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327-335 Burley Road, Horsley Park Vegetation
Management Plan - Implementation Progress Report:
September 2018-March 2019

CSR Building Products Ltd

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Template 2.8.1

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Abbreviations

Abbreviation	Description
BC Act	NSW <i>Biodiversity and Conservation Act 2016</i>
CEEC	Critically Endangered Ecological Community
CPLS	Cumberland Plain Land Snail
CPW	Cumberland Plain Woodland
CSR	CSR Building Products Ltd
ELA	Eco Logical Australia Pty. Ltd.
EPBC Act	Commonwealth <i>Environmental Protection and Biodiversity Conservation Act 2016</i>
L&E	NSW Land and Environment Court
VMP	Vegetation Management Plan

1. Introduction

A Vegetation Management Plan (VMP) was prepared by Travers bushfire & ecology (Travers 2016) on behalf of CSR Building Products Ltd (CSR) as part of Development Application (DA) 893.1/2013 for the three-staged subdivision of CSR's site at 327-335 Burley Road, Horsley Park. The VMP pertains to Lot 205 which has been zoned as E2 Environmental Conservation lands under the State Environmental Planning Policy (Western Sydney Employment Area) 2009 (SEPP). Lot 205 encompasses approximately 11.51 hectares (ha) of Cumberland Plain Woodland (CPW) which is listed as a critically endangered ecological community (CEEC) under both the Commonwealth *Environmental Protection and Biodiversity Act 1999* (EPBC Act) and the NSW *Biodiversity and Conservation Act 2016* (BC Act).

CSR Building Products Ltd (CSR) has engaged Eco Logical Australia (ELA) to implement the VMP (Travers 2016) for Lot 205 to fulfil the NSW Land and Environment (L&E) Court deferred approval conditions as follows:

- Creation of a Positive Covenant of the site including Lot 205;
- Lot 205 shall be managed in accordance with a VMP in line with recommendations made by Travers bushfire & ecology Flora and Fauna Assessment Report, 10 March 2014.

ELA has been undertaking the vegetation management works on-site since March 2018. The first implementation progress report for Lot 205 encompassing the period March 2018 to September 2018 (ELA 2018) was completed by ELA in October 2018. This is the second implementation progress report covering the six-month period from September 2018 to March 2019.

1.1 Performance criteria

This report describes how the works carried out to date comply with the performance targets listed in the VMP (**Table 1**). This satisfies the requirements of the VMP and helps to fulfil CSR's statutory obligations.

Table 1 : Performance targets listed in the VMP (Travers 2016)

Performance Criteria
1. A permanent, five-strand, plain wire protective fence is to be installed to the west of the site as located on Schedule 1 - Vegetation Management Works. Two gates will be installed for maintenance access as located on Schedule 1 – Vegetation Management Works. Existing fences to west and south to be repaired and upgraded.
2. Weed control and revegetation works are to be carried out by a qualified bushland regenerator to achieve the following weed control targets. The presence, abundance and cover of noxious and environmental weed species (maximum 10% weed coverage at the end of Year 1, progressively reducing to less than 1% at the end of Year 10).
3. A target 60% native vegetation cover applies at the end of Year 1, 75% native vegetation cover at the end of Year 3, and 95% native vegetation cover at the end of Year 10.
4. All highly invasive weed species are to be continuously suppressed and, if possible, eradicated from the restoration area in accordance with noxious weed control guidelines and permits issued by NSW Office of Water.
5. A 20 m wide Bushland Interface Zone will be established as shown on Schedule 1 – Vegetation Management Works. Enrichment planting of shrub species only will be planted to create a dense shrub layer to minimise weeds. A minimum of seven (7) shrub species for revegetation will be selected from Table 4 Revegetation Species List, however may be supplemented from species which typically occur in Cumberland Plain Woodland. Shrub planting densities are to on average, establish one (1) shrub every 12 m ²

Performance Criteria

6. Revegetation will also be undertaken in disturbed areas as indicated in Schedule 1. A minimum of three (3) tree species, seven (7) shrub species and 14 groundcover species for revegetation will be selected from Table 4 Revegetation Species List, however may be supplemented from species which typically occur in Cumberland Plain Woodland. Plantings will achieve the following densities:

Trees – one (1) tree every 50 m²

Shrubs – one (1) shrub every 12 m²

Groundcovers – three (3) groundcover every 1 m²

7. Habitat enhancement for the Cumberland Plain Land Snail completed including:

Placement of a minimum of 30 x 3 m length hardwood logs harvested from the adjoining affected vegetation remnants; and Search, removal and euthanasia of exotic snails (minimum 4 searches per year)

8. Monitoring will be undertaken every two (2) years. A condition assessment and review of works will be undertaken every 12 months and a report will be produced by the site bush regeneration contractors. A site restoration audit will be undertaken every two (2) years until the completion of the 10-year maintenance period by an independent project ecologist assessing achievements and recommended mitigation measures.

9. A compliance statement is to be issued by the project ecologist at the completion of all fencing and primary revegetation works and upon completion of the maintenance period.

10. No greater than 25% of the Cumberland Plain Woodland reverse is burnt in any one year and all snails within the proposed burn areas to be relocated into refuge shelters within the site.

2. Works undertaken

2.1 Weed control

Works for the period September 2018 to March 2019 focused on secondary treatment of weeds throughout the VMP area. Primary weed control was completed in the first 6 months of on-ground works. All weeds have been controlled as per the techniques and specifications included in the VMP (Travers 2016).

Woody weeds

Woody weeds were largely controlled onsite during the previous reporting period (March 2018 to September 2018). Woody weeds were treated using the cut and paint method. All adult specimens were treated across the site.

From September 2018 to March 2019, any remaining adult specimens and emergent woody weeds were treated by brush cutter followed by painting of stumps with neat roundup® or by spot spraying seedlings using a selective herbicide.

Vines

Vines have been largely controlled on site. All vines entering the canopy or climbing on fallen trees were targeted during the initial reporting period. Each vine was skirted and sprayed with a selective herbicide once on the ground, where they were piled around the base of native trees to help minimise the amount of vine in the canopy and shrub layer. During this reporting period any emerging vines were treated by hand removal or by spot spraying with a selective herbicide.

Groundcovers

Eragrostis curvula (African Lovegrass) and *Bidens pilosa* (Cobbler's Pegs) have been continually targeted throughout the previous and current reporting period. Other emerging herbaceous weeds, particularly coloniser / fast growing weeds have been targeted prior to setting seed to minimise the amount of weed seed present in the soil bank.

A cumulative list of the main weeds treated since the beginning of the implementation phase is provided in Table 2.

Management treatments have included hand weeding (HW), skirted (SK), spot spraying (SP), brush cutting (BC), cutting and painting (CP) and scrape and painting (ScP).

Table 2: Weed treatment table

Species	Common name	Weed control
Woody Weeds		
<i>Grevillea robusta</i>	Silky Oak	CP
<i>Lantana camara</i> *	Lantana	BC, SP, HW
<i>Ligustrum lucidum</i>	Large Leaved Privet	CP, SP, HW
<i>Ligustrum sinense</i>	Small Leaved Privet	CP, SP, HW

Species	Common name	Weed control
<i>Lycium ferocissimum</i>	African Boxthorn	CP, SP
<i>Ochna serrulata</i>	Ochna	ScP
<i>Olea europaea subsp. cuspidata</i>	African Olive	CP, SP
<i>Ricinus communis</i>	Castor Oil Plant	BC, SP
<i>Rosa rubinosa</i>	Sweet Briar	CP
Vine Weeds		
<i>Araujia sericifera</i>	Moth Plant	SK, SP, HW
<i>Asparagus asparagoides</i>	Bridal Creeper	SP, HW
Herbaceous weeds / Groundcovers		
<i>Bidens pilosa</i>	Cobblers Pegs	BC, SP
<i>Brassica oleracea</i>	Wild Cabbage	HW, SP
<i>Chloris gayana</i>	Rhodes Grass	BC, SP
<i>Cirsium vulgare</i>	Spear Thistle	SP
<i>Conyza bonariensis</i>	Fleabane	BC, SP
<i>Ehrharta erecta</i>	Panic Veldt Grass	SP
<i>Eragrostis curvula</i>	African Lovegrass	BC, SP
<i>Hypochaeris radicata</i>	Flatweed	SP
<i>Juncus acutus</i>	Sharp Rush	BC, SP
<i>Paspalum dilatatum</i>	Caterpillar Grass	SP
<i>Pennisetum clandestinum</i>	Kikuyu	BC, SP
<i>Plantago lanceolate</i>	Plantain	SP
<i>Senecio madagascariensis</i>	Fireweed	HW, SP
<i>Senecio pterophorus</i>	African Daisy	SP
<i>Setaria pumila subsp. pumila</i>	Pigeon Grass	SP
<i>Sida rhombifolia</i>	Paddy's Lucerne	HW, SP
<i>Solanum nigrum</i>	Blackberry Nightshade	HW, SP
<i>Solanum pseudocapsicum</i>	Madeira Winter Cherry	HW, SP
<i>Solanum sisymbriifolium</i>	Viscid Nightshade	BC, SP
<i>Sonchus oleraceus</i>	Common Sowthistle	HW, SP
<i>Verbena bonariensis</i>	Purpletop	BC, SP

2.2 Monitoring methods

The site was assessed on 29 March 2019 by ELA Restoration Ecologist Andrew Norvill, using general observations and floristic data collected using nine survey plots, which were established in the previous monitoring period. General observations, as per the VMP (Travers 2016), were made during a site walk-over with the following being recorded:

- Weed presence / absence
- Bushland floristic diversity
- Structural integrity of the bushland
- Condition of fencing

2.2.1 Weather onsite during surveys

Climate data has been collated for the nearest weather station to Horsley Park, at Horsley Park Equestrian Centre AWS (33.85°S, 150.86°E) from Bureau of Meteorology data, accessed on 18 April 2019 (see Error! Reference source not found. and **Figure 2**). 2018-19 Rainfall data has been measured against the mean and median rainfall data for this weather station. Rainfall for this reporting period (September 2018-March 2019), except for February 2019, has been equal to or above the mean and median data for all months, in particular October 2018, December 2018 and March 2019 where twice the mean rainfall was recorded, resulting in extremely wet conditions.

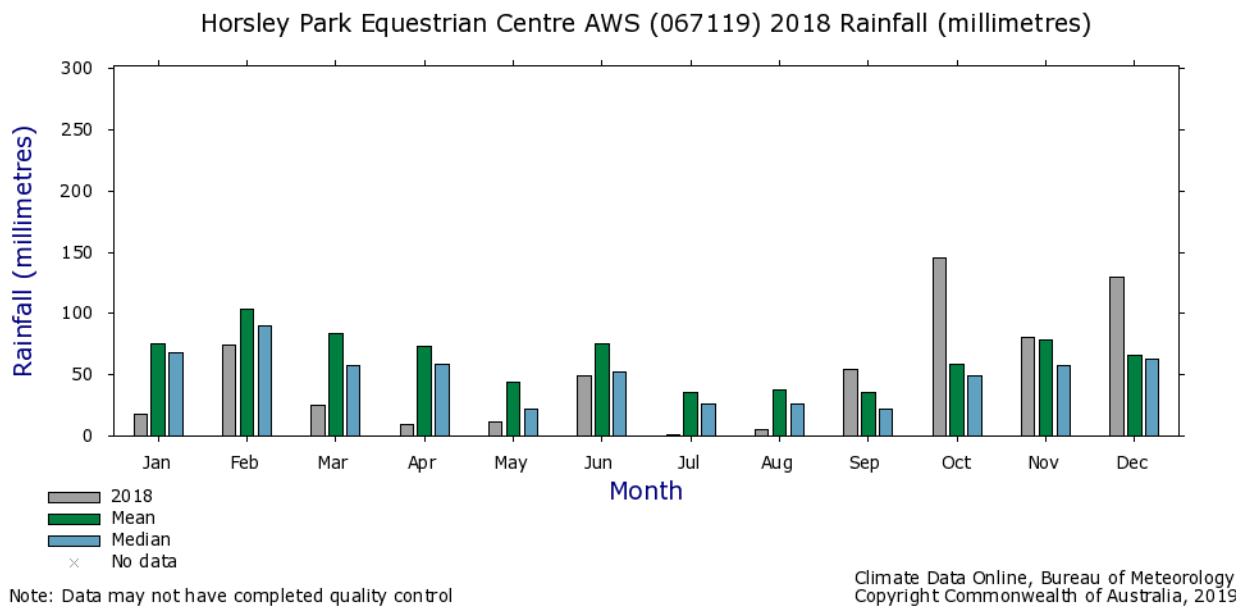


Figure 1: Mean rainfall and temperature for 2018 (BOM 18 April 2019)

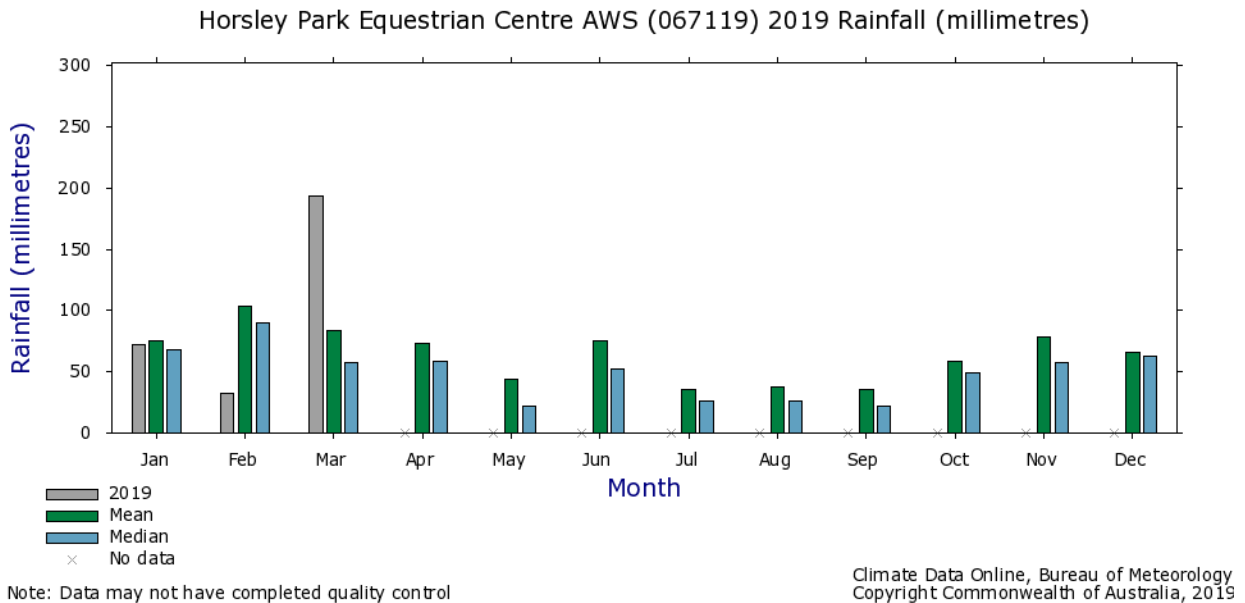


Figure 2: Mean rainfall and temperature for 2019 (BOM 18 April 2019)

2.2.2 Vegetation quadrats and transects

Nine survey plots were used to assess achievement against the performance targets listed in **Table 1**. **Figure 3** shows the location of the survey plots within the VMP area. The position of these plots was determined as per Schedule 1 of the VMP (Travers 2016) with each plot consisting of a 20x20 m quadrat.

In each quadrat the form (e.g. tree, shrub, grass, vine, forb), percent cover and abundance for all native and exotic overstorey, midstorey and ground cover species present was recorded.

2.2.3 Cumberland Plain Land Snail search

Throughout this reporting period the site was assessed for Cumberland Plain Land Snails (CPLS) on three occasions, 22 November 2018, 24 January 2019 and 29 March 2019 by ELA Restoration Ecologist Andrew Norvill and ELA Bush Regenerators Melinda Cook, Ryan Walker, Jack Bugden, Daniel Maher and Grant King. Assessments were focused on areas where CPLS would likely occur. This included:

- Leaf litter and bark situated at the base of *Eucalyptus* trees.
- Depressions and damp areas.
- Fallen logs and other debris
- Hardwood logs that were placed throughout the site as habitat enhancement.

Each CPLS was photographed, and the location recorded using a handheld Global Position System (GPS) and placed back amongst the leaf litter where it was initially found. The number of snails found at each location was recorded.

2.3 Photo point monitoring

Eighteen fixed photo monitoring points were established during the previous reporting period. They can be found at the beginning and end points of each transect (see Error! Reference source not found.). Comparative photos were taken from the same locations during this reporting period. The photos from each monitoring point, are included in **Appendix A**.

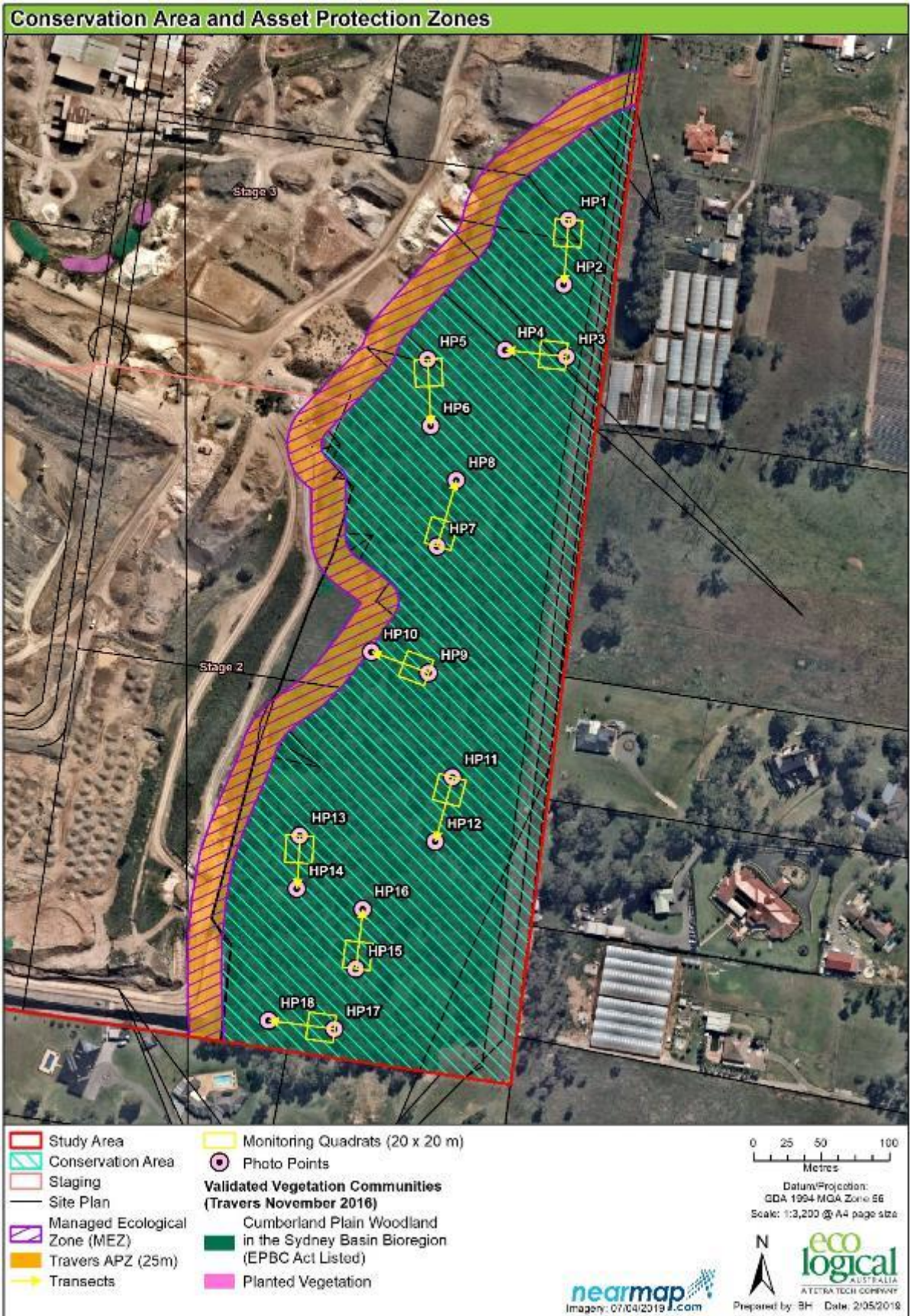


Figure 3: Vegetation quadrats and photo monitoring points

3. Results

3.1 Vegetation monitoring results

A summary of results from the monitoring of vegetation quadrats and transects is provided below. All monitoring data collected from ELA in 2018-19, is provided in **Appendix B**

1. Species richness (**Figure 4**)

- An increase in native species richness within the quadrats from 38 in 2018, to 53 in 2019
- A slight increase in weed species richness from 21 species in 2018, to 22 in 2019

2. Mean ground layer and mid storey cover abundance (**Figure 6** and **Figure 6**)

- A minor increase in native ground layer abundance from 75% in 2018, to 78% in 2019
- A minor increase in exotic ground layer abundance from 8% in 2018, to 11% in 2019
- A minor reduction in native mid storey abundance from 62% in 2018, to 59% in 2019
- A minor reduction in exotic mid storey abundance from 3% in 2018, to 1% in 2019

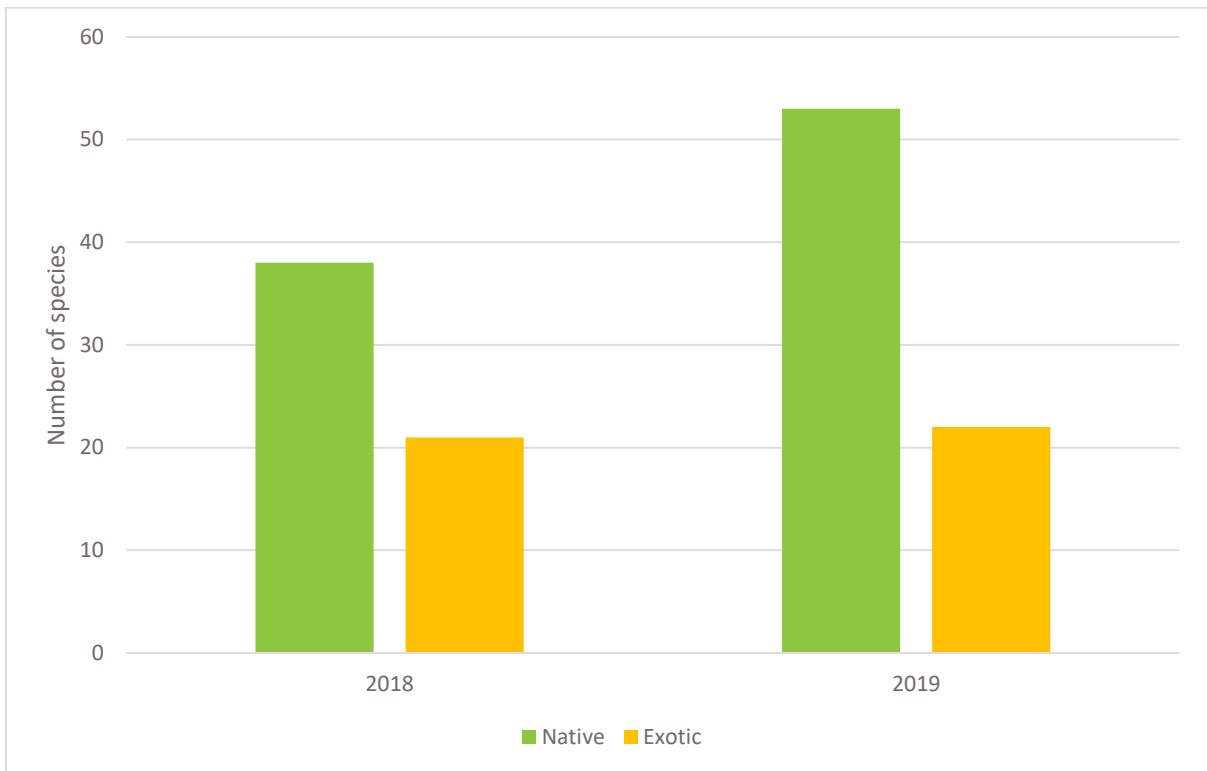


Figure 4 : Species richness across all quadrats

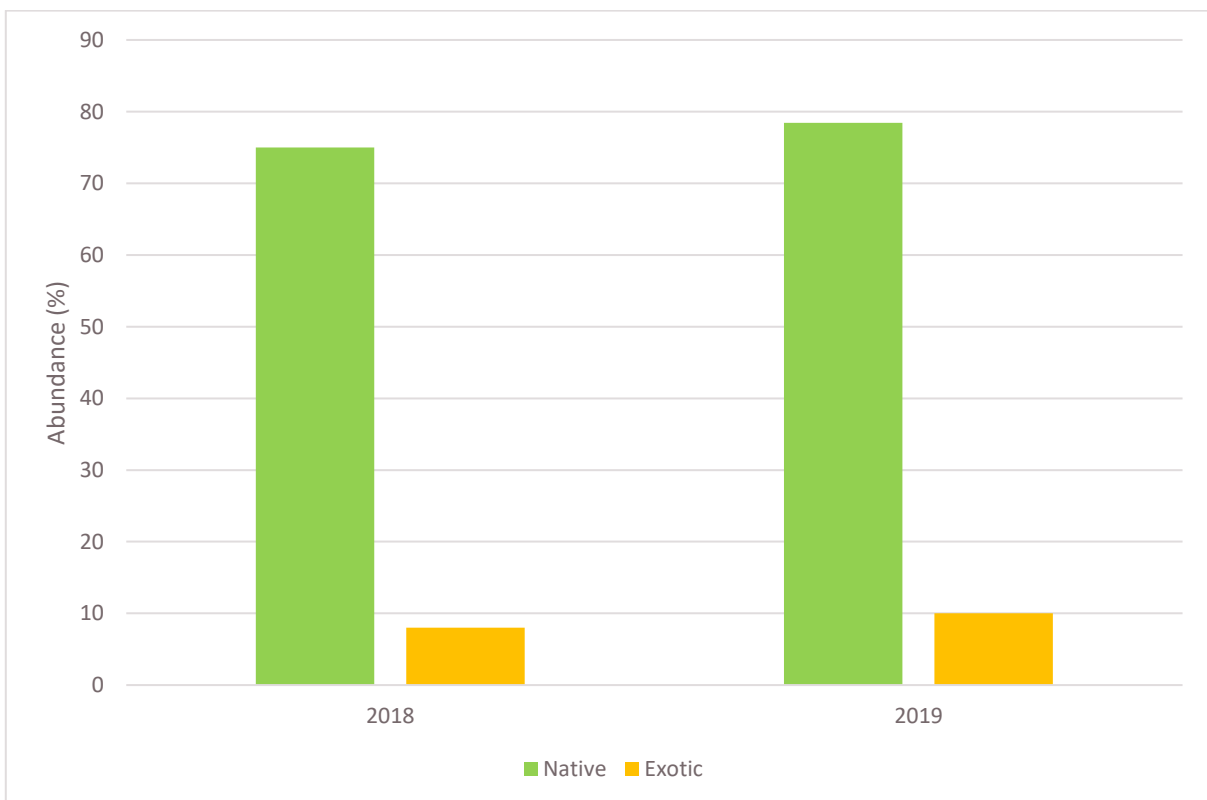


Figure 5 : Mean cover abundance Ground layer

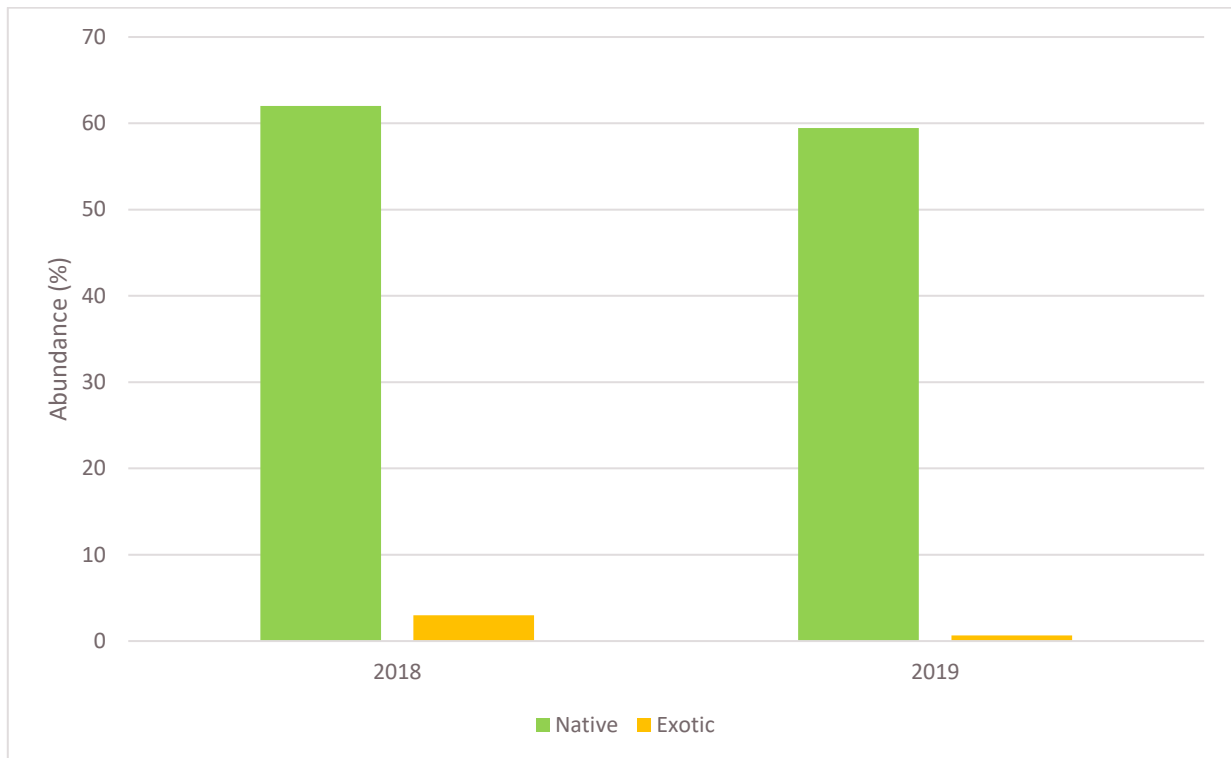


Figure 6 : Mean cover abundance Mid Storey

3.2 CPLS survey results

Three surveys for CPLS recorded the following (also see **Figure 7**):

- 128 live CPLS
- 157 CPLS shells
- 16 live exotic snails
- 35 exotic snail shells

The location where the snails were recorded is provided in **Figure 8** for the CPLS and **Figure 9** for the exotic snails.

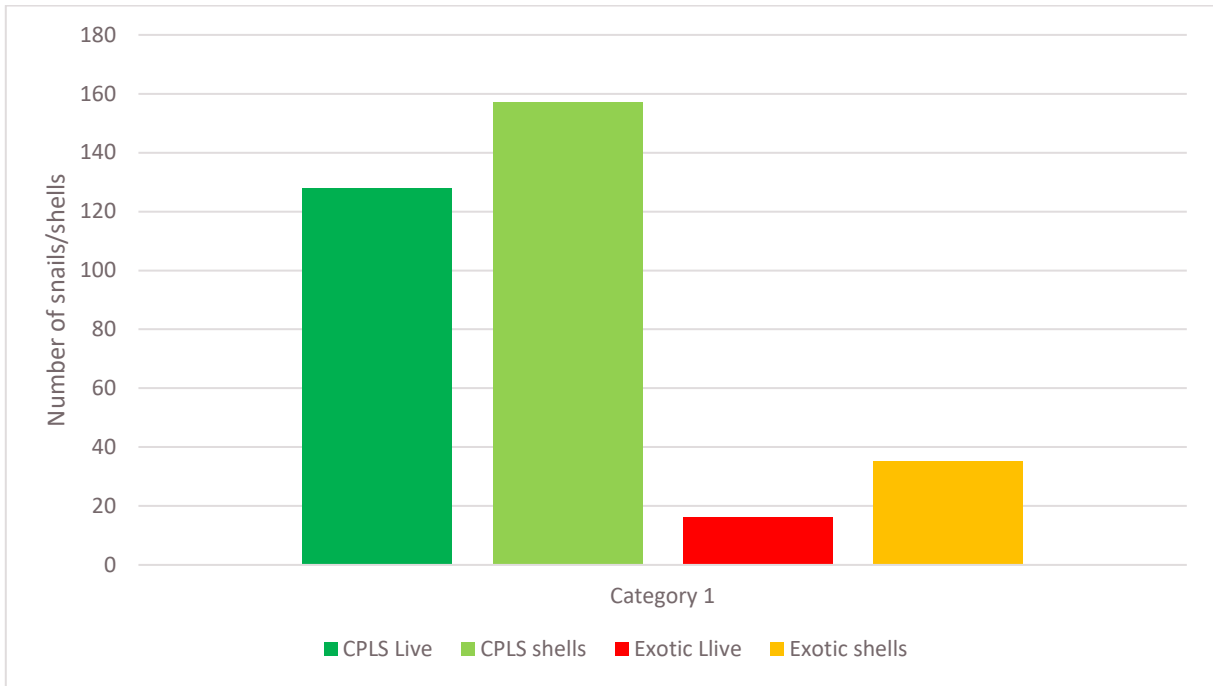


Figure 7: Cumberland Plain Land Snail search survey results and count

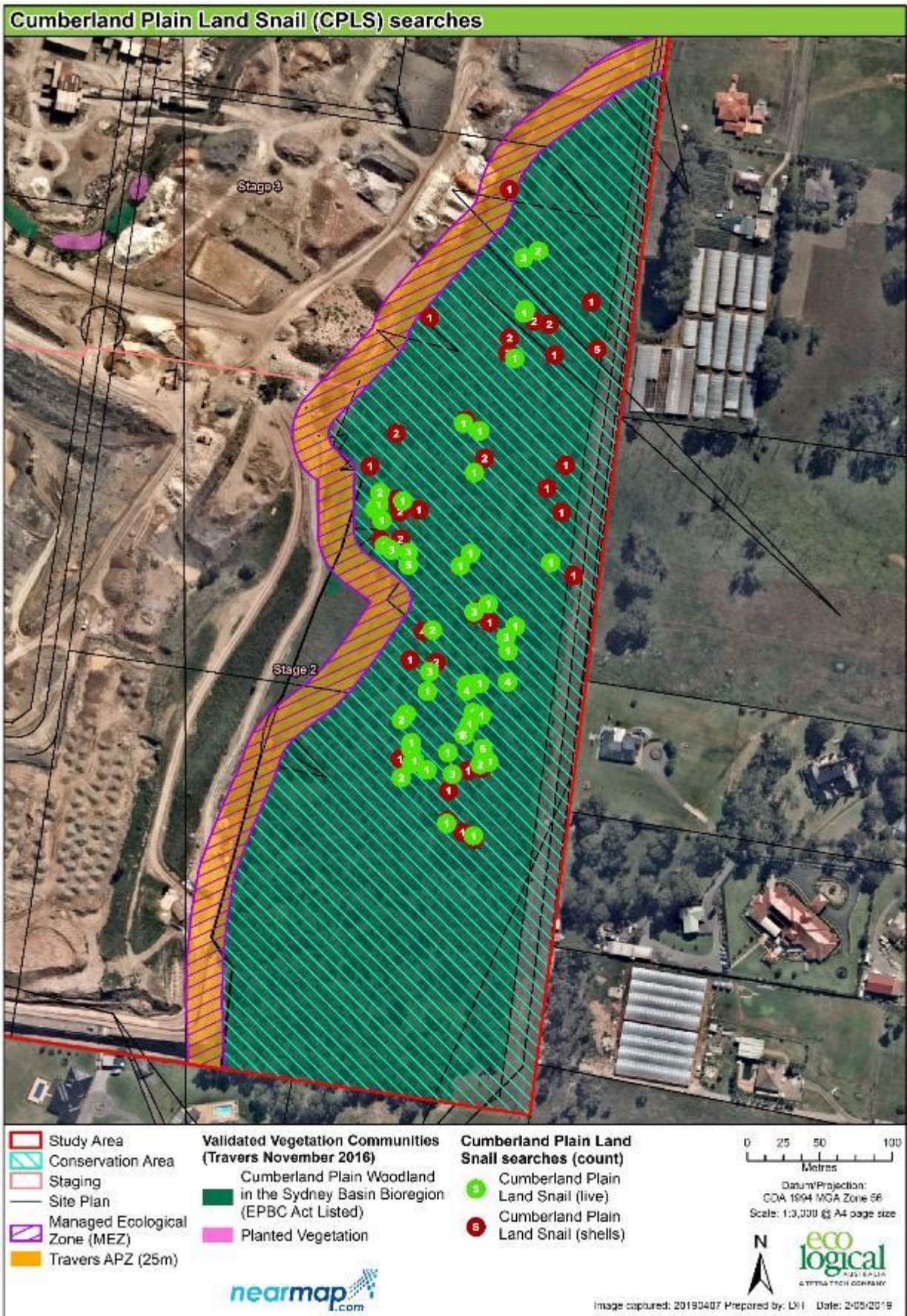


Figure 8: Cumberland Plain Land Snail Survey Results (September 2018-March 2019)

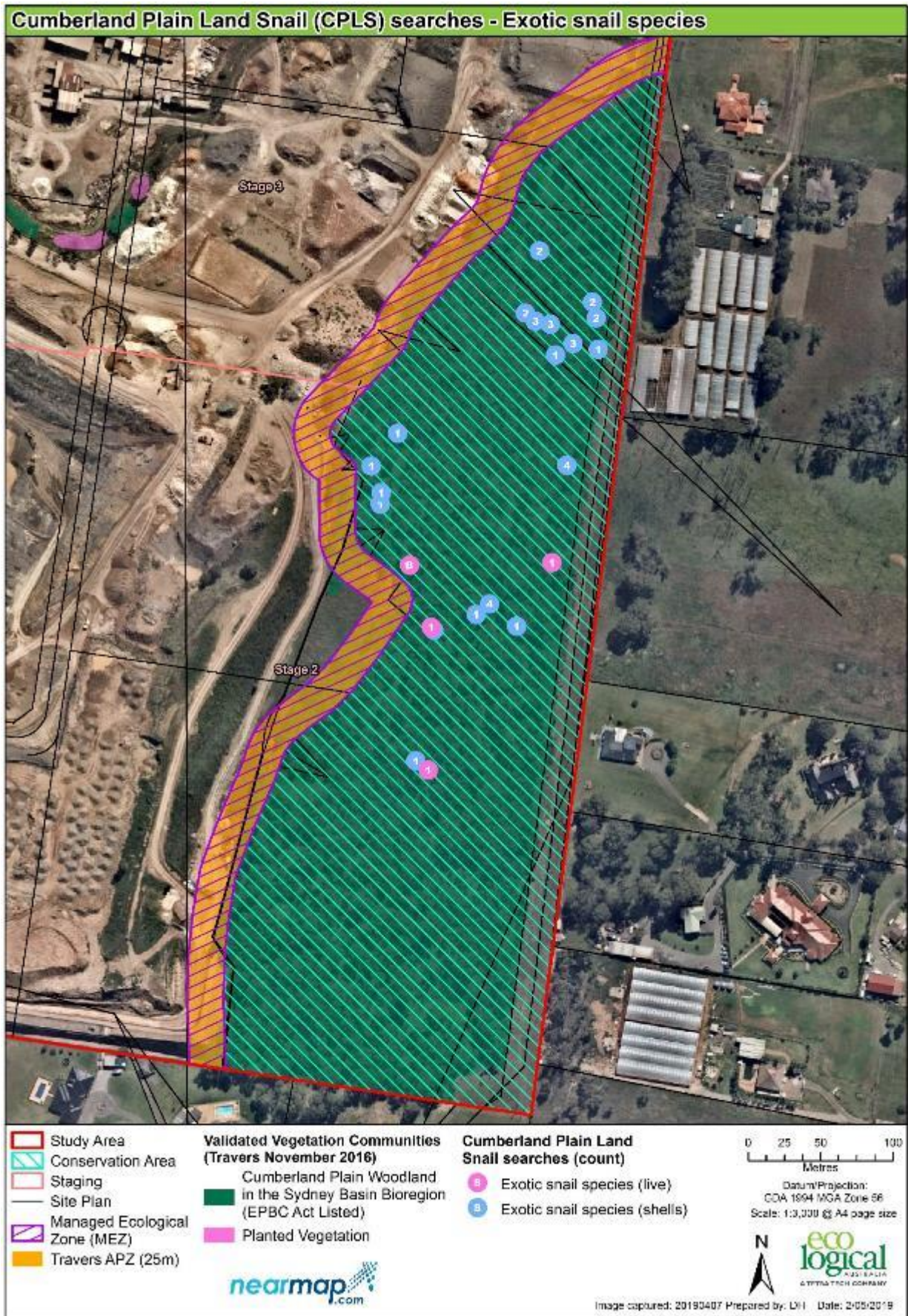


Figure 9: Exotic Snail Survey Results (September 2018-March 2019)

3.3 Vegetation Condition

Section 2.5 of the VMP (Travers 2016) notes that the vegetation condition across the site in May 2016 ranged from medium to high condition.

The eastern boundary consisted of a 20m wide band of African Olive (Travers 2016) prior to the commencement of VMP implementation works. All mature African Olive trees have been removed and only seedlings are growing in their place. Subsequently, all areas along the eastern boundary originally listed as poor condition are now in fair condition (see **Figure 10**).

Kikuyu, Mickey Mouse plant, Lantana and African Olive are all still present on the western boundary of the lot, but numbers have been significantly reduced since VMP implementation works commenced. These areas are also now in a fair condition, except for two small sections of Kikuyu in the south western corner and the northern tip which are still in a poor condition (see **Figure 10**).

Weeds present within the VMP boundary which require ongoing treatment include:

- *Araujia sericifera* (Moth Plant)
- *Lantana camara* (Lantana)
- *Ochna serrulate* (Mickey Mouse Plant)
- *Olea europaea* subsp. *cuspidate* (African Olive)
- *Pennisetum clandestinum* (Kikuyu)

The isolated pieces of concrete, reinforced steel, remnant mining equipment and tractor tyres that located on the eastern boundary (Travers 2016) are still present on site. However, as the protective fencing has now been installed and vehicular access has prohibited, it will be extremely difficult to relocate these items.



Figure 10: Vegetation Condition Map (March 2019)

3.4 Fauna observations

Incidental observations of native fauna onsite from the commencement of on ground works includes:

Birds

- Australian Wood Duck (*Chenonetta jubata*)
- Peregrine Falcon (*Falco peregrinus*)
- Galah (*Eolophus roseicapolla*)
- Sulphur-Crested Cockatoo (*Cacatua galerita*)
- Rainbow Lorikeet (*Trichoglossus haematodus*)
- Pallid Cuckoo (*Cacomantis pallidus*)
- Dollarbird (*Eurystomus orientalis*)
- Superb Fairy-Wren (*Malurus cyaneus*)
- Yellow Thornbill (*Acanthiza nana*)
- Spotted Pardalote (*Pardalotus punctatus*)
- Yellow-Faced Honeyeater (*Lichenostomus chrysops*)
- White-Plumed Honeyeater (*Ptilotula penicillata*)
- Noisy Miner (*Manorina melanocephala*)
- Black-Faced Cuckoo Shrike (*Coracina novaehollandiae*)
- Golden Whistler (*Pachycephala pectoralis*)
- Grey Shrike-Thrush (*Colluricincla harmonica*)
- Australian Magpie (*Cracticus tibicen*)
- Pied Currawong (*Strepera graculina*)
- Grey Fantail (*Rhipidura albiscapa*)
- Willie Wagtail (*Rhipidura leucophrys*)
- Australian Raven (*Corvus coronoides*)
- Magpie-Lark (*Grallina cyanoleuca*)
- Eastern Yellow Robin (*Eopsaltria australis*)
- Welcome Swallow (*Hirundo neoxena*)
- Common Myna (*Acridotheres tristis*) *
- Double-Barred Finch (*Taeniopygia bichenovii*)

*Denotes introduced species

Mammals

- Eastern Grey Kangaroo (*Macropus giganteus*)
- Swamp Wallaby (*Wallabia bicolor*)

Reptiles

- Red-Bellied Black Snake (*Pseudechis porphyriacus*)
- Eastern Blue-tongue Lizard (*Tiliqua scincoides scincoides*)

Snails

- Cumberland Plain Land Snail (*Meridolum corneovirens*)

4. Conclusions

4.1 Progress of works

The majority of the VMP area was of high-quality Cumberland Plain Woodland with minimal weed activity to begin with. To date, works have predominately focused on primary weed control throughout the more degraded sections of the site along the northern and eastern boundaries. These areas are now mostly in the secondary phase of weed control and still require regular follow up to help control seed propagation and further spreading of weeds into well maintained areas.

Overall the site is progressing well with most of the VMP performance criteria either met or on track to be met. The site is on-track to fulfil its Year 10 performance criteria targets. All weed control measures undertaken to date have been effective and there has been a significant reduction in cover of African Olive, African Boxthorn, Lantana and African Lovegrass.

Regular weed control maintenance will continue to be required to treat all emerging weeds, especially in and around natural regeneration areas. In these areas, especially where native groundcover is thicker, hand weeding will be the preferred method of weed control as accurate spot spraying becomes increasingly more difficult.

The progress of works to achieve the performance criteria is shown in **Table 3**

Table 3 : Performance criteria achievement (Travers 2016)

Performance Criteria	Completed	Comment
1. A permanent, five-strand, plain wire protective fence is to be installed to the west of the site as located on Schedule 1 - Vegetation Management Works. Two gates will be installed for maintenance access as located on Schedule 1 – Vegetation Management Works. Existing fences to west and south to be repaired and upgraded.	Yes	-
2. Weed control and revegetation works are to be carried out by a qualified bushland regenerator to achieve the following weed control targets. The presence, abundance and cover of noxious and environmental weed species (maximum 10% weed coverage at the end of Year 1, progressively reducing to less than 1% at the end of Year 10).	Yes	-
3. A target 60% native vegetation cover applies at the end of Year 1, 75% native vegetation cover at the end of Year 3, and 95% native vegetation cover at the end of Year 10.	Yes	Native groundcover at 78%. Native midstorey cover at 59%
4. All highly invasive weed species are to be continuously suppressed and, if possible, eradicated from the restoration area in accordance with noxious weed control guidelines and permits issued by NSW Office of Water.	On track	Exotic groundcover is currently 10%
5. A 20 m wide Bushland Interface Zone will be established as shown on Schedule 1 – Vegetation Management Works. Enrichment planting of shrub species only will be planted to create a dense shrub layer to minimise weeds. A minimum of seven (7) shrub species for revegetation will be selected from Table 4 Revegetation Species List, however may be supplemented from species which typically occur in Cumberland Plain Woodland. Shrub planting densities are to on average, establish one (1) shrub every 12 m ²	No. The Bushland Interface Zone is yet to be established.	
6. Revegetation will also be undertaken in disturbed areas as indicated in Schedule 1. A minimum of three (3) tree species, seven (7) shrub species and 14 groundcover species for revegetation will be selected from Table 4 Revegetation Species List, however may be supplemented from species which typically occur in Cumberland Plain Woodland. Plantings will achieve the following densities: Trees – one (1) tree every 50 m ² Shrubs – one (1) shrub every 12 m ² Groundcovers – three (3) groundcover every 1 m ²	No.	Revegetation works to be undertaken in Spring of 2019
7. Habitat enhancement for the Cumberland Plain Land Snail completed including: Placement of a minimum of 30 x 3 m length hardwood logs harvested from the adjoining affected vegetation remnants; and Search, removal and euthanasia of exotic snails (minimum 4 searches per year)	On track.	23 Hardwood logs have been placed within the site
8. Monitoring will be undertaken every two (2) years. A condition assessment and review of works will be undertaken every 12 months and a report will be produced by the site bush regeneration contractors. A site restoration audit will be undertaken every two (2) years until the	On track	Monitoring is currently being undertaken every 6

Performance Criteria	Completed	Comment
completion of the 10-year maintenance period by an independent project ecologist assessing achievements and recommended mitigation measures.		months, according to Section 4.1 of the VMP (Travers 2016)
9. A compliance statement is to be issued by the project ecologist at the completion of all fencing and primary revegetation works and upon completion of the maintenance period.	No.	The compliance statement is due every 2 years with the first one due March 2020.
10. No greater than 25% of the Cumberland Plain Woodland reserve is burnt in any one year and all snails within the proposed burn areas to be relocated into refuge shelters within the site.	No.	There are no burns planned in the foreseeable future so no need to relocate any snails

4.2 Site issues

To date, only 23 of the 30 x 3 m length hardwood logs have been placed within the VMP. Given the permanent, five strand plain wire protective fence has already been installed and vehicular access has been prevented, the relocation of the remaining seven hardwood logs into the site will be difficult. A recommendation would be to place several smaller logs into piles that are approximately 3 m in length

The VMP is subject to edge effects impacting on the bushland, especially where the VMP area lies adjacent to exotic grassland along the eastern and western boundaries. These respective grasslands will need to be regularly slashed to keep exotic grass seed to a minimum and prevent seed from entering the VMP area.

During site surveys, goats were observed grazing the exotic shrub layer to the west of the VMP area. Scats have also been identified within the VMP area. To meet the revegetation performance criteria goats will need to be controlled and prohibited from entering the site, especially once revegetation has commenced

Climatic conditions, notably the increased level of rainfall since the previous reporting period has had a dramatic impact on native species richness. Above average rainfall in every month since September 2018 has resulted in the number of native species recorded on site increase from 38 in the previous report to 53. However, the exotic groundcover abundance has also increased from 8% to 10% and this is also likely due to the above average rainfall in recent months.

Future works proposed in the VMP area include:

- Continued removal of any further woody weed regrowth.
- Weed control of any emerging saplings throughout the site.
- Continued CPLS searches (minimum of 4 per year).
- Implementation of all revegetation, including the Bushland Interface Zone.
- Continued monitoring and reporting.

5. References

Australian meteorology website. Data provided by Australian Bureau of meteorology. Accessed 18.4.2019. Accessed at: http://www.bom.gov.au/jsp/ncc/cdio/weatherData/av?p_display_type=dataSGraph&p_stn_num=067119&p_nccObsCode=136&p_month=13&p_startYear=2018

Australian meteorology website. Data provided by Australian Bureau of meteorology. Accessed 18.4.2019. Accessed at: http://www.bom.gov.au/jsp/ncc/cdio/weatherData/av?p_display_type=dataSGraph&p_stn_num=067119&p_nccObsCode=136&p_month=13&p_startYear=2019

Eco Logical Australia 2018. *327-335 Burley Road, Horsley Park Vegetation Management Plan Implementation Progress Report: March 2018 – September 2018*. Prepared for CSR Buildings Products Ltd.

Travers bushfire & ecology. 2016. Vegetation Management Plan, 327 – 335 Burley Road, Horsley Park.

Appendix A Photo monitoring points



HP1 March 2019



HP2 July 2018



HP2 March 2019



HP3 July 2018



HP3 March 2019



HP4 July 2018



HP4 March 2019



HP5 July 2018



HP5 March 2019



HP6 July 2018



HP6 March 2019



HP7 July 2018



HP7 March 2019



HP8 July 2018



HP8 March 2019



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HP11 March 2019



HP12 July 2018



HP12 March 2019



HP13 July 2018



HP13 March 2019



HP14 July 2018



HP14 March 2019



HP15 July 2018



HP15 March 2019



HP16 July 2018



HP16 March 2019



HP17 July 2018



HP17 March 2019



HP18 July 2018



HP18 March 2019

Appendix B Quadrat data

Native vegetation (September 2018)

Species	% Projected foliage cover in quadrats									% Total cover
	Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	
<i>Acacia decurrens</i>								40		4
<i>Acacia falcata</i>						<1	<1			0
<i>Acacia longifolia</i>							7			1
<i>Aristida ramosa</i>				<1	25	70	20	5		13
<i>Aristida vagans</i>		<1	20			2			<1	2
<i>Arthropodium milleflorum</i>					<1					0
<i>Brunoniella australis</i>	<1	5	3	5	5	<1	2	5	10	4
<i>Bursaria spinosa</i>	75	50	82	80	15		55	30	80	52
<i>Cheilanthes sieberi</i>		<1							<1	0
<i>Chloris ventricosa</i>					2					0
<i>Cymbonotus lawsonianus</i>							<1			0
<i>Daviesia ulicifolia</i>			<1							0
<i>Desmodium varians</i>	<1			<1						0
<i>Dianella longifolia</i>		<1		<1		<1	<1	<1	<1	0
<i>Dichondra repens</i>	5	2	3	<1	10	<1	2	<1	<1	2
<i>Dichopogon sp.</i>		<1								0
<i>Dillwynia sieberi</i>		<1							2	0
<i>Eremophila debilis</i>					<1					0
<i>Eucalyptus crebra</i>				75	10	2				10

Species	% Projected foliage cover in quadrats									% Total cover
	Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	
<i>Eucalyptus eugenoides</i>						25			10	4
<i>Eucalyptus moluccana</i>	5	10	20							4
<i>Eucalyptus tereticornis</i>	32	32	42	20	70	30	<1	20	30	31
<i>Ficus sp.</i>	<1									0
<i>Glycine microphylla</i>	<1	<1	<1	<1	<1					0
<i>Glycine tabacina</i>	<1		<1	<1	<1	<1		<1	<1	0
<i>Indigofera australis</i>	<1									0
<i>Lomandra multiflora subsp. multiflora</i>			<1	<1	<1		<1	<1	2	0
<i>Microlaena stipoides</i>	70	60	50	30	10	10	<1	5	30	29
<i>Oxalis perennans</i>	<1					<1				0
<i>Phyllanthus virgatus</i>					<1	<1				0
<i>Poa labillardieri</i>			<1		5		<1	<1		1
<i>Pratia purpurascens</i>									3	0
<i>Pultenea microphylla</i>							<1	2		0
<i>Rumex sp.</i>	<1									0
<i>Solanum prinophyllum</i>	<1	<1	<1	<1				<1		0
<i>Sporobolus creber</i>				<1						0
<i>Syncarpia glomulifera</i>								15		2
<i>Themeda australis</i>		5	2	2	25	2	50	10	30	14

Exotic vegetation (September 2018)

Species	% Projected foliage cover in quadrats									% Total cover
	Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	
<i>Araujia sericifera</i> *	<1	<1		<1	<1					0
<i>Bidens pilosa</i> *	2	2			2					1
<i>Conyza bonariensis</i> *		<1	<1							0
<i>Ehrharta erecta</i> *	5		1		3					1
<i>Eragrostis curvula</i> *								<1	<1	0
<i>Hyparrhenia hirta</i> *						<1				0
<i>Jacaranda mimosifolia</i> *				<1						0
<i>Lantana camara</i> *	10	<1	5	<1						2
<i>Lycium ferrocissimum</i> *		<1								0
<i>Ochna serrulata</i> *	<1									0
<i>Olea europaea subsp. cuspidata</i> *	<1		<1	<1						0
<i>Paspalum dilatatum</i> *	<1	<1			<1				2	0
<i>Plantago lanceolata</i> *						1	<1	<1		0
<i>Senecio madagascariensis</i> *				<1			<1			0
<i>Senecio pterophorus</i> *		<1				<1	<1	<1	<1	0
<i>Setaria parviflora</i> *						<1				0
<i>Sida rhombifolia</i> *	<1	<1	10	<1	<1	1	<1	<1	<1	1
<i>Solanum pseudocapsicum</i> *	<1	<1	<1	<1	<1	<1		<1		0
<i>Solanum sisymbriifolium</i> *		<1								0
<i>Sonchus oleraceus</i> *	<1			<1	<1					0
<i>Verbena bonariensis</i> *		<1				<1				0

Native vegetation (March 2019)

Species	% Projected foliage cover in quadrats									% Total cover
	Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	
<i>Acacia decurrens</i>								20		2
<i>Acacia falcata</i>						1	1			0
<i>Acacia implexa</i>							10			1
<i>Aristida ramosa</i>			<1	<1	15	40	20	25		11
<i>Aristida vagans</i>		<1	5			2		<1		1
<i>Arthropodium milleflorum</i>							<1			0
<i>Asperula conferta</i>						<1	<1	<1		0
<i>Brunoniella australis</i>	10	10	20	5	5	10	10	10	10	10
<i>Bursaria spinosa</i>	75	50	70	80	15	30	70	30	80	56
<i>Cayratia clematidea</i>	5									1
<i>Centella asiatica</i>					5		2			1
<i>Cheilanthes sieberi</i>	<1	<1	<1	<1		<1				0
<i>Chloris ventricosa</i>					2	5	2	2		1
<i>Cymbopogon refractus</i>					10	1	<1	<1	<1	1
<i>Cyperus sp.</i>			<1	<1				<1	<1	0
<i>Daviesia ulicifolia</i>			<1							0
<i>Desmodium varians</i>	2	2	<1	<1		1	<1	<1		1
<i>Dianella longifolia</i>		<1		<1	1	<1	<1	<1	<1	0
<i>Dichondra repens</i>	10	5	2	<1	10		2	<1	<1	3
<i>Dillwynia sieberi</i>		<1							2	0
<i>Echinopogon caespitosus var. caespitosus</i>			<1							0

Species	% Projected foliage cover in quadrats									% Total cover
	Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	
<i>Einadia hastata</i>	<1									0
<i>Einadia trigonos</i>				<1						0
<i>Eremophila debilis</i>			<1	<1			<1			0
<i>Eucalyptus crebra</i>				75	10	2				10
<i>Eucalyptus eugenoides</i>						25			10	4
<i>Eucalyptus moluccana</i>	5	10	20		1			1		4
<i>Eucalyptus tereticornis</i>	30	30	40	20	70	25	40	20	30	34
<i>Ficus sp.</i>	<1									0
<i>Glycine microphylla</i>	<1	<1	<1	<1				<1		0
<i>Glycine tabacina</i>	5	2	<1	<1		<1	<1	<1	<1	1
<i>Hypoxis hygrometrica var. hygrometrica</i>		<1	<1	<1		<1	<1	<1		0
<i>Indigofera australis</i>	1									0
<i>Lagenophora stipitata</i>			<1	<1			<1	<1		0
<i>Lomandra filiformis</i>			<1						<1	0
<i>Lomandra multiflora subsp. multiflora</i>		<1	1	1					2	0
<i>Mentha satuireioides</i>				<1					<1	0
<i>Microlaena stipoides</i>	20	60	20	20	10	20	1	25	20	22
<i>Oxalis perennans</i>	1	<1				<1		<1	<1	0
<i>Pandorea pandorana</i>		<1								0
<i>Paspalidium distans</i>				<1						0
<i>Phyllanthus virgatus</i>		<1	<1			<1		<1	<1	0
<i>Plantago gaudichaudii</i>					1	<1		<1		0
<i>Poa labillardieri</i>			<1		5		<1			1

Species	% Projected foliage cover in quadrats									% Total cover
	Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	
<i>Pratia purpurascens</i>									2	0
<i>Pultenea microphylla</i>							3	2		1
<i>Rumex sp.</i>	<1									0
<i>Sigesbeckia orientalis ssp. orientalis</i>				<1						0
<i>Solanum prinophyllum</i>	1	<1	<1	<1				<1		0
<i>Sporobolus creber</i>								<1		0
<i>Syncarpia glomulifera</i>								15		2
<i>Themeda australis</i>		2	2	2	20	2	30	10	30	11
<i>Wahlenbergia gracilis</i>								<1		0

Exotic vegetation (March 2019)

Species	% Projected foliage cover in quadrats									% Total cover
	Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	
<i>Araujia sericifera</i> *	<1	<1		<1						0
<i>Bidens pilosa</i> *	5	5	<1	1	<1	<1	<1		<1	1
<i>Brassica fruticulosa</i> *	<1									0
<i>Conyza bonariensis</i> *	<1			<1						0
<i>Ehrharta erecta</i> *	10		<1	1	3					1
<i>Eragrostis curvula</i> *						<1		<1		0
<i>Hyparrhenia hirta</i> *		<1								0
<i>Lantana camara</i> *	<1	1	1	1	<1					0
<i>Lycium ferrocissimum</i> *								<1	<1	0
<i>Ochna serrulata</i> *	<1		<1		<1					0
<i>Olea europaea subsp. cuspidata</i> *		<1		<1						0
<i>Paspalum dilatatum</i> *	<1	<1	<1	<1	<1	<1	1	<1	2	0
<i>Plantago lanceolata</i> *		<1				<1	<1	<1		0
<i>Rosa rubiginosa</i>					<1					0
<i>Senecio madagascariensis</i> *	<1	<1		<1	<1	1	<1	<1		0
<i>Senecio pterophorus</i> *	<1	<1			<1		<1	<1		0
<i>Setaria parviflora</i> *	<1		<1	<1		1	<1	<1		0
<i>Sida rhombifolia</i> *	<1	<1	<1	<1	<1	<1	<1	<1	<1	0
<i>Solanum pseudocapsicum</i> *				<1		<1				0
<i>Solanum sisymbriifolium</i> *			<1	<1		<1				0
<i>Sonchus oleraceus</i> *	<1	<1		<1						0

Appendix C Observed flora species not found within the quadrats

Family	Scientific name	Common name
Trees		
Mimosaceae	<i>Acacia decurrens</i>	Black Wattle
Myrtaceae	<i>Angophora floribunda</i>	Rough-barked Apple
Myrtaceae	<i>Corymbia maculata</i>	Spotted Gum
Myrtaceae	<i>Eucalyptus crebra</i>	Narrow-leaved Ironbark
Myrtaceae	<i>Eucalyptus eugenioides</i>	Thin-leaved Stringybark
Myrtaceae	<i>Eucalyptus moluccana</i>	Grey Box
Myrtaceae	<i>Eucalyptus tereticornis</i>	Forest Red Gum
Santalaceae	<i>Exocarpos cupressiformis</i>	Native Cherry
Moraceae	<i>Ficus</i> spp.	Fig
Myrtaceae	<i>Melaleuca decora</i>	White Feather Honey-myrtle
Myrtaceae	<i>Melaleuca styphelioides</i>	Prickly-leaved Tea Tree
Myrtaceae	<i>Syncarpia glomulifera</i>	Turpentine
Shrubs		
Mimosaceae	<i>Acacia falcata</i>	Sickle Wattle
Mimosaceae	<i>Acacia fimbriata</i>	Fringed Wattle
Mimosaceae	<i>Acacia implexa</i>	Hickory
Mimosaceae	<i>Acacia longifolia</i> var. <i>longifolia</i>	Sydney Golden Wattle
Mimosaceae	<i>Acacia saligna</i> *	Orange Wattle
Mimosaceae	<i>Acacia ulicifolia</i>	Prickly Moses
Pittosporaceae	<i>Bursaria spinosa</i> var. <i>spinosa</i>	Native Blackthorn
Asteraceae	<i>Cassinia</i> sp.	-
Solanaceae	<i>Cestrum parqui</i> *	Chilean Cestrum
Fabaceae	<i>Daviesia ulicifolia</i>	Gorse Bitter Pea
Fabaceae	<i>Dillwynia sieberi</i>	Prickly Parrot-pea
Apocynaceae	<i>Gomphocarpus fruticosus</i> *	Narrow Leaf Cotton Bush
Proteaceae	<i>Hakea salicifolia</i>	Willow Hakea
Fabaceae	<i>Indigofera australis</i>	Native Indigo
Verbenaceae	<i>Lantana camara</i> *	Lantana
Oleaceae	<i>Ligustrum lucidum</i> *	Large-leaved Privet
Solanaceae	<i>Lycium ferocissimum</i> *	African Boxthorn

Family	Scientific name	Common name
Berberidaceae	<i>Nandina domestica</i> *	Sacred Bamboo
Ochnaceae	<i>Ochna serrulata</i> *	Mickey Mouse Plant
Oleaceae	<i>Olea europaea</i> subsp. <i>cuspidata</i> *	African Olive
Fabaceae	<i>Pultenaea microphylla</i>	-
Euphorbiaceae	<i>Ricinus communis</i> *	Castor Oil Plant
Rosaceae	<i>Rosa rubiginosa</i> *	Sweet Briar
Asteraceae	<i>Senecio pterophorus</i> *	African Daisy
Solanaceae	<i>Solanum linnaeanum</i> *	Apple-of-Sodom
Groundcovers		
Myrsinaceae	<i>Anagallis arvensis</i> *	Scarlet Pimpernel
Poaceae	<i>Aristida ramosa</i>	Wire Grass
Poaceae	<i>Aristida vagans</i>	Three-awn Speargrass
Poaceae	<i>Aristida warburgii</i>	Wire Grass
Anthericaceae	<i>Arthropodium milleflorum</i>	Pale Vanilla Lily
Rubiaceae	<i>Asperula conferta</i>	Common Woodruff
Poaceae	<i>Austrostipa pubescens</i>	Tall Speargrass
Poaceae	<i>Axonopus fissifolius</i> *	Narrow-leafed Carpet Grass
Asteraceae	<i>Bidens pilosa</i> *	Cobbler's Pegs
Brassicaceae	<i>Brassica fruticulosa</i> *	Twiggy Turnip
Acanthaceae	<i>Brunoniella pumilio</i>	Dwarf Blue Trumpet
Brassicaceae	<i>Cardamine hirsuta</i> *	Hairy Bittercress
Apiaceae	<i>Centella asiatica</i>	Indian Pennywort
Sinopteridaceae	<i>Cheilanthes sieberi</i>	Rock Fern
Poaceae	<i>Chloris gayana</i> *	Rhodes Grass
Poaceae	<i>Chloris ventricosa</i>	Tall Chloris
Asteraceae	<i>Cirsium vulgare</i> *	Spear Thistle
Asteraceae	<i>Conyza bonariensis</i> *	Flaxleaf Fleabane
Brassicaceae	<i>Coronopus didymus</i> *	Lesser Swine-cress
Poaceae	<i>Cortaderia selloana</i> *	Pampas Grass
Apiaceae	<i>Cyclosporum leptophyllum</i> *	Slender Celery
Asteraceae	<i>Cymbonotus lawsonianus</i>	Bear's Ear
Poaceae	<i>Cymbopogon refractus</i>	Barbed Wire Grass
Poaceae	<i>Cynodon dactylon</i>	Common Couch

Family	Scientific name	Common name
Cyperaceae	<i>Cyperus eragrostis</i> *	Umbrella Sedge
Phormiaceae	<i>Dianella longifolia</i>	Pale Flax-lily
Poaceae	<i>Dichelachne micrantha</i>	Short-hair Plume Grass
Convolvulaceae	<i>Dichondra repens</i>	Kidney Weed
Poaceae	<i>Echinopogon caespitosus</i> var. <i>caespitosus</i>	Tufted Hedgehog Grass
Poaceae	<i>Ehrharta erecta</i> *	Panic Veldtgrass
Chenopodiaceae	<i>Einadia hastata</i>	Berry Saltbush
Chenopodiaceae	<i>Einadia trigonos</i>	Fishweed
Poaceae	<i>Entolasia marginata</i>	Bordered Panic
Poaceae	<i>Eragrostis brownii</i>	Brown's Lovegrass
Poaceae	<i>Eragrostis curvula</i> *	African Lovegrass
Asteraceae	<i>Erechtites valerianifolia</i> *	Brazilian Fireweed
Scrophulariaceae	<i>Eremophila debilis</i>	Winter Apple
Apiaceae	<i>Foeniculum vulgare</i> *	Fennel
Geraniaceae	<i>Geranium solanderi</i>	Cutleaf Cranesbill
Poaceae	<i>Hyparrhenia hirta</i> *	Coolatai Grass
Clusiaceae	<i>Hypericum gramineum</i>	Small St John's Wort
Asteraceae	<i>Hypochaeris radicata</i> *	Flatweed
Hypoxidaceae	<i>Hypoxis hygometrica</i> var. <i>hygometrica</i>	Golden Weather-grass
Juncaceae	<i>Juncus acutus</i> *	Sharp Rush
Juncaceae	<i>Juncus continuus</i>	-
Juncaceae	<i>Juncus usitatus</i>	Common Rush
Poaceae	<i>Lachnagrostis filiformis</i>	Blown Grass
Asteraceae	<i>Lagenophora stipitata</i>	Blue Bottle-daisy
Lomandraceae	<i>Lomandra longifolia</i>	Spiky-headed Mat-rush
Lomandraceae	<i>Lomandra multiflora</i> subsp. <i>multiflora</i>	Many-flowered Mat-rush
Fabaceae	<i>Lotus suaveolans</i> *	Hairy Bird's Foot Trefoil
Lamiaceae	<i>Mentha saturoioides</i>	Creeping Mint
Poaceae	<i>Microlaena stipoides</i> var. <i>stipoides</i>	Weeping Grass
Malvaceae	<i>Modiola caroliniana</i> *	Red-flowered Mallow
Oxalidaceae	<i>Oxalis perennans</i>	-
Poaceae	<i>Panicum effusum</i>	Hairy Panic
Poaceae	<i>Paspalidium distans</i>	Watercrown Grass

Family	Scientific name	Common name
Poaceae	<i>Paspalum dilatatum</i> *	Paspalum
Malvaceae	<i>Pavonia hastata</i> *	Pink Pavonia
Poaceae	<i>Pennisetum clandestinum</i> *	Kikuyu
Polygonaceae	<i>Persicaria decipiens</i>	Slender Knotweed
Phyllanthaceae	<i>Phyllanthus virgatus</i>	Seed-under-leaf
Plantaginaceae	<i>Plantago gaudichaudii</i>	Narrow Plantain
Plantaginaceae	<i>Plantago lanceolata</i> *	Ribwort
Poaceae	<i>Poa labillardieri</i>	Tussock Grass
Lobeliaceae	<i>Pratia purpurascens</i>	White Root
Acanthaceae	<i>Pseuderanthemum variabile</i>	Pastel Flower
Fabaceae	<i>Pultenaea microphylla</i>	Spreading Bush-pea
Iridaceae	<i>Romulea rosea</i> var. <i>australis</i> *	Onion Grass
Polygonaceae	<i>Rumex</i> sp.	-
Asteraceae	<i>Senecio madagascariensis</i> *	Fireweed
Poaceae	<i>Setaria parviflora</i> *	Pigeon Grass
Malvaceae	<i>Sida rhombifolia</i> *	Paddy's Lucerne
Asteraceae	<i>Sigesbeckia orientalis</i> ssp. <i>orientalis</i>	Indian Weed
Solanaceae	<i>Solanum nigrum</i> *	Blackberry Nightshade
Solanaceae	<i>Solanum prinophyllum</i>	Forest Nightshade
Solanaceae	<i>Solanum pseudocapsicum</i> *	Jerusalem Cherry
Solanaceae	<i>Solanum sisymbriifolium</i> *	Sticky Nightshade
Asteraceae	<i>Sonchus oleraceus</i> *	Common Sow-thistle
Poaceae	<i>Sporobolus africanus</i> *	Parramatta Grass
Poaceae	<i>Sporobolus creber</i>	Slender Rat's Tail Grass
Lamiaceae	<i>Stachys arvensis</i> *	Stagger Weed
Asteraceae	<i>Taraxacum officinale</i> *	Dandelion
Poaceae	<i>Themeda australis</i>	Kangaroo Grass
Commelinaceae	<i>Tradescantis fluminensis</i> *	Wandering Jew
Fabaceae	<i>Trifolium repens</i> *	White Clover
Verbenaceae	<i>Verbena bonariensis</i> *	Purpletop
Campanulaceae	<i>Wahlenbergia gracilis</i>	Australian Bluebell
Vines		
Apocnyaceae	<i>Araujia sericifera</i> *	Moth Plant

Family	Scientific name	Common name
Rosaceae	Rubus fruticosus*	Blackberry
Vitaceae	Cayratia clematidea	Native Grape
Fabaceae	Desmodium varians	Slender Tick-Trefoil
Chenopodiaceae	Einadia nutans subsp. linifolia	Climbing Saltbush
Fabaceae	Glycine clandestina	Twining Glycine
Fabaceae	Glycine microphylla	Small-leaf Glycine
Fabaceae	Glycine tabacina	Variable Glycine
Fabaceae	Hardenbergia violacea	False Sarsparilla
Convolvulaceae	Ipomoea cairica*	Coastal Morning Glory
Convolvulaceae	Ipomoea indica*	Blue Morning Glory
Bignoniaceae	Pandorea pandorana	Wonga Vine
Apocynaceae	Parsonsia straminea	Common Silkpod
Fabaceae	Vicia sativa subsp. sativa*	Common Vetch
Water plants		
Juncaceae	Juncus cognatus*	-
Onagraceae	Ludwigia peploides subsp. montevidensis	Water Primrose
Juncaginaceae	Triglochin microtuberosum	Water Ribbons
Typhaceae	Typha orientalis	Broadleaf Cumbungi

* denotes exotic species

