



327-335 Burley Road Horsley Park VMP -
Implementation Progress Report: March – August 2020

CSR Building Products Ltd

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Template 2.8.1

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Abbreviations

Abbreviation	Description
APZ	Asset Protection Zone
BC Act	NSW <i>Biodiversity and Conservation Act 2016</i>
BIZ	Bushland Interface Zone
BoM	Bureau of Meteorology
CEEC	Critically Endangered Ecological Community
CPLS	Cumberland Plain Land Snail
CPW	Cumberland Plain Woodland
DA	Development Application
ELA	Eco Logical Australia
EPBC Act	Commonwealth <i>Environmental Protection and Biodiversity Act 1999</i>
SEPP	State Environmental Planning Policy
VMP	Vegetation Management Plan

1. Introduction

A Vegetation Management Plan (VMP) was prepared by Travers bushfire & ecology (Travers 2017) 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 2017) 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 in their Flora and Fauna Assessment Report, 10 March 2014

ELA has been undertaking the vegetation management works on-site since March 2018. Implementation progress reports are to be produced every six months for the first three years with annual progress reports for the remaining seven years of the maintenance program. ELA has prepared six-month progress reports for the periods March to August 2018 (ELA 2018), September 2018 to February 2019 (ELA 2019a), March to August 2019 (ELA 2019b) and September 2019 to February 2020 (ELA 2020). This is the six-month progress report covering the period from March to August 2020. This report was delayed due to the previous report (ELA 2020) being delayed to capture the revegetation works undertaken during that period.

1.1 Performance criteria

This report describes how the works undertaken 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 2017)

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.

Performance Criteria

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 m²

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. A search for Cumberland Plain Land Snail and relocation into the CPW Reserve is to be undertaken two weeks prior to bulk earthworks at the reserve interface within any CPW remnants outside of the CPW reserve.

9. 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.

10. 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.

11. 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 from March to August 2020 continued to focus on maintenance weed control throughout the VMP area. Primary weed control was completed Year 1 (March 2018 to February 2019) and secondary weed control was completed in Year 2 (March 2019 to February 2020). The maintenance weed control has concentrated on the regrowth of weeds. All weeds have been controlled as per the techniques and specifications included in the VMP (Travers 2017).

Woody weeds

Primary woody weed removal, especially *Olea europaea subsp. cuspidata* (African Olive), *Lycium ferocissimum* (African Boxthorn) and *Lantana camara* (Lantana) were largely undertaken onsite during Year 1. Woody weeds were treated using the cut and paint method. All adult specimens have been treated across the site.

Since then, 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. The only remaining woody weeds on site are juvenile individuals.

Vines

The main vines targeted on site include *Araujia sericifera* (Moth Plant) and *Asparagus asparagoides* (Bridal Creeper). Vines have been largely controlled on site. All vines entering the canopy or climbing on fallen trees were targeted during Year 1. 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. Since then, any emerging vines have been treated by hand removal or by spot spraying with a selective herbicide to prevent them from re-entering the canopy.

Groundcovers

Initially, large patches of *Eragrostis curvula* (African Lovegrass), *Cenchrus clandestinum* (Kikuyu) and other exotic grasses were brushcut and sprayed as part of the primary weed control. Since then, any reshooting *Eragrostis curvula* are spot sprayed prior to setting seed.

Broad leaf weeds such as *Bidens Pilosa* (Cobbler's Pegs), *Senecio madagascariensis* (Fireweed) and *Sida rhombifolia* (Paddy's Lucerne) have been continually targeted since implementation works commenced.

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), skirting (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
<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 rubiginosa</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>Anagallis arvensis</i>	Scarlett Pimpernel	SP
<i>Bidens pilosa</i>	Cobblers Pegs	BC, SP
<i>Brassica oleracea</i>	Wild Cabbage	HW, SP
<i>Bromus catharticus</i>	Prairie Grass	HW, SP
<i>Cenchrus clandestinum</i>	Kikuyu	BC, 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>Lolium perenne</i>	Rye Grass	HW, SP
<i>Paspalum dilatatum</i>	Caterpillar Grass	SP
<i>Plantago lanceolata</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

Species	Common name	Weed control
<i>Solanum sisymbriifolium</i>	Viscid Nightshade	BC, SP
<i>Sonchus oleraceus</i>	Common Sowthistle	HW, SP
<i>Verbena bonariensis</i>	Purpletop	BC, SP

*Priority weeds

2.2 Revegetation

A total of 41,428 plants were installed between 3 and 10 June 2020. All plantings consisted of suitable CPW species grown from local provenance seed, installed as tubes and *hiko* cells and irrigated thoroughly upon installation. All shrubs were also installed with tree guards to protect against herbivory and frost.

The installation of 240 plants in the north east section of Bushland Interface Zone (BIZ) was delayed to allow for the earthworks in the adjoining Stage 3 development to be completed.

Planting species and numbers installed to date have been provided below in **Table 3**.

Table 3: Revegetation species and numbers

Species	Common Name	BIZ	Dam	Reveg Areas	Total
Trees					
<i>Acacia implexa</i>	Hickory Wattle			40	40
<i>Eucalyptus crebra</i>	Narrow Leaved Ironbark			40	40
<i>Eucalyptus eugenioides</i>	Thin leaved Stringybark			40	40
<i>Eucalyptus moluccana</i>	Grey Box			48	48
<i>Eucalyptus tereticornis</i>	Forest Red Gum			40	40
Total Trees		0	0	208	208
Shrubs					
<i>Acacia decurrens</i>	Black Wattle	360		120	480
<i>Acacia falcata</i>	Sickle Wattle	160		40	200
<i>Acacia parramattensis</i>	Parramatta Wattle	400		100	500
<i>Bursaria spinosa</i>	Black Thorn	320		80	400
<i>Daviesia ulicifolia</i>	Gorse Bitter Pea	120		80	200
<i>Dillwynia sieberi</i>	Prickly Parrot Pea			80	80
<i>Dodonaea viscosa</i>	Sticky Hop-Bush	552		167	720
<i>Indigofera australis</i>	Australian Indigo	80		40	120
<i>Melaleuca nodosa</i>	Ball Honey Myrtle	560		160	720
Total Shrubs		2,553	0	867	3,420
Sedges / Grasses					

Species	Common Name	BIZ	Dam	Reveg Areas	Total
<i>Baumea articulata</i>	Jointed Twig-Rush		1,100		1,100
<i>Bothriochloa macra</i>	Redleg Grass			400	400
<i>Carex appressa</i>	Tall Sedge		1,380		1,380
<i>Chloris truncata</i>	Windmill Grass			1,160	1,160
<i>Chloris ventricosa</i>	Windmill Grass			400	400
<i>Cymbopogon refractus</i>	Barbed Wire Grass			1,200	1,200
<i>Dichelachne micrantha</i>	Shorthair Plumegrass			200	200
<i>Echinopogon caespitosus</i>	Hedgehog Grass			1,200	1,200
<i>Eleocharis sphacelata</i>	Tall Spike Rush		360		360
<i>Entolasia stricta</i>	Wiry Panic			120	120
<i>Eragrostis brownii</i>	Brown's Lovegrass			120	120
<i>Eragrostis leptostachya</i>	Paddock Lovegrass			200	200
<i>Juncus usitatus</i>	Common Rush		1,900		1,900
<i>Microlaena stipoides</i>	Weeping Grass			2,400	2,400
<i>Oplismenus aemulus</i>	Basket Grass			1,600	1,600
<i>Philydrum lanuginosum</i>	Frogsmouth		560		560
<i>Poa labillardieri</i>	Tussock Grass			2,404	2,404
<i>Rytidosperma racemosum</i>	Wallaby Grass			200	200
<i>Schoenoplectus validus</i>	Softstem Bulrush		1,300		1,300
<i>Themeda australis</i>	Kangaroo Grass			400	400
Total Sedges / Grasses		0	6,600	12,004	18,604

Herbs / Scramblers

<i>Arthropodium milleflorum</i>	Vanilla Lily			80	80
<i>Brunoniella australis</i>	Blue Trumpet			1,200	1,200
<i>Calotis cuneifolia</i>				880	880
<i>Centella asiatica</i>	Indian Pennywort			800	800
<i>Clematis glycinoides</i>	Old Man's Beard			320	320
<i>Commelina cyanea</i>	Scurvy Weed			1,600	1,600
<i>Desmodium varians</i>	Slender Tick-Trefoil			120	120
<i>Dianella longifolia</i>	Blueberry Lily			600	600
<i>Dichondra repens</i>	Kidney Weed			2,400	2,400
<i>Einadia hastata</i>	Berry Saltbush			600	600
<i>Glycine tabacina</i>	Variable Glycine			320	320
<i>Goodenia hederacea</i>	Forest Goodenia			1,200	1,200
<i>Hardenbergia violacea</i>	Purple Coral Pea			3,000	3,000

Species	Common Name	BIZ	Dam	Reveg Areas	Total
<i>Lomandra filiformis</i>	Wattle Mat-Rush			320	320
<i>Lomandra longifolia</i>	Mat Rush			1,600	1,600
<i>Phyllanthus virgatus</i>	-			10	10
<i>Pratia purpeuascens</i>	Whiteroot			2,200	2,200
<i>Stackhousia viminea</i>	Slender Stackhousia			100	100
<i>Wahlenbergia gracilis</i>	Australian Bluebell			1,846	1,846
Total Herbs / Scramblers		0	0	19,196	19,196
Grand Total		2,553	6,600	32,275	41,428

2.3 Monitoring methods

The site was assessed on 11 November 2020 by ELA Restoration Ecologist Andrew Norvill, using general observations and floristic data collected using nine survey plots, which were established in the first monitoring period (March-August 2018). General observations, as per the VMP (Travers 2017), 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 installed revegetation
- Condition of fencing

2.3.1 Vegetation quadrats and transects

Nine survey plots were used to assess achievement against the performance targets listed in **Table 1**. **Figure 1** 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 2017) with each plot consisting of a 20x20 m quadrat.

In each quadrat the percentage cover and abundance for all native and exotic overstorey, midstorey and ground cover species present was recorded.

2.3.2 Cumberland Plain Land Snail search

Throughout this reporting period the site was assessed for Cumberland Plain Land Snails (CPLS) on two occasions, 11 August 2020 and 10 September 2020 by ELA Restoration Ecologist Andrew Norvill and ELA Bush Regenerators Melinda Cook, Grant King and Adam Halliday. 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.

2.3.3 Weather during site monitoring

The weather on site during the CPLS surveys can be found in **Table 4**.

Table 4: Weather during CPLS surveys

Date	Max. temperature	Rainfall
11 August 2020	17.7°C	0.2mm
10 September 2020	17.8°C	6.8mm

2.4 Photo point monitoring

Eighteen fixed photo monitoring points were established during the first reporting period (ELA 2018). They can be found at the beginning and end points of each transect (see **Figure 1**). Comparative photos were taken from the same locations during this reporting period. The photos from each monitoring point, are included in **Appendix A**.

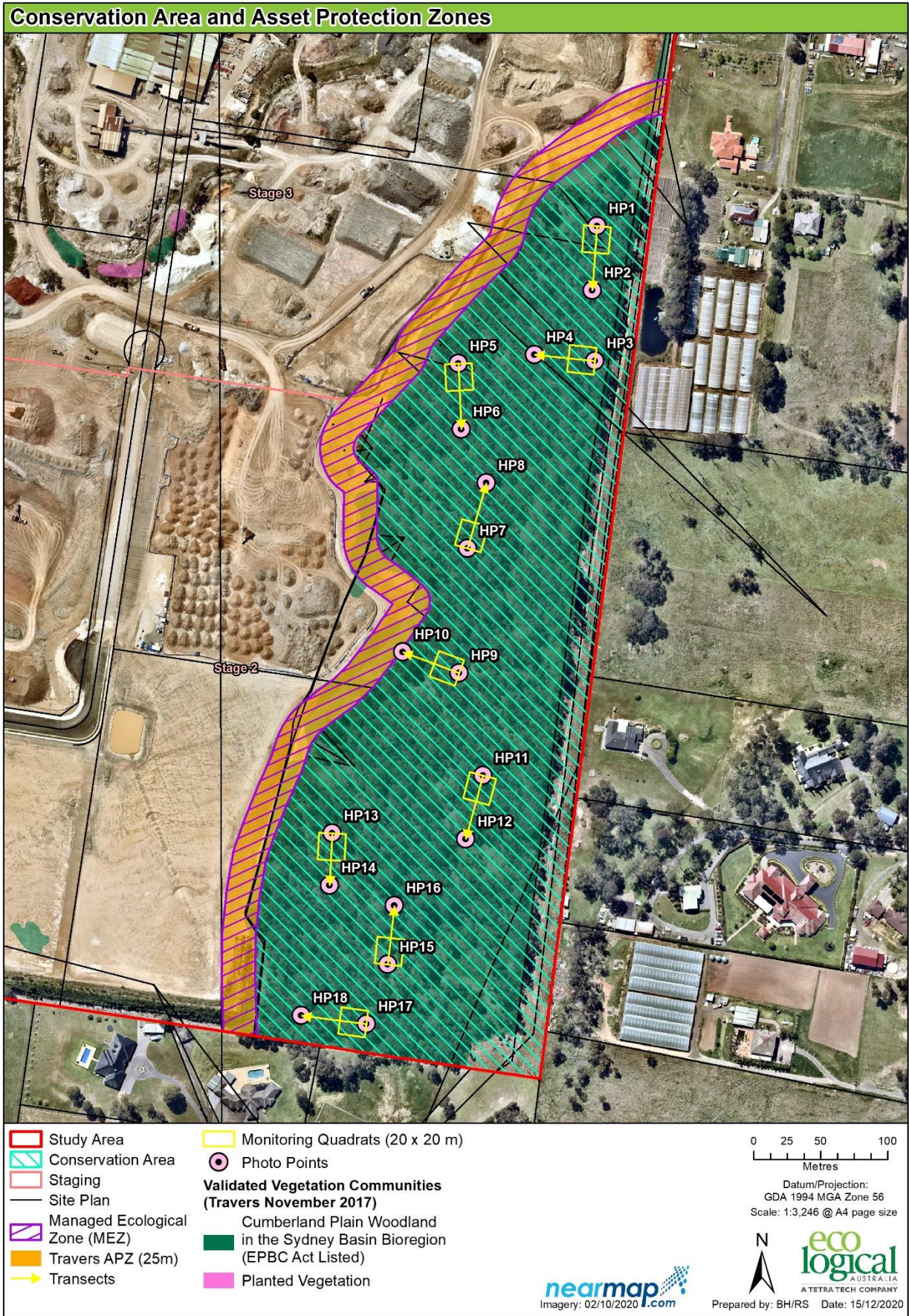


Figure 1: Vegetation quadrats and photo monitoring points

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 2018-20, is provided in **Appendix B**.

1. Species richness (**Figure 2**)

- An increase in native species richness within the quadrats from 38 in August 2018, to 60 in August 2020.
- A slight increase in weed species richness from 21 in August 2018, to 24 in August 2020.

2. Mean ground layer and mid storey cover abundance (**Figure 3** and **Figure 4**)

- An increase in native ground layer abundance from 75% in August 2018 to 88% in August 2020.
- A reduction in exotic ground layer abundance from 8% in August 2018 to 5% in August 2020.
- A decrease in native mid storey abundance from 62% in August 2018, to 57% in August 2020.
- A decrease in exotic mid storey abundance from 3% in August 2018 to 1% in August 2020.



Figure 2: Species richness across all quadrats

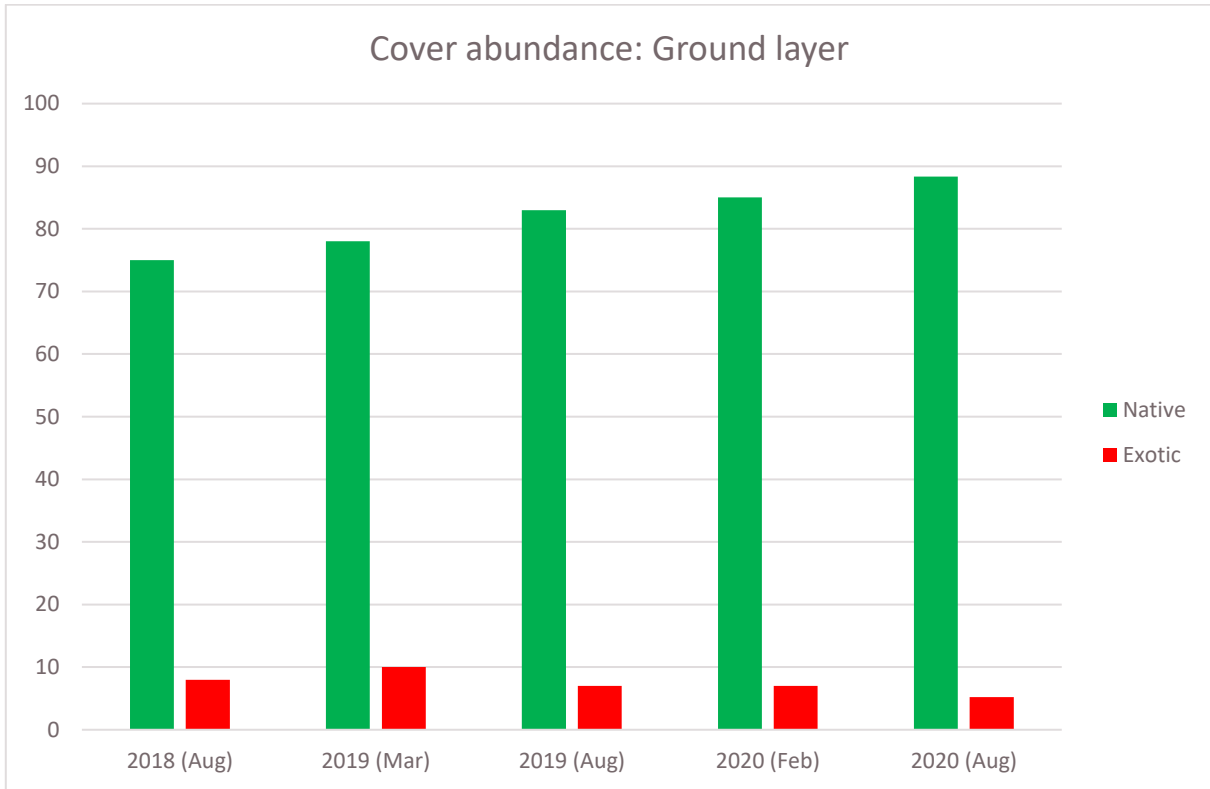


Figure 3: Mean cover abundance Ground layer

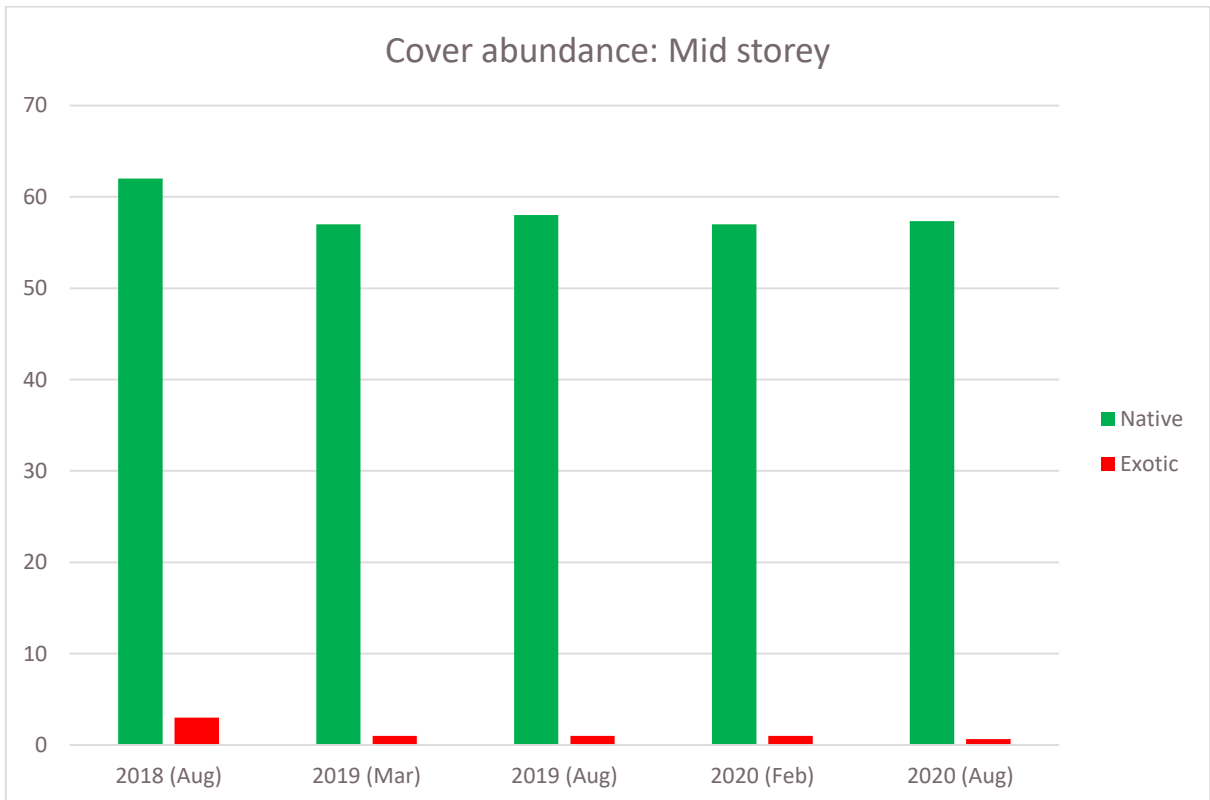


Figure 4: Mean cover abundance Mid Storey

3.2 CPLS survey results

Two surveys for CPLS recorded the following (also see **Figure 5**):

- 22 live CPLS
- 108 CPLS shells
- 0 live exotic snails
- 3 exotic snail shells

The location where the snails were recorded is provided in **Figure 6** for the CPLS and **Figure 7** for the exotic snails.

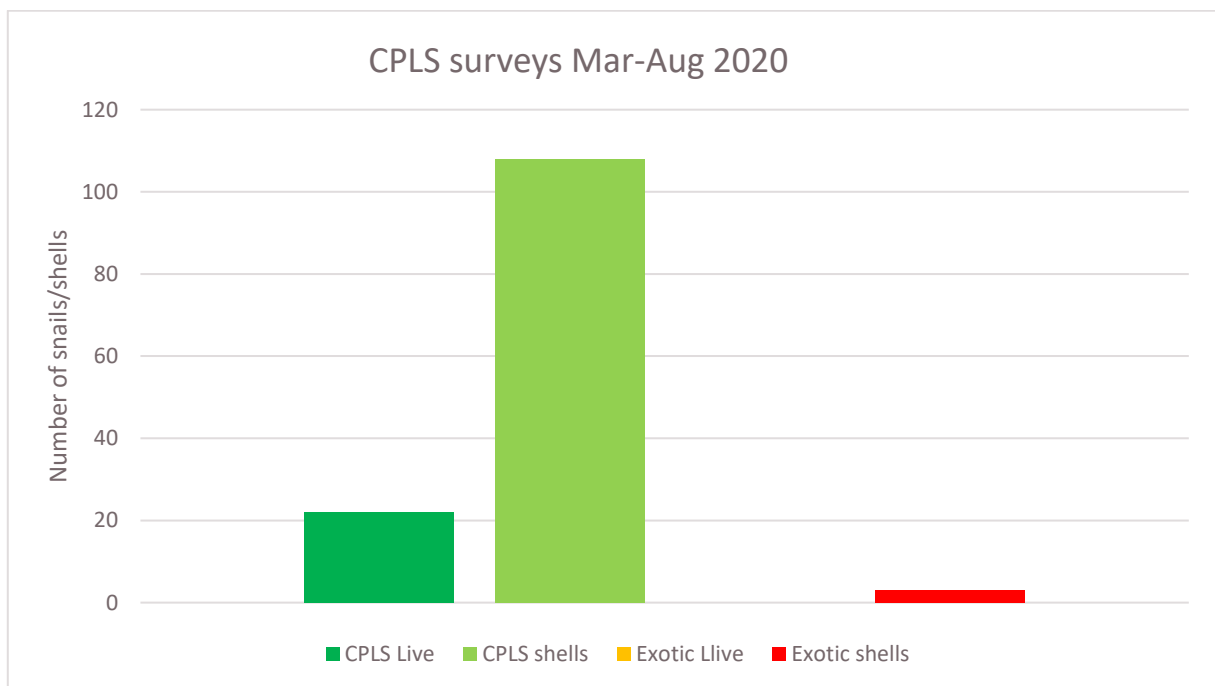


Figure 5: Cumberland Plain Land Snail search survey results and count

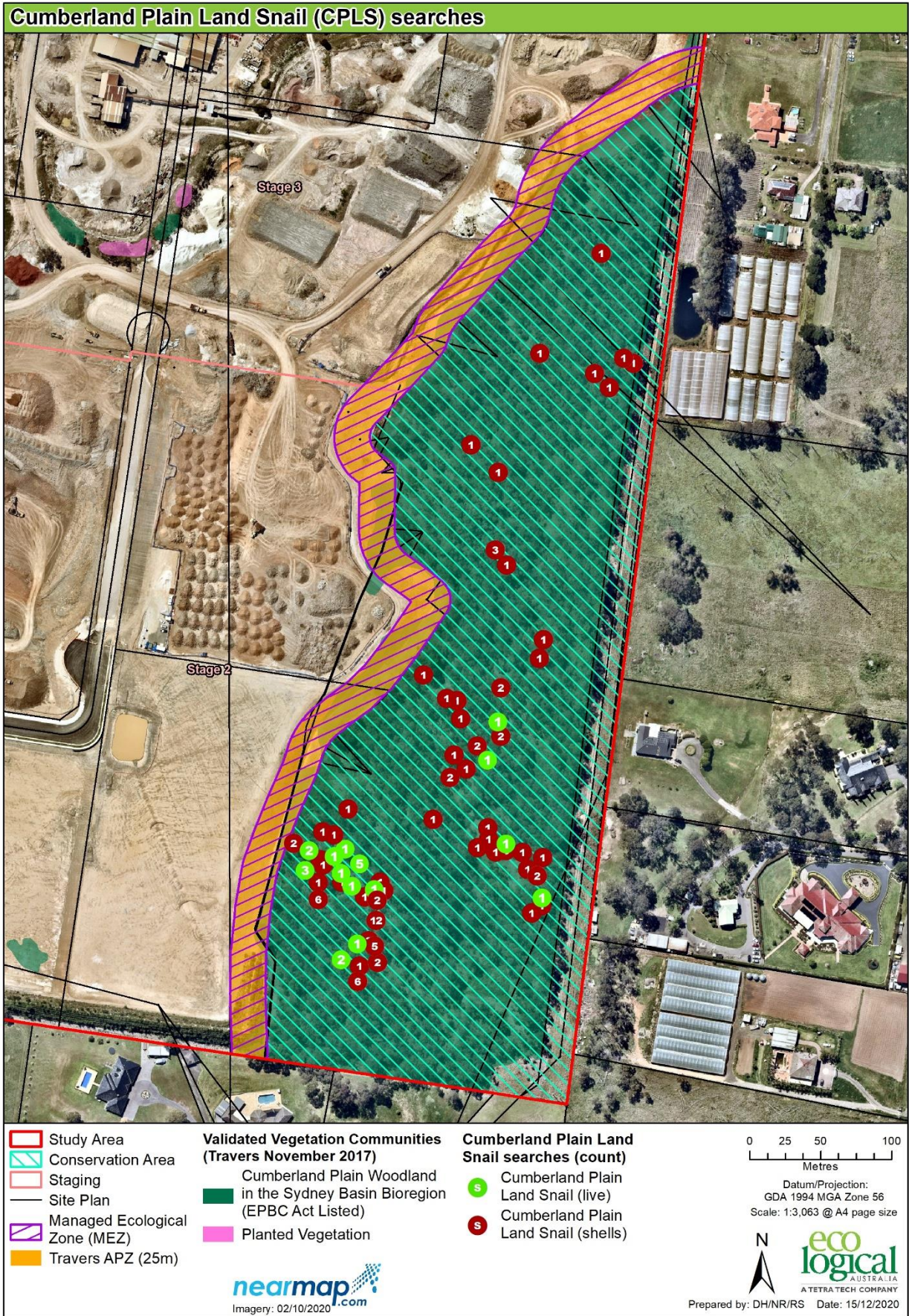


Figure 6: Cumberland Plain Land Snail survey results (March-August 2020)

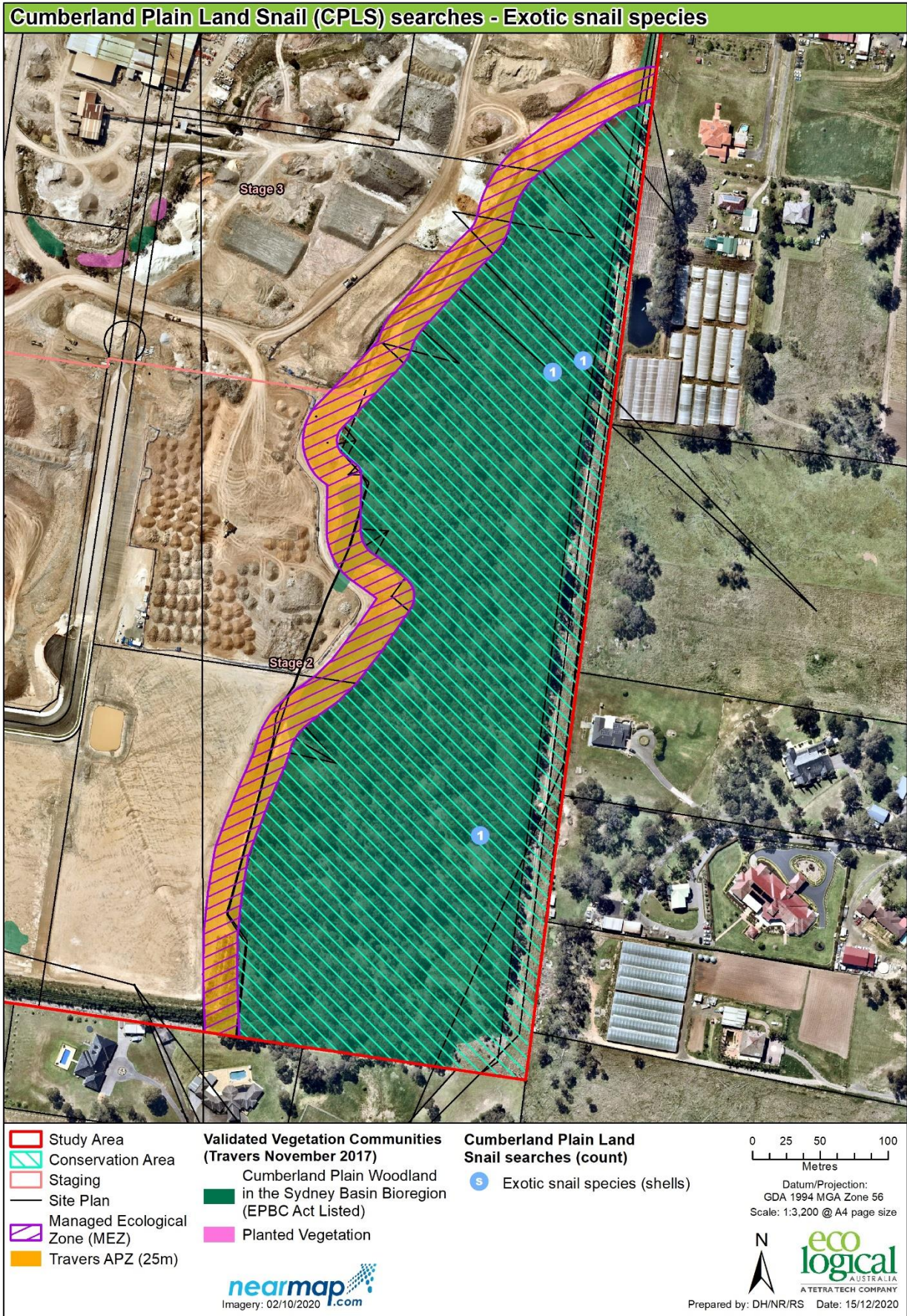


Figure 7: Exotic Snail survey results (March-August 2020)

3.3 Fauna observations

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

BIRDS

- Australian Wood Duck (*Chenonetta jubata*)
- Crested Pigeon (*Ocyphaps lophotes*)
- Peregrine Falcon (*Falco peregrinus*)
- Galah (*Eolophus roseicapilla*)
- 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*)
- Grey Butcherbird (*Cracticus torquatus*)
- 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*)

3.4 Weather during management period

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 9 November 2020 (see **Figure 8**).

The 2020 Rainfall data (**Figure 8**) has been measured against the mean and median rainfall data for this weather station. Rainfall for this reporting period (March to August 2020), has been consistent for all months except for July 2020 where 135.4mm of rain fell (95.9mm above the monthly average rainfall for July).

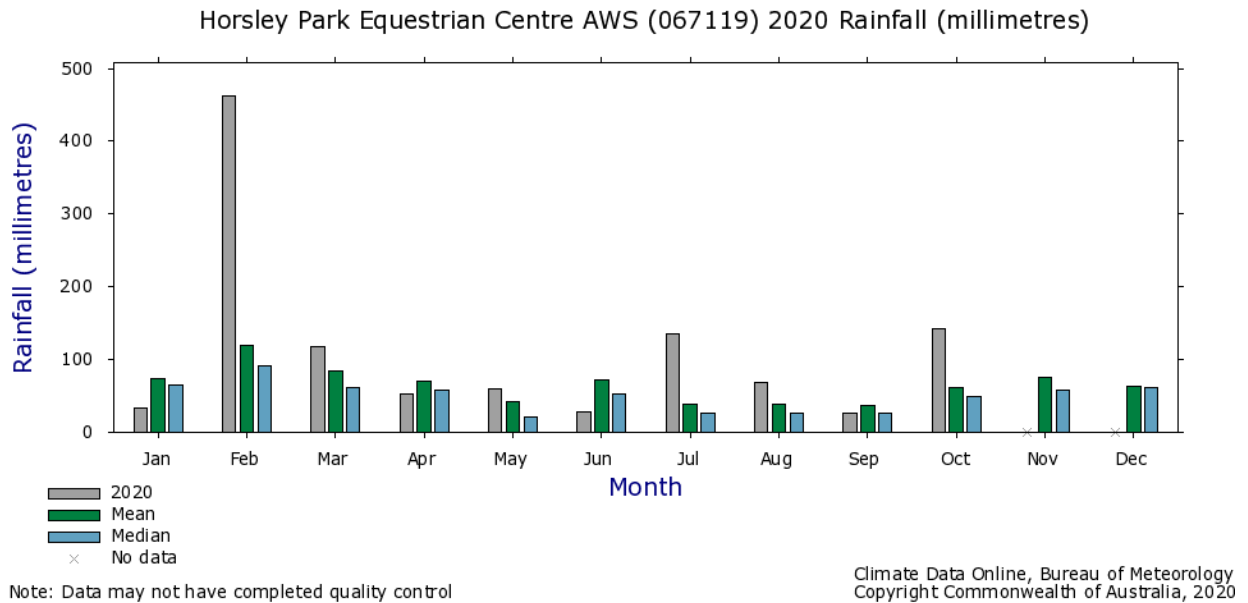


Figure 8: Mean rainfall for 2020 (BOM 9 November 2020)

4. Assessment against performance criteria

Works continued to concentrate on maintenance weed control of the more degraded sections of the site, in particular along the southern and western boundaries and amongst the plantings. Primary weed control was undertaken in Year 1 with secondary weed control works undertaken in Year 2 however, these areas will require regular follow up throughout the duration of the VMP implementation period to help control seed propagation and further spreading of weeds into well maintained areas.

All revegetation has been installed with the exception of 240 shrubs in the north west corner of the Bushland Interface Zone (BIZ). The earthworks in the adjoining Stage development are currently being undertaken and the revegetation along this section will be installed Autumn 2021.

Overall the site is progressing well with all of the VMP performance criteria either met or on track to be met. The site is also on-track to fulfil its overall 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, African Lovegrass, Kikuyu and overall weed presence.

Regular weed control maintenance will continue to be required to treat all emerging weeds, especially in and around natural regeneration areas where weeds such as *Bidens pilosa* (Cobbler's Pegs), *Senecio madagascariensis* (Fireweed) *Ehrharta erecta* (Panic Veldtgrass) and *Sida rhombifolia* (Paddy's Lucerne) are sprouting in areas where woody weed removal has been undertaken. In these areas, especially where native groundcover is thicker, hand weeding has become the preferred method of weed control as accurate spot spraying is more difficult.

The progress of works to achieve the performance criteria is shown in **Table 5**.

Table 5: Performance criteria achievement (Travers 2017)

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 and on track	With the exception of the north western boundary where earthworks adjoining the VMP are currently being undertaken
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 and on track	Exotic groundcover at 5%
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 and on track	Native groundcover at 88%. Native midstorey cover at 57%
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.	Yes	-
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	On track	240 shrubs to be installed in the north east corner upon completion of adjoining Stage 3 earthworks
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	Yes	32,275 plants installed in disturbed areas in June 2020. A total of 5 tree species, 9 shrub species and 19 groundcover were species installed
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	24 Hardwood logs have been placed within the site

Performance Criteria	Completed	Comment
8. A search for Cumberland Plain Land Snail and relocation into the CPW Reserve is to be undertaken two weeks prior to bulk earthworks at the reserve interface within any CPW remnants outside of the CPW reserve.	Yes	-
9. 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.	On track	Monitoring is currently being undertaken every 6 months, according to Section 4.1 of the VMP (Travers 2017)
10. 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.	N/A	-
11. 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.	N/A	There are no burns planned in the foreseeable future so no need to relocate any snails

5. Site issues

To date, only 24 of the 30 x 3 m length hardwood logs have been placed within the VMP. Given the permanent protective fence has already been installed along the western boundary and vehicular access has been prohibited, the relocation of the remaining six hardwood logs into the site will be difficult. However, there have been several fallen native trees within the conservation area that can compensate as CPLS habitat for the remaining six hardwood logs. In addition, it is recommended that piles of smaller diameter logs, ideally still 3m long, be placed in the conservation area. These can be used to create habitat structures which can provide similar habitat.

The VMP is subject to edge effects impacting on the bushland, especially where the VMP area lies adjacent to exotic grassland along the eastern boundary. Also, irrigation from the revegetation works in the APZ (outside of the VMP) along the western boundary has seen a large increase in exotic plant growth within the VMP due to excess water runoff. These boundaries will need to be regularly maintained to keep exotic grass seed to a minimum and prevent seed from entering the VMP area so that the long term performance criteria can be met.

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.
- Irrigation of plants installed
- Plant installation in north east corner of the BIZ upon completion of earthworks in adjacent development site
- 10% replacement planting (if required)
- Continued CPLS searches (minimum of 4 per year).
- Continued monitoring and reporting.

6. Conclusions

The performance criteria for the site are all being met or on-track to being met in the future where no specific criteria exists for Year 3. However, edge effects and impacts from the adjacent development site will be a continuous issue.

Works for the remainder of Year 3 site will consist of maintenance of revegetation, infill revegetation, ongoing weed control as well as the required monitoring and reporting.

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Appendix A Photo monitoring points



HP1 July 2018



HP1 August 2020



HP2 July 2018



HP2 August 2020



HP3 July 2018



HP3 August 2020



HP4 July 2018



HP4 August 2020



HP5 July 2018



HP5 August 2020



HP6 July 2018



HP6 August 2020



HP7 July 2018



HP7 August 2020



HP8 July 2018



HP8 August 2020



HP9 July 2018



HP9 August 2020



HP10 July 2018



HP 10 August 2020



HP11 July 2018



HP11 August 2020



HP12 July 2018



HP12 August 2020



HP13 July 2018



HP13 August 2020



HP14 July 2018



HP14 August 2020



HP15 July 2018



HP15 August 2020



HP16 July 2018



HP16 August 2020



HP17 July 2018



HP17 August 2020



HP18 July 2018



HP18 August 2020

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

Species	% Projected foliage cover in quadrats									% Total cover
	Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	
<i>Verbena bonariensis</i>		<1				<1				0

Native vegetation (September 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>							7			1
<i>Aristida ramosa</i>		30	20	20	30	40	30	30		22
<i>Aristida vagans</i>		<1	2	<1	<1	2	<1	<1		0
<i>Asperula conferta</i>						<1				0
<i>Brunoniella australis</i>	2	2	2	2	2	5	2	2	2	2
<i>Bursaria spinosa</i>	75	50	70	80	15	30	70	30	80	56
<i>Cayratia clematidea</i>	5									1
<i>Centella asiatica</i>					<1		<1			0
<i>Cheilanthes sieberi</i>	<1					<1				0
<i>Chloris ventricosa</i>					5	2	5	2		2
<i>Cymbopogon refractus</i>					5	2	<1	<1	<1	1
<i>Cyperus sp.</i>			<1				<1			0
<i>Daviesia ulicifolia</i>			<1							0
<i>Desmodium varians</i>	1	1	<1	<1	<1	<1	<1	<1		0
<i>Dianella longifolia</i>		<1			1	<1	<1	<1	<1	0
<i>Dichondra repens</i>	2	2	1	<1	5	<1	1	1	<1	1
<i>Dillwynia sieberi</i>		<1							2	0
<i>Einadia hastata</i>	<1									0
<i>Eremophila debilis</i>			<1				<1			0

Species	% Projected foliage cover in quadrats									% Total cover	
	Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9		
<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	<1		<1		<1	0
<i>Glycine tabacina</i>	5	2	<1	<1	<1	<1	<1	<1		<1	1
<i>Goodenia hederacea</i>							<1	<1			0
<i>Indigofera australis</i>	1										0
<i>Kennedia rubicunda</i>			<1								0
<i>Lomandra filiformis</i>			<1		<1	<1		<1		<1	0
<i>Lomandra multiflora</i> subsp. <i>multiflora</i>		<1	1	1	<1	<1	<1			2	0
<i>Mentha saturejoides</i>			<1								0
<i>Microlaena stipoides</i>	60	40	20	20	15	20	15	40		50	31
<i>Oxalis perennans</i>	<1									<1	0
<i>Paspalidium distans</i>			<1								0
<i>Plantago gaudichaudii</i>					<1	<1		<1			0
<i>Poa labillardieri</i>			<1		5		5	<1			1
<i>Pratia purpurascens</i>										2	0
<i>Pultenea microphylla</i>							3	2			1
<i>Solanum prinophyllum</i>	1		<1	<1	<1			<1			0
<i>Sporobolus creber</i>								<1			0
<i>Syncarpia glomulifera</i>								15			2

Species	% Projected foliage cover in quadrats									% Total cover
	Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	
<i>Themeda australis</i>	2	2	2	15	10	20	5		20	8

Exotic vegetation (September 2019)

Species	% Projected foliage cover in quadrats									% Total cover
	Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	
<i>Bidens pilosa</i>	<1	<1	<1		<1	<1	<1		<1	0
<i>Cirsium vulgare</i>		<1								0
<i>Conyza bonariensis</i>	<1									0
<i>Ehrharta erecta</i>	10		<1	<1		<1				1
<i>Eragrostis curvula</i>						<1		<1		0
<i>Hypochaeris radicata</i>				<1						0
<i>Lantana camara</i>			<1	<1						0
<i>Lycium ferrocissimum</i>		<1	<1							0
<i>Ochna serrulata</i>				<1	<1					0
<i>Olea europaea</i> subsp. <i>cuspidata</i>			<1	<1						0
<i>Paspalum dilatatum</i>		<1					<1	<1	2	0
<i>Plantago lanceolata</i>							<1	<1		0
<i>Senecio madagascariensis</i>	<1					<1	<1	<1	<1	0
<i>Senecio pterophorus</i>		<1			<1		<1	<1		0
<i>Sida rhombifolia</i>	<1	<1	<1	<1		<1	<1		<1	0
<i>Solanum nigrum</i>	<1								<1	0
<i>Solanum pseudocapsicum</i>	<1		<1	<1		<1				0
<i>Solanum sisymbriifolium</i>									1	0

Native vegetation (March 2020)

Species	% Projected foliage cover in quadrats									% Total cover
	Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	
<i>Acacia decurrens</i>								5		1
<i>Acacia falcata</i>							<1			0
<i>Acacia implexa</i>							5			1
<i>Aristida ramosa</i>		10	20	10	10	10	25	10		11
<i>Aristida vagans</i>			2	<1	2	10		<1		2
<i>Arthropodium milleflorum</i>							<1			0
<i>Asperula conferta</i>					<1	<1	<1	<1		0
<i>Bossiaea prostrata</i>						1				0
<i>Bothriochloa macra</i>								1		0
<i>Brunoniella australis</i>	2	10	2	5	5	10	10	10	5	7
<i>Bursaria spinosa</i>	75	50	70	80	15		70		80	49
<i>Cayratia clematidea</i>	5									1
<i>Cheilanthes sieberi</i>	<1	<1	<1	<1		<1				0
<i>Chloris ventricosa</i>			<1		5	5		<1		1
<i>Commelina cyanea</i>						<1				0
<i>Cymbopogon refractus</i>					10	5	20	1		4
<i>Cyperus gracilis</i>	<1		<1							0
<i>Daviesia ulicifolia</i>			<1							0
<i>Desmodium varians</i>	<1	<1	<1	1	<1	<1	2			0
<i>Dianella longifolia</i>		<1		<1	<1	<1	<1	<1		0
<i>Dichondra repens</i>	15	5	5	5	5	3	5	5	<1	5

Species	% Projected foliage cover in quadrats									% Total cover
	Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	
<i>Dillwynia sieberi</i>									2	0
<i>Einadia hastata</i>	<1							<1		0
<i>Einadia nutans</i>							<1			0
<i>Eremophila debilis</i>				1						0
<i>Eriochloa pseudoacrotricha</i>							<1			0
<i>Eucalyptus crebra</i>				70	10	2				9
<i>Eucalyptus eugenioides</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 clandestina</i>	<1	<1	<1	<1	<1	<1	<1	<1		0
<i>Glycine tabacina</i>	5	2	5	2	1	<1	2	<1	<1	2
<i>Goodenia hederacea</i>								<1		0
<i>Hypoxis hygometrica var. hygometrica</i>		<1	<1	1	1	<1	<1	<1		0
<i>Indigofera australis</i>	<1									0
<i>Kennedia rubicunda</i>			<1							0
<i>Lagenofera stipata</i>			<1	<1						0
<i>Lomandra multiflora subsp. multiflora</i>		<1	<1	<1	<1	<1	<1	<1		0
<i>Mentha saturejoides</i>						<1				0
<i>Microlaena stipoides</i>	51	50	30	40		50	15	70	50	40
<i>Oxalis perennans</i>	<1	<1				<1	<1	<1		0
<i>Panicum effusum</i>						<1				0
<i>Paspalidium distans</i>		<1	<1			<1	<1			0

Species	% Projected foliage cover in quadrats									% Total cover	
	Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9		
<i>Phyllanthus virgatus</i>		<1			<1	<1	<1				0
<i>Plantago gaudichaudii</i>					1						0
<i>Pratia purpurascens</i>									20		2
<i>Pultenea microphylla</i>							3	2			1
<i>Sigesbeckia orientalis ssp. orientalis</i>				<1							0
<i>Solanum prinophyllum</i>	1	<1	<1	<1				1			0
<i>Sorghum leiocladum</i>					2			<1			0
<i>Stackhousia viminea</i>						<1	<1				0
<i>Syncarpia glomulifera</i>								15			2

Exotic vegetation (March 2020)

Species	% Projected foliage cover in quadrats									% Total cover
	Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	
<i>Araujia sericifera</i>	<1	<1								0
<i>Bidens pilosa</i>	10	5	5	1	<1	<1		<1	5	3
<i>Cirsium vulgare</i>		<1		<1						0
<i>Ehrharta erecta</i>	10		1			<1				1
<i>Eragrostis curvula</i>								<1		0
<i>Hypochaeris radicata</i>		<1								0
<i>Lantana camara</i>	2	1	2	2				<1		1
<i>Ochna serrulata</i>				<1						0
<i>Olea europaea subsp. cuspidata</i>		<1							<1	0
<i>Paspalum dilatatum</i>		5		<1	<1	<1	3	<1	10	2
<i>Phytolacca octandra</i>				<1						0
<i>Plantago lanceolata</i>						<1	<1	<1		0
<i>Senecio madagascariensis</i>			<1	<1		<1	<1	<1		0
<i>Setaria parviflora</i>	<1		<1		<1	<1	<1	<1	<1	0
<i>Sida rhombifolia</i>	1	2	<1	1	<1	1	<1	<1	<1	1
<i>Solanum nigrum</i>				<1						0
<i>Solanum pseudocapsicum</i>				<1		<1				0
<i>Solanum sisymbriifolium</i>	<1	<1	<1	<1			<1	<1	<1	0
<i>Sonchus oleraceus</i>	<1	<1	<1	<1			<1	<1		0

Native vegetation (August 2020)

Species	% Projected foliage cover in quadrats									% Total cover
	Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	
<i>Acacia decurrens</i>								5		1
<i>Acacia falcata</i>						<1				0
<i>Acacia implexa</i>							3			0
<i>Aristida ramosa</i>		10	20	10	10	15	30	5		11
<i>Aristida vagans</i>			2	<1	2	5				1
<i>Arthropodium milleflorum</i>		<1					<1	<1	<1	0
<i>Bossiaea prostrata</i>						<1				0
<i>Bothriochloa macra</i>								<1		0
<i>Brunoniella australis</i>	1	10	10	10		10	10	10	5	7
<i>Bursaria spinosa</i>	75	50	70	80	15	30	70	30	80	56
<i>Cayratia clematidea</i>	5									1
<i>Cheilanthes sieberi</i>	<1	<1	<1	<1		<1				0
<i>Chloris ventricosa</i>			<1		5	5		<1		1
<i>Cymbopogon refractus</i>					10	5	20	1		4
<i>Cyperus gracilis</i>	<1									0
<i>Daviesia ulicifolia</i>			<1							0
<i>Desmodium varians</i>	<1	<1	<1	<1	<1	<1	<1	<1		0
<i>Dianella longifolia</i>		<1		<1	<1	<1	<1	<1		0
<i>Dichelachne micrantha</i>		<1						<1		0
<i>Dichondra repens</i>	15	5	5	10	2	5	5	5	<1	6
<i>Dillwynia sieberi</i>		<1							2	0

Species	% Projected foliage cover in quadrats									% Total cover
	Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	
<i>Echinopogon caespitosus</i>								<1		0
<i>Einadia hastata</i>	<1									0
<i>Entolasia marginata</i>	<1									0
<i>Eremophila debilis</i>				1			<1			0
<i>Eucalyptus crebra</i>				70	10	2				9
<i>Eucalyptus eugenoides</i>						25			10	4
<i>Eucalyptus moluccana</i>	5	10	20							4
<i>Eucalyptus tereticornis</i>	30	30	40	20	70	25	40	20	30	34
<i>Euchiton sphaericus</i>				<1						0
<i>Ficus sp.</i>	<1									0
<i>Glycine clandestina</i>	<1	<1	<1	<1	<1	<1	<1	<1		0
<i>Glycine tabacina</i>	3	2	2	2	<1	<1	<1	<1	<1	1
<i>Goodenia hederacea subsp. hederacea</i>					<1			<1		0
<i>Hardenbergia violacea</i>						<1				0
<i>Hypoxis hygometrica var. hygometrica</i>		<1	<1	<1	1	<1	<1	<1		0
<i>Indigofera australis</i>	<1									0
<i>Lagenofera stipata</i>			<1	<1						0
<i>Lomandra longifolia</i>						<1				0
<i>Lomandra multiflora subsp. multiflora</i>		<1	<1	<1	<1	<1	<1	<1		0
<i>Mentha saturejoides</i>			<1							0
<i>Microlaena stipoides</i>	60	55	40	40	40	50	10	75	80	50
<i>Oplismenus aemulus</i>						<1				0
<i>Oxalis perennans</i>	<1	<1				<1		<1		0

Species	% Projected foliage cover in quadrats									% Total cover
	Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	
<i>Pandorea pandorana</i>		<1								0
<i>Panicum effusum</i>					<1	<1				0
<i>Paspalidium distans</i>			<1	<1						0
<i>Phyllanthus virgatus</i>		<1			<1	<1				0
<i>Plantago gaudichaudii</i>					<1					0
<i>Poa labillardierei</i>				<1	<1	<1	<1	<1		0
<i>Pratia purpurascens</i>									<1	0
<i>Pultenea microphylla</i>							3	2		1
<i>Sigesbeckia orientalis ssp. orientalis</i>			<1							0
<i>Solanum prinophyllum</i>	1		<1	<1						0
<i>Sorghum leiocladum</i>					2					0
<i>Stackhousia viminea</i>						<1				0
<i>Syncarpia glomulifera</i>								15		2
<i>Themeda triandra</i>		<1	<1	2	15	<1	10	<1	<1	3
<i>Vittadinia gracilis</i>			<1							0
<i>Wahlenbergia gracilis</i>			<1	<1		<1	<1	<1		0

Exotic vegetation (March 2020)

Species	% Projected foliage cover in quadrats									% Total cover
	Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	
<i>Anagallis arvensis</i>				<1	<1	<1	<1	<1		0
<i>Araujia sericifera</i>	<1									0
<i>Bidens pilosa</i>	5	2	1		<1	<1	<1	<1	2	1
<i>Briza subaristata</i>					<1			<1		0
<i>Cirsium vulgare</i>	<1	<1		<1	<1	<1				0
<i>Conyza bonariensis</i>				<1						0
<i>Ehrharta erecta</i>	10	<1	1							1
<i>Herbertia lahue</i>								<1		0
<i>Hypochaeris radicata</i>	<1			<1	<1	<1		<1		0
<i>Lactuca serriola</i>				<1						0
<i>Lantana camara</i>	2		2	2						1
<i>Lolium perenne</i>		<1								0
<i>Ochna serrulata</i>				<1	<1					0
<i>Olea europaea subsp. cuspidata</i>		<1								0
<i>Paspalum dilatatum</i>					<1		3		5	1
<i>Plantago lanceolata</i>						<1	<1	<1		0
<i>Senecio madagascariensis</i>			<1	<1		<1	<1			0
<i>Senecio pterophorus</i>	<1	<1		<1	<1					0
<i>Sida rhombifolia</i>	<1		<1	<1	<1	<1		<1	<1	0
<i>Solanum nigrum</i>			<1							0
<i>Solanum pseudocapsicum</i>			<1			<1				0

Species	% Projected foliage cover in quadrats									% Total cover
	Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	
<i>Solanum sisymbriifolium</i>	<1		<1	<1	<1		<1	<1	<1	0
<i>Sonchus oleraceus</i>	<1	<1	<1	<1		<1		<1		0
<i>Verbena bonariensis</i>						2				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 spp.</i>	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 var. longifolia</i>	Sydney Golden Wattle
Mimosaceae	<i>Acacia parramattensis</i>	Parramatta Wattle
Mimosaceae	<i>Acacia saligna*</i>	Orange Wattle
Mimosaceae	<i>Acacia ulicifolia</i>	Prickly Moses
Pittosporaceae	<i>Bursaria spinosa var. spinosa</i>	Native Blackthorn
Asteraceae	<i>Cassinia sp.</i>	-
Solanaceae	<i>Cestrum parqui*</i>	Chilean Cestrum
Fabaceae	<i>Daviesia ulicifolia</i>	Gorse Bitter Pea
Fabaceae	<i>Dillwynia sieberi</i>	Prickly Parrot-pea
Sapindaceae	<i>Dodonaea viscosa</i>	Sticky Hop-bush
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

Family	Scientific name	Common name
Oleaceae	<i>Ligustrum lucidum*</i>	Large-leaved Privet
Solanaceae	<i>Lycium ferocissimum*</i>	African Boxthorn
Myrtaceae	<i>Melaleuca nodosa</i>	Ball Honey Myrtle
Berberidaceae	<i>Nandina domestica*</i>	Sacred Bamboo
Ochnaceae	<i>Ochna serrulata*</i>	Mickey Mouse Plant
Oleaceae	<i>Olea europaea subsp. cuspidata*</i>	African Olive
Fabaceae	<i>Pultenaea microphylla</i>	-
Euphorbiaceae	<i>Ricinus communis*</i>	Castor Oil Plant
Rosaceae	<i>Rosa rubignosa*</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-leaved Carpet Grass
Asteraceae	<i>Bidens pilosa*</i>	Cobbler's Pegs
Poaceae	<i>Bothriochloa macra</i>	Redleg Grass
Brassicaceae	<i>Brassica fruticulosa*</i>	Twiggy Turnip
Acanthaceae	<i>Brunoniella australis</i>	Dwarf Blue Trumpet
Asteraceae	<i>Calotis cuneifolia</i>	Purple Burr-daisy
Brassicaceae	<i>Cardamine hirsuta*</i>	Hairy Bittercress
Poaceae	<i>Cenchrus clandestinum*</i>	Kikuyu
Apiaceae	<i>Centella asiatica</i>	Indian Pennywort
Sinopteridaceae	<i>Cheilanthes sieberi</i>	Rock Fern
Poaceae	<i>Chloris gayana*</i>	Rhodes Grass
Poaceae	<i>Chloris truncata</i>	Windmill Grass
Poaceae	<i>Chloris ventricosa</i>	Tall Chloris
Asteraceae	<i>Cirsium vulgare*</i>	Spear Thistle

Family	Scientific name	Common name
Commelinaceae	<i>Commelina cyanea</i>	Scurvy Weed
Asteraceae	<i>Conyza bonariensis*</i>	Flaxleaf Fleabane
Brassicaceae	<i>Coronopus didymus*</i>	Lesser Swine-cress
Poaceae	<i>Cortaderia selloana*</i>	Pampas Grass
Apiaceae	<i>Cyclospermum 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
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 var. 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>Entolasia stricta</i>	Wiry Panic
Poaceae	<i>Eragrostis brownii</i>	Brown's Lovegrass
Poaceae	<i>Eragrostis curvula*</i>	African Lovegrass
Poaceae	<i>Eragrostis leptostachya</i>	Paddock 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
Goodeniaceae	<i>Goodenia hederacea</i>	Forest Goodenia
Fabaceae	<i>Hardenbergia violacea</i>	Purple Coral Pea
Iridaceae	<i>Herbertia lahue*</i>	Prairie Nymph
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 var. hygometrica</i>	Golden Weather-grass
Juncaceae	<i>Juncus acutus*</i>	Sharp Rush

Family	Scientific name	Common name
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 filiformis</i>	Wattle Mat-Rush
Lomandraceae	<i>Lomandra longifolia</i>	Spiky-headed Mat-rush
Lomandraceae	<i>Lomandra multiflora subsp. multiflora</i>	Many-flowered Mat-rush
Fabaceae	<i>Lotus suaveolans*</i>	Hairy Bird's Foot Trefoil
Lamiaceae	<i>Mentha satureioides</i>	Creeping Mint
Poaceae	<i>Microlaena stipoides var. stipoides</i>	Weeping Grass
Malvaceae	<i>Modiola caroliniana*</i>	Red-flowered Mallow
Poaceae	<i>Oplismenus aemulus</i>	Basket Grass
Oxalidaceae	<i>Oxalis perennans</i>	-
Poaceae	<i>Panicum effusum</i>	Hairy Panic
Poaceae	<i>Paspalidium distans</i>	Watercrown Grass
Poaceae	<i>Paspalum dilatatum*</i>	Paspalum
Malvaceae	<i>Pavonia hastata*</i>	Pink Pavonia
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 var. australis*</i>	Onion Grass
Polygonaceae	<i>Rumex sp.</i>	-
Poaceae	<i>Rytidosperma racemosum</i>	Wallaby Grass
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 ssp. orientalis</i>	Indian Weed
Solanaceae	<i>Solanum nigrum*</i>	Blackberry Nightshade

Family	Scientific name	Common name
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
Celastraceae	<i>Stackhousia viminea</i>	Slender Stackhousia
Asteraceae	<i>Taraxacum officinale</i> *	Dandelion
Poaceae	<i>Themeda triandra</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
Rosaceae	<i>Rubus fruticosus</i> *	Blackberry
Vitaceae	<i>Cayratia clematidea</i>	Native Grape
Ranunculaceae	<i>Clematis glycinoides</i>	Old Man's Beard
Fabaceae	<i>Desmodium varians</i>	Slender Tick-Trefoil
Chenopodiaceae	<i>Einadia nutans subsp. linifolia</i>	Climbing Saltbush
Fabaceae	<i>Glycine clandestina</i>	Twining Glycine
Fabaceae	<i>Glycine microphylla</i>	Small-leaf Glycine
Fabaceae	<i>Glycine tabacina</i>	Variable Glycine
Fabaceae	<i>Hardenbergia violacea</i>	False Sarsparilla
Convolvulaceae	<i>Ipomoea cairica</i> *	Coastal Morning Glory
Convolvulaceae	<i>Ipomoea indica</i> *	Blue Morning Glory
Bignoniaceae	<i>Pandorea pandorana</i>	Wonga Vine
Apocynaceae	<i>Parsonsia straminea</i>	Common Silkpod
Fabaceae	<i>Vicia sativa subsp. sativa</i> *	Common Vetch
Water plants		
Cyperaceae	<i>Baumea articulata</i>	Jointed Twig-Rush
Cyperaceae	<i>Carex appressa</i>	Tall Sedge

Family	Scientific name	Common name
Cyperaceae	<i>Eleocharis sphacelata</i>	Tall Spike Rush
Juncaceae	<i>Juncus cognatus</i> *	-
Onagraceae	<i>Ludwigia peploides subsp. montevidensis</i>	Water Primrose
Philydraceae	<i>Philydrum lanuginosum</i>	Frogsmouth
Cyperaceae	<i>Schoenoplectus validus</i>	Softstem Bulrush
Juncaginaceae	<i>Triglochin microtuberosum</i>	Water Ribbons
Typhaceae	<i>Typha orientalis</i>	Broadleaf Cumbungi

*denotes exotic species

