



Eastern Creek Business Hub EPBC 2012/6617
Annual Compliance Report 2023-2024

Western Sydney Parklands Trust

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Template 2.8.1

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1. Introduction

1.1. Project background

Western Sydney Parklands Trust (WSPT) lodged a referral to the then Department of Environment (DotE) for a super lot subdivision and early site stage establishment works for the Eastern Creek Business Hub along Beggs Road, Eastern Creek NSW. The proposed action sought to consolidate the existing landholdings, subdivide the site into three developable lots and one residue lot for environmental management, plus complete site establishment works including roads and stormwater drainage. The site is about 35 ha in size.

The action was determined to be a controlled action due to significant impacts on *Cumberland Plain Woodland* (CPW) and *Shale Gravel Transition Forest* (SGTF). The proposed development was approved on 18 May 2015 with conditions.

1.2. Commencement of works

1.3. Variations

Works in Stage 1 commenced in 2018 and Stage 2 commencement in March 2021. Stage 3 has not yet commenced.

To facilitate the Stage 3 works, the approval holder sought a variation to EPBC 2012/6617 under s143 of the EPBC Act. The variation was to remove an area of 0.73 ha from the 'vegetation to be retained'. The variation was approved on 26 April 2024 (Appendix A). To compensate for the removal of the 0.73 ha of CPW from protection under the VMP, the approval holder must retire 5 ecosystem credits under the NSW Biodiversity Offset Scheme By the 1st of January 2025.

The impact area associated with Stage 3 was proposed to change. The NSW government has approved Stage 3. The Commonwealth is currently assessing the matter as EPBC 2020/8715.

1.4. Vegetation Management Plan

A Vegetation Management Plan dated 4 September 2018 was approved by the Commonwealth Department of Energy and Environment on 25 September 2018.

An updated VMP (version 8 dated October 2022) was approved by the Commonwealth Department of Climate Change, Energy, the Environment and Water on 9 November 2022.

To ensure consistency with the s143 Variation granted on 26 April 2024, version 9 of the VMP was submitted to the Department for approval. This version removed the need to manage the 0.73 ha of vegetation. The approval holder is awaiting approval of the VMP. See Figure 1 below for the updated extent of VMP.

1.5. Reason for this report

This report has been prepared in compliance with condition 11 of the EPBC Approval which states:

Within three months of every 12-month anniversary of the commencement of the action, the approval holder must publish a report on their website addressing compliance with each of the conditions of this approval, including implementation of any management plans as specified in the conditions. Documentary evidence providing proof of the date of publication and non-compliance with any conditions of this approval must be provided the Department at the same time as the compliance report is published. The approval holder must also notify any non-compliances with this approval to the Department within 5 business days of becoming aware of the non-compliance.

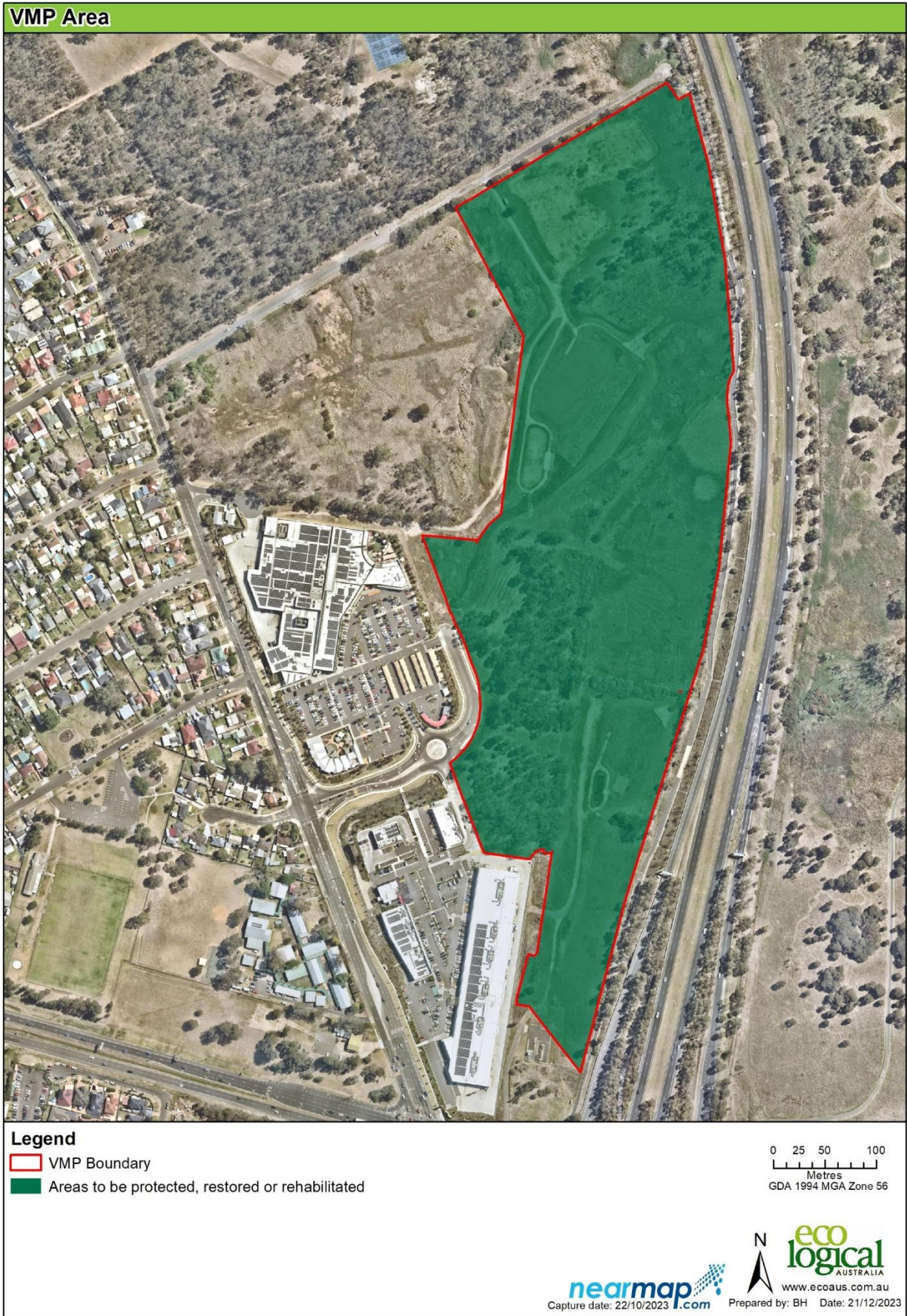


Figure 1: Proposed VMP Area boundary as depicted in Version 9 of the VMP (ELA 2024)

2. Compliance reporting

The following table provides a summary of the approved condition and their respective compliance status, outcomes achieved and whether further action is required.

Table 1: Compliance with conditions of approval as granted under the s143 variation dated 26 April 2024

Number	Condition	Compliance Y/N	Date due	Status	Details
1	The approval holder must clear no more than 2.1 hectares of Cumberland Plain Shale Woodlands and Shale-Gravel Transition Forest ecological community (CPW) on the project site, as defined and identified as “CPW to be removed” at Annexure 1	Y	Ongoing	Ongoing	All clearing of EPBC Act CPW contained within approved development footprint and has not exceeded 2.1 ha
2	To protect the remaining CPW on the project site, the approval holder must prepare and submit a management plan for the Minister’s approval. The approval holder must not commence the action unless the Minister has approved the management plan. The approved management plan must be implemented prior to the commencement of the action. The plan must include actions to: <ul style="list-style-type: none"> Protect the remaining CPW from indirect impacts as a result of the proposed action Rehabilitate and restore remaining CPW on site; and Produce conservation outcomes to the benefit of 	Y	Prior to commencement of the action	Complete	Original VMP was approved by the Minister on 25 September 2018. Current VMP (Version 8, October 2022) was approved by the Commonwealth on 9 November 2022. A revised VMP (v9) is awaiting approval from the Minister as of April 2024 (Appendix D). The 5 additional biodiversity credits have not yet been retired. The process of retiring these additional credits commenced on 7 May 2024.

Number	Condition	Compliance Y/N	Date due	Status	Details
	<p>CPW on the project site and the adjoining bushland</p> <ul style="list-style-type: none"> To compensate for the removal of 0.73 hectares of CPW from protection under the vegetation management plan, the approval holder must retire 5 ecosystem credits under the NSW Biodiversity Offset Scheme by 1 January 2025. The approval holder may satisfy the requirement in condition 2d to retire 5 credits through payment into the Biodiversity Conservation Fund, the amount determined in accordance with the offset calculator established under the Biodiversity Conservation Act 2016. <p>Note: the management plan may be included within a broader WSPT plan of management</p>				
3	<p>To address the loss of 2.1 hectares of CPW on the project site, the approval holder must retire 49 ecosystem credits under the Biobanking agreement for the advanced offset site at Chandos West, before the commencement of the action. The approval holder must provide written evidence to the Department of the retirement of these credits prior to the commencement of</p>	Y	Prior to the commencement of the action	Complete	49 ecosystem credits were retired on 28 June 2018 prior to the commencement of the action.

Number	Condition	Compliance Y/N	Date due	Status	Details
	the action. The site must be managed in-perpetuity in accordance with a management plan prepared under the Biobanking agreement.				
4	The approval holder must provide additional information which fully describes the offset site specified in condition 3, including offset attributes and shapefiles, prior to the commencement of the action	Y	Prior to the commencement of the action	Complete	Shapefiles provided prior to commencement of the action in 2014, however the exact date is unknown. Site visits were also completed by the Department with David Kirkland from WSPT.
5	Within 14 days after the commencement of the action, the approval holder must advise the Department in writing of the actual date of commencement of the action.	N	within 14 days of the commencement of the action	Complete	The action commenced on 11 September 2018. Written evidence of the commencement of the action was not provided to the Department until 3 March 2021
6	The approval holder must maintain accurate records substantiating all activities and outcomes associated with or relevant to the above conditions of approval, including measures taken to implement the management plan required by this approval, and make them available upon request to the Department. Such records may be subject to audit by the Department or an independent auditor in accordance with section 458 of the EPBC Act, or used to verify compliance with the conditions of approval. Summaries of audits will be posted on the Department's website. The results of audits may also be publicised through the general media.	Y	Ongoing	Ongoing	Annual monitoring report for 2024 was prepared by Narla Environmental. See Appendix 1.

Number	Condition	Compliance Y/N	Date due	Status	Details
7	<p>Within three months of every 12-month anniversary of the commencement of the action, the approval holder must publish a report on their website addressing compliance with each of the conditions of this approval, including implementation of any management plans as specified in the conditions. Documentary evidence providing proof of the date of publication and non-compliance with any conditions of this approval must be provided the Department at the same time as the compliance report is published. The approval holder must also notify any non-compliances with this approval to the Department within 5 business days of becoming aware of the non-compliance.</p>	Y	<p>Within three months of every 12 months anniversary of the commencement of the action</p>	Ongoing	<p>This annual compliance report covers all actions on the site in 2023 and contains information about the recently approved variations in April 2024.</p>
8	<p>Upon the direction of the Minister, the approval holder must ensure that an independent audit of compliance with the conditions of approval is conducted and a report submitted to the Minister. The independent auditor must be approved by the Minister prior to the commencement of the audit. Audit criteria must be agreed to by the Minister and the audit report must address the criteria to the satisfaction of the Minister.</p>	N/A	Ongoing	N/A	<p>An independent audit has not been requested by the Minister.</p>

Number	Condition	Compliance Y/N	Date due	Status	Details
9	If the approval holder wishes to carry out any activity otherwise than in accordance with the management plan, as specified in the conditions, the approval holder must submit to the Department for the Minister's written approval a revised version of that management plan. The varied activity shall not commence until the Minister has approved the revised the management plan in writing. The Minister will not approve a revised management plan, unless the revised management plan would result in an equivalent or improved environmental outcome over time. If the Minister approves the revised management plan, that management plan must be implemented in place of the management plan originally approved.	Y	Ongoing	Approved	A variation under s143 of the EPBC Act was sought and approved. An updated Vegetation Management Plan (v9) has been submitted for approval to satisfy condition 2. Works will not proceed under Stage 3 until the VMP is approved.
10	If the Minister believes that it is necessary or convenient for the better protection of listed threatened species and communities to do so, the Minister may request that the approval holder make specified revisions to the management plan specified in the conditions and submit the revised management plan for the Minister's written approval. The approval holder must comply with any such request. The revised approved management plan must be implemented. Unless the	N/A	Ongoing	N/A	No requests have been made by the Minister.

Number	Condition	Compliance Y/N	Date due	Status	Details
	Minister has approved the revised management plan, then the approval holder must continue to implement the management plan originally approved, as specified in the conditions.				
11	If at any time after 5 years from the date of this approval, the approval holder has not commenced the action, then the approval holder must not commence the action without the written agreement of the Minister.	Y	Within 5 years of the date of the approval	Complete	The action commenced in 2018.
12	Unless otherwise agreed to in writing by the Minister, the approval holder must publish all management plans referred to in these conditions of approval on their website. Each management plan must be published on the website within 1 month of being approved.	Y	Ongoing	Ongoing	Reports up to VMP Version 8 are published at the following link Western Sydney Parklands Parklands business hubs Note: Following the approval of the most recent revision of the VMP (v9), this website will require updating

3. Conclusion

ELA, on behalf of WSPT has prepared this Compliance Report to fulfil condition 11, and in doing so, all conditions of the project Approval (EPBC 2012/6617).

References

Eco Logical Australia 2022. *Eastern Creek Retail Centre Vegetation Management Plan*. Prepared for Western Sydney Parklands Trust. V8

Narla Environmental 2024. *Eastern Creek Business Hub – VMP Implementation Annual Progress Monitoring Report*. Prepared for Western Sydney Parklands Trust.

Appendix A – Vegetation Management Plan Annual Report (Narla 2024)



Eastern Creek Business Hub– VMP Implementation Annual Progress Monitoring Report: Year 3 2024

Report prepared by Narla Environmental for Western Sydney Parklands Trust

April 2024



NARLA

environmental

Report:	Eastern Creek Business Hub Vegetation Monitoring Report
Prepared for:	Toolijooa Environmental Restoration
Prepared by:	Narla Environmental Pty Ltd
Project no:	TOOL68
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Document Control

Revision	Document Name	Issue Date	Internal Document Review
Draft v1.0	Eastern Creek Business Hub Vegetation Monitoring Report	21/03/24	Luke Johnson
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1. Introduction

1.1 Project Background

Narla Environmental Pty Ltd (Narla) has been engaged by the Western Sydney Parklands Trust to conduct vegetation monitoring and mapping of weed densities and for the protection, restoration and rehabilitation of Cumberland Plain Woodlands and Shale-Gravel Transition Forest ecological communities. These vegetation communities are associated with the development of the Eastern Creek Quarter Shopping Centre, Eastern Creek. All works on the ground and monitoring parameters are in accordance to “Vegetation Management Plan” Prepared by Ecological Australia (ELA 2021).

The VMP details the works to be undertaken to meet requirements set out within the Biosecurity Act 2015 and in accordance with environmental best practices. VMP works will be aimed at restoring the ‘Endangered Ecological Community’ Shale Plains Woodland (SPW), a component of Cumberland Plain Woodland (CPW), which is listed as Critically Endangered under the NSW Biodiversity Conservation Act 2016 (BC Act 2016). The VMP Works will also aim to restore the Alluvial Woodland (AW), a part of River-Flat Eucalyptus Forest (RFEF) which is also listed as an ‘Endangered Ecological Community’ under the BC Act 2016.

The general aim of the VMP is to detail the rehabilitation of areas adjacent to the development including roads and services, weed removal, revegetation, on-going maintenance, and monitoring requirements. To track progress towards achieving this goal surveys were conducted in February 2024 within the bushland areas of the VMP to establish baseline data for ongoing monitoring (ELA 2021).

This report aims to track the changes to the health and diversity of flora and fauna existing within the site over time and to address the performance criteria identified by the initial VMP through vegetation surveys and photo monitoring.

1.2 Site Description

The site is located within Blacktown City Council (BCC) Local Government Area in Eastern Creek. The VMP area is approximately 17.6 ha in size (**Appendix A**). The site is bordered by Westlink (M7) to the east, Great Western Highway (A44) to the south, Eastern Creek Quarter Shopping Centre to the west, and bushland and a reserve to the north. The VMP area is a mostly flat and includes areas of remnant bushland and grasslands.

The VMP has divided works into three (3) management zones (**Appendix B**). These zones have been created to better manage and maintain restoration treatments and objectives.

- Zone 1: Regeneration; comprised of remnant bushland to be regenerated to RFEF and CPW ecological communities
- Zone 2: Revegetation; comprised of areas mostly dominated by pasture grass with few native shrubs or trees present, includes potential batters and a gas line easement.
- Zone 3: Revegetation – Wetlands; comprised of areas to be revegetated to native wetland, includes the construction of the channel base within constructed creek swales and an onsite stormwater detention basin to comply with **Blacktown City Council stormwater design**. Stage 3 of the development has not yet been completed and as such, the wetlands are not functionally operational. This zone of the VMP is still under the Developers control.

Ecological Australia (ELA) has undertaken the VMP monitoring works in Year 1 and Year 2. These works included photo point monitoring and quadrat data collection. Muru Mittigar has undertaken the on-ground VMP works, including site preparation, primary weed control works.

Due to the COVID-19 lock downs and restrictions throughout Year 1 causing severe and extensive delays to the implementation of the VMP from July to November 2021. The delays were communicated to the Department via email on 5 August 2021. DAWE responded in agreeance to halting works due to COVID-19 and stated that works could be resumed when possible.

Toolijooa Pty Ltd via a tender process were appointed as the new bush regeneration contractors in October 2023 and began Year 3 onsite works in November 2024. Narla Environmental took over as the Project Ecologist in February 2024, undertaking the VMP monitoring and reporting works for Year 3.

This report captures all the work undertaken in Year 3, covering the period from January – December 2023.

2. Methodology

2.1 Annual Monitoring Assessment

A monitoring assessment was undertaken by Narla Ecologists, Luke Johnson and Gemma Hicks, on 13th of February 2024.

A total of eight (8) monitoring plots across three (3) management zones were established in February 2021 (). The monitoring plots were sampled for full floristic diversity and cover, in line with the 'plot based floristic vegetation survey' in the Biodiversity Assessment Method (BAM) (DPIE 2020). To achieve a more general overview of the vegetation condition within each zone and ensure they were sampled appropriately, ELA established permanent monitoring plots 20m x 20m (200m²). The start of each plot was marked with a star picket and cap with the coordinates and bearing recorded. Data collected within each plot included:

- The growth form for each native species;
- Scientific name of each native and exotic species; and
- Estimate of the foliage cover of each native and exotic species within the boundaries of the plot including all attached plant material, alive or dead, rooted in or overhanging the plot. Cover was recorded:
 - in decimals if less than 1% (e.g. 0.1, 0.2)
 - in whole numbers up to 5% (e.g. 1, 2, 3)
 - to the nearest 5% if >5% cover (e.g. 5, 10, 15, 20, 25).
- Count (when ≤10) or estimate (when >10) the number of individuals of each native and exotic species rooted within the plot. Record abundance as:
 - counts of 1, 2, 3...
 - estimates of 10, 20, 30...
 - 100, 200, 300...
 - 1000, 2000, 3000...
- Photo points were taken at the 0m mark (star picket) (**Figure 1, Appendix C**).



Figure 1. Photo Points and Direction Photo Taken

2.2 Monitoring Requirements

Section 7 of the VMP (ELA 2022) specifies that baseline monitoring will be undertaken prior to works being commenced to establish a benchmark for performance. This is to include the establishment of photo points and vegetation survey quadrats. Progress reports will then be prepared on an annual basis throughout the establishment period (Years 1 – 3) and bi-annually until the VMP is fully implemented (Years 4 – 10).

2.2.1 Biometric Benchmarks

Native Vegetation Integrity Benchmarks (or Biometric benchmarks) have been developed by OEH for the composition, structure and function of vegetation communities, based upon the best-on-offer condition for the same vegetation type in the contemporary landscape.

WPST are committed to achieving Biometric Benchmark 2 conditions, i.e. achievement of between 50% - 100% of the benchmarks for all of their precincts within their Biodiversity Strategy. Further commitments to achieving biometric benchmarks for this site are identified in **Table 1**.

Biometric benchmarks for the two ecological communities identified onsite are identified in **Table 2**.

2.3 Study Limitations

This study was not intended to provide a complete inventory of all flora and fauna species with potential to occur within each zone. The species list provided for each monitoring plot was restricted to what was observed during the site assessment by the Narla Ecologist. The timing of the survey may not have coincided with emergence times of some species of flora, such as seasonally flowering herbs.

Table 1. Key Performance Indicators (KPIs) for Establishment Phase (Years 1 – 3).

KPIs for All Monitoring Plots During Establishment Phase
Commencement or completion of all tasks outlined in the VMP.
Management of priority weeds as per statutory regulations. No <i>Rubus fruticosus spp. agg.</i> Patches over 4m ² .
Revegetation is to be undertaken with a minimum of 60% of the benchmark levels for species diversity provided in Appendix C of the VMP (ELA).
At one year post planting, a minimum of 80% survival rate of all vegetation strata planted in each zone (e.g. tree, shrub and groundcover).
Any localised plant failure within planting areas are addressed with no area larger than 2m x 2m without surviving plants at one year post planting.
Maintenance replanting is to replace plants with the same growth form (i.e. tree for tree etc.) and must not decrease species diversity. Any new species to be planted must be from the community being emulated and of local provenance or of provenance for climate change adaptation if required.
Monitoring and reporting undertaken in accordance with Section 7 of the VMP (ELA).
KPIs for All Monitoring Plots at the completion of Year 3
Woody weeds and exotic vines to be less than 5% cover, not allowed to set seed and no establishment of new species.
Exotic ground covers 60% of original extent.
Native vegetation cover no less than 60% of biometric benchmark in Table 2 .

Table 2. Biometric Benchmarks for Each Identified Plant Community Type (PCT). (ELA 2022)

Plant Community Type (PCT)	Vegetation Community	Vegetation Species Richness			Vegetation Cover (%)		
		Canopy	Shrub	Groundcover	Canopy	Shrub	Groundcover
849	Shale Plains Woodland	5	8	34	52%	18%	77%
835	River Flat Eucalypt Forest	4	8	20	21%	21%	78%

3. Results

3.1 Species Richness and Cover

Narla's year 3 vegetation monitoring showed the condition of Eastern Creek Business Hub was highly variable, with results bushland ranging from poor-quality (low native species richness and high weed cover) to high quality (high native species richness and very low weed cover). Mean species richness and cover collected from 2023 is displayed and is compared against the data collected during the previous monitoring in **Table 3** and **Table 4**. Numbers in red indicate an increase in mean exotic species richness or cover or a decrease in mean native species richness and cover. Numbers in green indicate an increase in mean native species richness or cover or a decrease in mean exotic species richness and cover.

Table 3. Maximum extent of exotic ground layer allowed each year.

Management Zone	Monitoring Plot Location	Baseline	Year 1 (ELA)	Year 2 (ELA)	Year 3	Year 4	Year 6	Year 8	Year 10
Zone 1: Maximum exotic ground layer required		N/A	15.6	14.5	13.4	12.3	11.2	10	8.9
Zone 1 actual groundcover abundance	SP1	22.3	42.3	32	27.5	-	-	-	--
	SP3								
	SP5								
	SP6								
Zone 2: Maximum exotic ground layer required		N/A	49	45.5	42	38.5	35	31.5	28
Zone 2 actual groundcover abundance	SP4	70	71.5	97	95.5	-	-	-	-
	SP8								
Zone 3: Maximum exotic ground layer required		N/A	31.5	29.3	27	24.8	22.5	20.3	18
Zone 3 actual exotic ground layer required	SP2	45	62.5*	82*	87*	-	-	-	-
	SP7								
Overall Maximum exotic ground layer required	N/A	N/A	36.8	34.2	31.6	28.9	26.3	23.7	21
Overall actual exotic ground layer required	-	52.6	61.9	60.5	60.6	-	-	-	-

*Only minor staged works have been completed within Zone 3 as Stage 3 of the development has not yet been completed. Stormwater basins are currently not functionally operational. This zone of the VMP is still under the Developers control and will be progressed to compliance requirements on completion of Stage 3 of the development.

Table 4. Performance against PCT Native Groundcover % Benchmark.

Plant Community Type (PCT)	Management Zone	Monitoring Plot Location	Baseline	Year 1 (ELA)	Year 2 (ELA)	Year 3	Year 4	Year 6	Year 8	Year 10
PCT – 849 minimum required			N/A	30.8	38.5	46.2	50	53.9	57.8	61.6
PCT - 849 groundcover abundance	Zone 1	SP1	9.7	13.9	34	43.8	-	-	-	-
	Zone 1	SP3								
	Zone 1	SP6								
	Zone 2	SP4								
	Zone 2	SP8								
PCT – 835 minimum required			N/A	31.2	39	46.8	50.7	54.6	58.5	62.4
PCT - 835 groundcover abundance	Zone 1	SP5	10.9	12.5	21	30*	-	-	-	-
	Zone 3	SP2								
	Zone 3	SP7								

*See discussion in Section 4.1.1.

4. Discussion

4.1.1 Annual Change in Mean Native Species Abundance

Of the two (2) PCT's monitored within the Eastern Creek Business Hub, both showed an increase in mean native species abundance. PCT 835 includes the cover percentage of SP2 and SP7 which falls within Management Zone 3. As previously mentioned, bush regeneration works have not been conducted within Management Zone 3 as this stage of the development is yet to be completed and handed over to WSPT. Therefore, the data presented for this community in **Table 4** is not reflective the effectiveness of the bush regeneration works for PCT 835, as the native cover for the areas of the PCT 835 being actively managed is 89%.

The overall increase in mean native species richness could be attributed to many factors. The recent weather conditions may be providing favourable conditions for the emergence and flowering of native herbs and grasses (which were observed within more plots) and may have been less conspicuous during the previous survey period. Increased mean species richness may also be the result of both active (planting) and passive (natural regeneration) species recruitment following bush regeneration works which was observed throughout several of the subject reserves. It is worth noting that although the Native Groundcover abundance does not meet the benchmark requirements, there are positive trends to be observed which show positive signs for the plant communities.

The overall changes in mean native species cover could be attributed to discrepancies between observers as a result of observer bias or the overestimation of baseline data. Such fluctuations are to be expected in the initial years within monitoring and are expected to plateau with continued monitoring if weather conditions remain consistent. Furthermore, the BAM method of identifying species cover is not an 'exact science' and some variability (up to 10%) is to be expected.

4.1.2 Annual Change in Mean Exotic Species Abundance

Of the three (3) Vegetation Management Zones monitored within the Eastern Creek Business Hub, one (1) showed an increase in mean exotic species abundance, and two (2) showed a decrease in abundance.

The slight overall increase in mean exotic species richness may similarly be attributed to prevailing weather conditions such as heavy rainfall, which assists the distribution of exotic seed dispersal as a result of water runoff. This overall increase could also be ongoing effects of the interruptions bush regenerators faced as a result of the Covid-19 restrictions.

The reduction in mean exotic species abundance in some zones may be attributed to bush regeneration works that have occurred within the subject reserves as well as potential discrepancies between observers as a result of observer bias or the overestimation of baseline data. It should be noted that although the decreases in abundance do not meet the requirements, there is an overall declining trend across most zones which is optimistic for the future of the area.

It is expected that information collated from the analysis of long-term monitoring data (i.e., over a 10-year timeframe) will divulge more meaningful information regarding the progress of regeneration works. As such, the continuation of annual monitoring will be vital in ensuring key performance indicators are on track and met.

Table 5. Performance criteria – Year 3.

Performance Criteria	Results following Year 3 2024 Survey.
KPIs for All Monitoring Plots During Establishment Phase	
Commencement or completion of all tasks outlined in the VMP.	On Track; With the exception of works within Management Zone 3. All tasks have been commenced.
Management of priority weeds as per statutory regulations. No Blackberry patches over 4 m ² .	Criteria met; stabilisation of <i>Rubus futicosus sp. agg</i> population in Management Zones 1 and 2, bush regeneration works occurring throughout to manage all priority weeds.
Revegetation is to be undertaken with a minimum of 60% of the benchmark levels for species diversity provided in Appendix C of the VMP (ELA).	Criteria met; 75% of species provided in Appendix C of the VMP were installed throughout Year 2.
At one year post planting, a minimum of 80% survival rate of all vegetation strata planted in each zone (e.g. tree, shrub and groundcover).	Partial; Initial planting completed in year 1 had a survival rate of approximately 50% (ELA). No infill planting has occurred in year 3. Infill planting is required for year 4.
Any localised plant failure within planting areas are addressed with no area larger than 2m x 2m without surviving plants at one year post planting.	Partial; whilst infill planting was not conducted within year 3, weed management and exotic suppression have resulted in better establishment of surviving plantings. Infill planting is required in year 4.
Maintenance replanting is to replace plants with the same growth form (i.e. tree for tree etc.) and must not decrease species diversity. Any new species to be planted must be from the community being emulated and of local provenance or of provenance for climate change adaptation if required.	Not met; Infill planting has not been undertaken following initial revegetation. Infill planting to be undertaken in year 4.
Monitoring and reporting undertaken in accordance with Section 7 of the VMP (ELA).	Criteria met; This report has been prepared for year 3 of the monitoring.
KPIs for All Monitoring Plots at the completion of Year 3	
Woody weeds and exotic vines to be less than 5% cover, not allowed to set seed and no establishment of new species.	Criteria met; 4.2% woody weeds and exotic vines. No new species of woody weeds or exotic vines established within Management Zones 1 and 2.
Exotic groundcover covers 60% of original extent.	Partial; whilst overall exotic ground layer across all three (3) zones is 60.6% in total, an increase from previous 60.5% (ELA 2022). Percentage cover for species less than 1% have been rounded up (see Section 4). Therefore, percentage covers should be used as a general guide.
Native vegetation cover to be no less than 60% of biometric benchmark in Table 2 .	Criteria met; PCT 849 at 90.8% of benchmark, PCT 835 at 64.1% of benchmark.

5. Management actions and Focus for Year 4

Bush regeneration works should continue throughout Management Zones 1 and 2 to ensure annual and long term KPIs are met and to maintain the suppression of weed cover. Infill planting is required in year 4 to compensate for the 50% survival rate of plantings that occurred in year 2. Revegetation efforts should be continued to ensure seedlings are established.

Zone 3 to remain in holding until Stage 3 of the development is completed and the stormwater flow is sufficient to meet the design to provide functional operation of the wetland. Zone 3 to be monitored for any threats to other zones and actioned accordingly.

6. References

Department of Planning and Environment (DPE) (2023a) BioNet Vegetation Classification. <https://www.environment.nsw.gov.au/research/Visclassification.htm>

Department of Planning and Environment (DPE) (2023b) eSPADE v2.1 <https://www.environment.nsw.gov.au/eSpade2Webapp#>

Department of Primary Industries (DPI) (2022) NSW WeedWise: Priority weeds for the Greater Sydney <https://weeds.dpi.nsw.gov.au/WeedBiosecurities?Areald=34>

Department of Planning, Industry and Environment (DPIE) (2020) Biodiversity Assessment Method

Eco Logical Australia 2018. Eastern Creek Retail Centre Vegetation Management Plan. Prepared for Western Sydney Parklands Trust.

Eco Logical Australia 2022. Eastern Creek Business Hub – VMP Implementation Progress Annual Report: Year 2 2022. Prepared for Western Sydney Parklands Trust.

PlantNET (2024) The NSW Plant Information Network System, Royal Botanic Gardens and Domain Trust, Sydney. <http://plantnet.rbgsyd.nsw.gov.au>

7. Appendices

Appendix A. VMP Survey Area (ELA 2022).



Appendix B. Management Zones and Monitoring Locations within the VMP Area (ELA 2022).



Appendix C. Comparative Site Photos from Year 1 to Year 3.

Monitoring Location	2021	13 th February 2024
SP1 (Zone 1)	<p data-bbox="434 373 539 400">4th March</p> 	

Monitoring Location	2021	13 th February 2024
SP2 (Zone 3)	<p data-bbox="436 256 533 280">4th March</p> 	

Monitoring Location	2021	13 th February 2024
SP3 (Zone 3)	<p data-bbox="434 252 537 277">5th March</p> 	

Monitoring Location	2021	13 th February 2024
SP4 (Zone 2)	5 th March 	

Monitoring Location	2021	13 th February 2024
SP5 (Zone 1)	<p data-bbox="434 256 533 280">5th March</p> 	

Monitoring Location	2021	13 th February 2024
SP6 (Zone 1)	<p data-bbox="432 252 537 279">5th March</p> 	

Monitoring Location	2021	13 th February 2024
SP7 (Zone 3)	<p data-bbox="436 256 533 280">7th March</p> 	

Monitoring Location	2021	13 th February 2024
SP8 (Zone 2)	<p data-bbox="436 256 533 280">7th March</p> 	

Appendix D. Vegetation Monitoring Data

Native Vegetation – March 2021 (ELA)

Species	% Projected foliage cover in quadrats								% Sitewide Total Cover
	SP1 (Zone 1)	SP2 (Zone 3)	SP3 (Zone 1)	SP4 (Zone 2)	SP5 (Zone 1)	SP6 (Zone 1)	SP7 (Zone 3)	SP8 (Zone 2)	
<i>Acacia falcata</i>						<1			0
<i>Angophora subvelutina</i>						<1			0
<i>Aristida vagans</i>	<1					<1			0
<i>Asperula conferta</i>	<1								0
<i>Brunoniella australis</i>	<1		<1			<1			0
<i>Bursaria spinosa</i>	<1		<1		<1				0
<i>Centello asiatica</i>	<1							<1	0
<i>Chellanthes sieberi</i>					<1	<1			0
<i>Chloris truncata</i>		<1		<1					0
<i>Chloris ventricosa</i>			<1						0
<i>Commelina cyanea</i>			<1	<1		<1			0
<i>Cyoeus gracillis</i>					<1	<1			0
<i>Daviesia ulicifolia</i>						<1			0
<i>Dianella longifolia</i>			<1						0
<i>Dichondra repens</i>	<1		2			<1			0
<i>Digitaria parviflora</i>					<1				0
<i>Einadia nutans</i>			<1			<1			0
<i>Entolasia marginata</i>					<1				0
<i>Eragrostis leptostachya</i>			<1	<1	<1	<1			0
<i>Eriochloa pseudoacrotricha</i>	<1								0

<i>Eucalyptus moluccana</i>	17		1		3	<1			2
<i>Eucalyptus tetricornis</i>	<1		16	<1	20	11			5
<i>Euchiton sphaericus</i>	<1	<1					<1		0
<i>Glycine tabacina</i>	<1		<1		<1	<1			0
<i>Jacksonia scoparia</i>					<1				0
<i>Juncus usitatus</i>		<1			<1		5		1
<i>Lachnagrostis filiformis</i>		<1					<1		0
<i>Microlaena stipoides</i>	<1		30	<1	35	35		10	6
<i>Oxalis perennans</i>				<1					0
<i>Paspalidium distans</i>	<1		<1		<1	<1			0
<i>Pericaria decipens</i>							<1		0
<i>Rytidosperma sp.</i>						<1			0
<i>Sporobolus creber</i>	<1			<1	<1	<1			0
<i>Themeda triandra</i>	<1				<1	<1			0
<i>Wahlenbergia gracillis</i>				<1		<1			0
Total Cover	19	0	50	0	64	48	5	10	25
Total Species	15	6	13	8	16	20	4	2	36

Exotic Vegetation – March 2021 (ELA)

Species	% Projected foliage cover in quadrats								% Sitewide Total Cover
	SP1 (Zone 1)	SP2 (Zone 3)	SP3 (Zone 1)	SP4 (Zone 2)	SP5 (Zone 1)	SP6 (Zone 1)	SP7 (Zone 3)	SP8 (Zone 2)	
<i>Araujia sericifera</i>	<1		<1		<1	<1			0
<i>Asparagus asparagoides</i>			<1		10	2			1
<i>Asparagus plumosus</i>	<1		<1	<1	<1	<1		<1	0
<i>Axonopus fissifolius</i>								<1	0
<i>Bidens pilosa</i>	<1			<1	<1		<1		0
<i>Bidens sp.</i>			15		<1				2
<i>Briza subaristata</i>				<1	<1			<1	0
<i>Bromus catharticus</i>			<1						
<i>Cenchrus clandestinum</i>		<1					<1		0
<i>Cirsium vulgare</i>	<1	<1			<1	<1		<1	0
<i>Conzysa sp.</i>	<1	<1		<1	<1	<1	<1	<1	0
<i>Cyclosporum leptophyllum</i>							<1		0
<i>Cynodon dactylon</i>	10	<1	<1	70	<1	<1		30	12
<i>Cyperus eragrostis</i>		5		<1			<1		1
<i>Digitaria sanguinalis</i>							<1		0
<i>Echinochloa colona</i>		<1							0
<i>Ehrharta erecta</i>			<1		<1	<1			0
<i>Eragrostis curvula</i>	<1			<1	<1				0
<i>Erythrina cristo-galli</i>									0
<i>Gamochoaeta sp.</i>		<1							0
<i>Hypericum perforatum</i>				5					1

<i>Hypochaeris radicata</i>					<1	<1		<1	0
<i>Ligustrum lucidum</i>			<1	<1	<1	<1			0
<i>Ligustrum sinense</i>			<1		<1	<1			0
<i>Lycium ferocissimum</i>			5		<1				1
<i>Medicago polymorpha</i>							<1		0
<i>Modiola caroliniana</i>		<1					<1		0
<i>Olea europaea subsp. cuspidata</i>						<1			0
<i>Paspalum dilatatum</i>	25	10	<1	15	<1	<1	<1	20	8
<i>Plantago lanceolata</i>	<1	<1		<1			<1		0
<i>Polygonum aviculare</i>		<1					<1		0
<i>Rumex crispus</i>		<1		<1			<1		0
<i>Senecio madagascariensis</i>	<1	<1	<1	<1	<1	<1	<1	<1	0
<i>Setaria parviflora</i>	20	<1	<1	<1	<1	<1	<1	<1	2
<i>Sida rhombifolia</i>	<1				5	2			1
<i>Solanum linnaeanum</i>	<1				<1	<1	<1		0
<i>Solanum nigrum</i>	<1				<1	<1			0
<i>Solanum pseudocapsicum</i>			<1		<1	<1			0
<i>Symphyotrichum subulatum</i>	<1	<1		<1			<1	<1	0
<i>Trifolium sp.</i>		<1					15		2
<i>Verbena bonariensis</i>	<1	20		<1			40	<1	7
<i>Verbena rigida</i>								<1	0
Total Cover	55	35	21	90	15	4	55	50	55
Total Species	16	17	14	15	22	17	18	13	41

Native Vegetation – February 2022 (ELA)

Species	% Projected foliage cover in quadrats								% Sitewide Total Cover
	SP1 (Zone 1)	SP2 (Zone 3)	SP3 (Zone 1)	SP4 (Zone 2)	SP5 (Zone 1)	SP6 (Zone 1)	SP7 (Zone 3)	SP8 (Zone 2)	
<i>Acacia falcata</i>						<1			0
<i>Angophora subvelutina</i>						<1			0
<i>Aristida vagans</i>	<1					<1			0
<i>Asperula conferta</i>	<1								0
<i>Brunoniella australis</i>	<1		<1			<1			0
<i>Bursaria spinosa</i>	<1		<1		<1				0
<i>Centello asiatica</i>	<1							<1	0
<i>Chellanthes sieberi</i>					<1	<1			0
<i>Chloris truncata</i>		<1		<1					0
<i>Chloris ventricosa</i>			<1						0
<i>Commelina cyanea</i>			<1	<1	<1	<1			0
<i>Cyoeus gracillis</i>					<1	<1			0
<i>Daviesia ulicifolia</i>						<1			0
<i>Dianella longifolia</i>			<1						0
<i>Dichondra repens</i>	<1		5			<1			1
<i>Digitaria parviflora</i>					<1				0
<i>Einadia nutans</i>			<1			<1			0
<i>Entolasia marginata</i>					<1				0
<i>Eragrostis leptostachya</i>			<1	<1	<1	<1			0
<i>Eriochloa pseudoacrotricha</i>	<1								0

<i>Eucalyptus moluccana</i>	17		2		10	5			4
<i>Eucalyptus tetricornis</i>	1		16	<1	20	11			5
<i>Euchiton sphaericus</i>	<1	<1					<1		0
<i>Glycine tabacina</i>	<1		<1		<1	<1			0
<i>Jacksonia scoparia</i>					<1				0
<i>Juncus usitatus</i>		<1			<1		10		1
<i>Lachnagrostis filiformis</i>		<1					<1		0
<i>Microlaena stipoides</i>	<1		35	<1	45	40		10	14
<i>Oxalis perennans</i>				<1					0
<i>Paspalidium distans</i>	<1		<1		<1	<1			0
<i>Pericaria decipens</i>		<1					<1		0
<i>Rytidosperma sp.</i>		<1				<1			0
<i>Sporobolus creber</i>	<1			<1	<1	<1			0
<i>Themeda triandra</i>	<1				<1	<1			0
<i>Wahlenbergia gracillis</i>				<1		<1			0
Total Cover	32	4	61	5	76	63	5	10	45
Total Species	15	6	13	8	16	20	4	2	37

Exotic Vegetation – February 2022 (ELA)

Species	% Projected foliage cover in quadrats								% Sitewide Total Cover
	SP1 (Zone 1)	SP2 (Zone 3)	SP3 (Zone 1)	SP4 (Zone 2)	SP5 (Zone 1)	SP6 (Zone 1)	SP7 (Zone 3)	SP8 (Zone 2)	
<i>Araujia sericifera</i>	<1		<1		<1	<1			0
<i>Asparagus asparagoides</i>			<1		10	10			2
<i>Asparagus plumosus</i>	<1		<1	<1	<1	<1		<1	0
<i>Axonopus fissifolius</i>								<1	0
<i>Bidens pilosa</i>	<1			<1	<1		<1		0
<i>Bidens sp.</i>			10		<1				1
<i>Briza subaristata</i>				<1	<1			<1	0
<i>Bromus catharticus</i>			<1						
<i>Cenchrus clandestinum</i>		<1					<1		0
<i>Cirsium vulgare</i>	<1	<1			<1	<1		<1	0
<i>Conzya sp.</i>	<1	<1		<1	<1	<1	<1	<1	0
<i>Cyclosporum leptophyllum</i>							<1		0
<i>Cynodon dactylon</i>	15	<1	<1	70	<1	<1		30	13
<i>Cyperus eragrostis</i>		5		<1			<1		1
<i>Digitaria sanguinalis</i>							<1		0
<i>Echinochloa colona</i>		<1							0
<i>Ehrharta erecta</i>			<1		<1	<1			0
<i>Eragrostis curvula</i>	<1			<1	<1				0
<i>Erythrina cristo-galli</i>									0
<i>Gamochaeta sp.</i>		<1							0

<i>Hypericum perforatum</i>				5					1
<i>Hypochaeris radicata</i>					<1	<1		<1	0
<i>Ligustrum lucidum</i>			<1	<1	<1	<1			0
<i>Ligustrum sinense</i>			<1		<1	<1			0
<i>Lycium ferocissimum</i>			<1		<1				0
<i>Medicago polymorpha</i>							<1		0
<i>Modiola caroliniana</i>		<1					<1		0
<i>Olea europaea subsp. cuspidata</i>						<1			0
<i>Paspalum dilatatum</i>	30	20	<1	15	<1	<1	<1	15	9
<i>Plantago lanceolata</i>	<1	<1		<1			<1		0
<i>Polygonum aviculare</i>		<1					<1		0
<i>Rumex crispus</i>		<1		<1			<1		0
<i>Senecio madagascariensis</i>	<1	<1	<1	<1	<1	<1	<1	<1	0
<i>Setaria parviflora</i>	20	<1	<1	<1	<1	<1	<1	<1	2
<i>Sida rhombifolia</i>	<1				10	50			7
<i>Solanum linnaeanum</i>	<1				<1	<1	<1		0
<i>Solanum nigrum</i>	<1				<1	<1			0
<i>Solanum pseudocapsicum</i>			<1		<1	<1			0
<i>Symphotrichum subulatum</i>	<1	<1		<1			<1	<1	0
<i>Trifolium sp.</i>		<1					20		2
<i>Verbena bonariensis</i>	<1	10		<1			20	<1	3
<i>Verbena rigida</i>								<1	0
Total Cover	87	70	26	93	26	30	55	50	62
Total Species	16	17	14	15	22	17	18	13	41

Native Vegetation – February 2024 (Narla)

Species	% Projected foliage cover in quadrats								% Sitewide Total Cover
	SP1 (Zone 1)	SP2 (Zone 3)	SP3 (Zone 1)	SP4 (Zone 2)	SP5 (Zone 1)	SP6 (Zone 1)	SP7 (Zone 3)	SP8 (Zone 2)	
<i>Acacia falcata</i>									0
<i>Acacia implexa</i>				1					1
<i>Angophora subvelutina</i>									0
<i>Aristida vagans</i>									0
<i>Asperula conferta</i>	<1								0
<i>Brunoniella australis</i>	<1		<1			5			5
<i>Bursaria spinosa</i>	<1		2	1	<1	5			8
<i>Centello asiatica</i>								<1	0
<i>Chellanthus sieberi</i>						1			1
<i>Chloris truncata</i>		<1		<1		1	<1		1
<i>Chloris ventricosa</i>									0
<i>Commelina cyanea</i>			<1	5	1	1			8
<i>Cyoeus gracillis</i>			<1						0
<i>Daviesia ulicifolia</i>									0
<i>Dianella longifolia</i>	<1								0
<i>Dichondra repens</i>			1		20	3			24
<i>Digitaria parviflora</i>					<1				0
<i>Dodonea viscosa</i>				1					1
<i>Einadia nutans</i>									0
<i>Entolasia marginata</i>					<1				0
<i>Eragrostis leptostachya</i>	10			10					20

<i>Eriochloa pseudoacrotricha</i>	<1								0
<i>Eucalyptus moluccana</i>	10		2		5	1			18
<i>Eucalyptus tetricornis</i>	1		20	5	25	40			91
<i>Euchiton sphaericus</i>		<1							0
<i>Gahnia sp.</i>						<1			0
<i>Glycine candenesta</i>	1			1	1	<1			3
<i>Glycine tabacina</i>	1								1
<i>Hardenbergia obtusifolia</i>						5			5
<i>Jacksonia scoparia</i>									0
<i>Juncus usitatus</i>		<1		1					1
<i>Lachnagrostis filiformis</i>		<1							0
<i>Microlaena stipoides</i>	<1		40	20	35				95
<i>Oxalis perennans</i>									0
<i>Paspalidium distans</i>	<1								0
<i>Persicaria decipens</i>		<1							0
<i>Rytidosperma sp.</i>		<1							0
<i>Sporobolus creber</i>	10			3					13
<i>Themeda triandra</i>	<1				1	1			2
<i>Wahlenbergia gracillis</i>				1					1
<i>Wahlenbergia violacea</i>						<1			0
Total Cover	34	1	65	49	89	63	0	0	38
Total Species	14	6	8	12	10	13	1	1	41

Exotic Vegetation – February 2024

Species	% Projected foliage cover in quadrats								% Sitewide Total Cover
	SP1 (Zone 1)	SP2 (Zone 3)	SP3 (Zone 1)	SP4 (Zone 2)	SP5 (Zone 1)	SP6 (Zone 1)	SP7 (Zone 3)	SP8 (Zone 2)	
<i>Anagallis arvensis</i>				<1					0
<i>Araujia sericifera</i>			<1						0
<i>Asparagus asparagoides</i>			<1		2	1			3
<i>Asparagus plumosus</i>	<1		<1	1	<1	1			2
<i>Aster subulatus</i>				<1			3	5	8
<i>Axonopus fissifolius</i>									0
<i>Bidens pilosa</i>			50	1					51
<i>Bidens sp.</i>									0
<i>Briza subaristata</i>				1					1
<i>Bromus catharticus</i>				<1	<1		1		1
<i>Cenchrus clandestinum</i>							1		1
<i>Cirsium vulgare</i>						<1			0
<i>Conzya sp.</i>				1					1
<i>Cyclosporum leptophyllum</i>									0
<i>Cynodon dactylon</i>	15	5		80				10	110
<i>Cyperus eragrostis</i>	<1			1					1
<i>Digitaria parviflora</i>					<1				0
<i>Digitaria sanguinalis</i>									0
<i>Echinochloa colona</i>									0
<i>Entolasia marginata</i>					<1				0

<i>Ehrharta erecta</i>									0
<i>Eragrostis curvula</i>	15			3					18
<i>Erythrina cristogalli</i>							<1		0
<i>Gamochaeta sp.</i>									0
<i>Hypericum perforatum</i>									1
<i>Hypochaeris radicata</i>									0
<i>Juncus acutus</i>							5		5
<i>Ligustrum lucidum</i>									0
<i>Ligustrum sinense</i>									0
<i>Lycium ferocissimum</i>									0
<i>Medicago minima</i>				<1					0
<i>Medicago polymorpha</i>									0
<i>Modiola caroliniana</i>									0
<i>Olea europaea subsp. cuspidata</i>									0
<i>Paspalum dilatatum</i>	1		<1	10				1	12
<i>Paspalum urvillei</i>			<1			10	80	50	140
<i>Pavonia hastata</i>						<1			0
<i>Plantago lanceolata</i>		<1	5	2		1	1		0
<i>Polygonum aviculare</i>		<1		<1					0
<i>Rubus fruticosus spp. agg.</i>								1	1
<i>Rumex crispus</i>									0
<i>Senecio madagascariensis</i>		1		1		<1		<1	0
<i>Setaria incrassata</i>						<1			0
<i>Setaria parviflora</i>			5	20				<1	25

<i>Sida rhombifolia</i>	10	10	1	1	<1	1	2		25
<i>Solanum linnaeanum</i>				<1		<1			0
<i>Solanum nigrum</i>						<1			0
<i>Solanum pseudocapsicum</i>									0
<i>Symphyotrichum subulatum</i>				<1					0
<i>Tradescantia fluminensis</i>			<1						0
<i>Trifolium sp.</i>									0
<i>Verbena bonariensis</i>		30	<1	<1			40	5	75
<i>Verbena rigida</i>									0
Total Cover	41	46	61	123	3	15	128	68	60.6
Total Species	6	6	11	20	6	11	8	9	53



NARLA

environmental

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