza maxima</i>	Large Quaking-grass	high	low
MTG	<i>Lolium rigidum</i>	Wimmera Rye-grass	high	low
MTG	<i>Lolium perenne</i>	Perennial Rye-grass	high	low
MTG	<i>Nassella neesiana</i>	Chilean Needle-grass	high	high
MNG	<i>Cynosurus echinatus</i>	Rough Dog's-tail	high	low
MNG	<i>Juncus capitatus</i>	Capitate Rush	high	low

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