

A stylized topographic map with contour lines in a light grey color, positioned on the left side of the page.

1111-1141 Elizabeth Drive, Cecil Hills Vegetation Management Plan

111 Elizabeth Drive Pty Ltd

DOCUMENT TRACKING

Project Name	1111-1141 Elizabeth Drive, Cecil Hills Vegetation Management Plan
Project Number	23GWS5868
Project Manager	Andrew Whitford
Prepared by	Kody Kemp, Chelsea Philip and Charlotte Mills
Reviewed by	Andrew Whitford
Approved by	Andrew Whitford
Status	Final
Version Number	V4
Last saved on	1 October 2025

This report should be cited as ‘Eco Logical Australia 2025. 1111-1141 Elizabeth Drive, Cecil Hills Vegetation Management Plan. Prepared for A&N Designs Pty Ltd on behalf of 111 Elizabeth Drive Pty Ltd.

Acknowledgements

This document has been prepared by Eco Logical Australia Pty Ltd with support from A&N Design Group Pty Ltd.

Disclaimer
This document may only be used for the purpose for which it was commissioned and in accordance with the contract between Eco Logical Australia Pty Ltd and 111 Elizabeth Drive Pty Ltd. The scope of services was defined in consultation with A&N Design Group Pty Ltd, by time and budgetary constraints imposed by the client, and the availability of reports and other data on the subject area. Changes to available information, legislation and schedules are made on an ongoing basis and readers should obtain up to date information. Eco Logical Australia Pty Ltd accepts no liability or responsibility whatsoever for or in respect of any use of or reliance upon this report and its supporting material by any third party. Information provided is not intended to be a substitute for site specific assessment or legal advice in relation to any matter. Unauthorised use of this report in any form is prohibited.

Contents

Contents	ii
Abbreviations	iv
1. Introduction	1
1.1. Background.....	1
1.2. Scope and objectives of the VMP	1
1.3. Preparation and implementation of this plan.....	4
2. Description of the site environment	6
2.1. Topography and hydrology.....	6
2.2. Vegetation communities.....	6
2.2.1. Cumberland Shale Plains Woodland (PCT 3320).....	6
2.3. Existing vegetation on site	8
2.4. Priority weeds.....	8
2.5. Threatened species habitat	9
3. Preliminary works	10
3.1. Fencing	10
3.2. Soil and water management.....	10
3.3. Vegetation clearance and earthworks supervision	10
3.3.1. Community consultation	10
3.4. Pest control.....	11
3.5. Soil preparation prior to revegetation	11
4. Vegetation management works	13
4.1. VMP Management Zones	13
4.1.1. MZ1: Pipeline Easement	13
4.2. Weed control	14
4.2.1. Primary and secondary weed control	14
4.2.2. Maintenance	14
4.3. Revegetation.....	14
5. Implementation schedule	16
5.1. Adaptive management	16
5.2. VMP management in-perpetuity	16
6. Monitoring and reporting	18
6.1. Monitoring.....	18
6.1.1. Photo monitoring.....	18
6.1.2. Vegetation surveys.....	18
6.1.3. Progress reports.....	18

6.2. Performance criteria	19
6.3. Risk assessment and corrective actions	21
7. Cost	23
7.1. Construction and preparation works	23
7.2. Vegetation management works	23
7.2.1. Weed control techniques	23
7.2.2. Monitoring and reporting	23
7.3. Pest control	23
8. References	25

List of Figures

Figure 1: Site Location	5
Figure 2: Plant Community Types within and surrounding the VMP area	7
Figure 3: VMP management zones	15

List of Tables

Table 1: VMP objectives	2
Table 2: VMP condition requirements outlined in Development Consent SSD-8859	2
Table 3: Plant community types present within the subject site	6
Table 4: Priority weeds identified within the study area	9
Table 5: Indicative soil preparation work requirements	12
Table 6: IPA requirements	13
Table 9: Indicative implementation schedule	17
Table 10: Performance criteria	20
Table 12: Risk assessment	22
Table 13: Indicative implementation costs	24
Table 14: Exotic species present on site	27
Table 15: Native species present on site	28

List of Appendices

Appendix A Existing vegetation	27
Appendix B Weed management techniques	30
Appendix C Bushfire management requirements	33

Abbreviations

Abbreviation	Description
AABR	Australian Association of Bush Regenerators
APZ	Asset Protection Zone
ARAP	Addendum Remedial Action Plan
BDAR	Biodiversity Development Assessment Report
CEEC	Critically Endangered Ecosystem Community
ELA	Eco Logical Australia
FCC	Fairfield City Council
IPA	Inner Protection Area
LGA	Local Government Area
LLS	Local Land Services
PCT	Plant Community Type
SEPP	State Environmental Planning Policy
RAP	Remedial Action Plan
VMP	Vegetation Management Plan

1. Introduction

This Vegetation Management Plan (VMP) has been prepared by Eco Logical Australia (ELA) on behalf of 111 Elizabeth Drive Pty Ltd for the State Significant Development (SSD) application (SSD-8859) of 1111-1141 Elizabeth Drive, Cecil Hills (Lot 5 DP 1274952). The subject site lies within the Fairfield City Council (FCC) local government area (LGA) with location shown in **Figure 1**. As per Section 9(2) of the Western Sydney Parklands SEPP 2009, this site is not currently zoned under a local environment plan.

The subject site is bound by native vegetation to the east, rural properties to the north, Cecil Road to the west and Elizabeth Drive to the south. Further to the east of the site (300m), lies Wallgrove Road and the M7. Elizabeth Drive has been widened, and part of the western boundary has formed a portion of the proposed M12 motorway. **Figure 1** shows the site after the road widening and motorway works have commenced.

1.1. Background

The subject site encompasses approximately 7.73 hectares of land comprised of four dwellings, a decommissioned farm dam, dumped fill, cleared agricultural land and remnant native vegetation. The Biodiversity Development Assessment Report (BDAR) prepared by GHD Pty Ltd in 2021, outlined the presence of 1.15 hectares of moderate to good condition Grey Box – Forest Red Gum grassy woodland (PCT 849), which has since been amalgamated into Cumberland Shale Plains Woodland (PCT 3320), plus 3.05 hectares of exotic grassland and 3.53 hectares encompassing infrastructure and fill.

The presence of four locations of dumped fill (including asbestos) across the site triggered the requirement for a Remedial Action Plan (RAP) (Martens Consulting Engineers 2021) and an Addendum Remedial Action Plan (ARAP) (Sydney Environmental Group 2023). These reports outline the required remediation actions required across the site, prior to development of the site. If contaminated soil remains on site, VMP management will not go ahead.

The BDAR (GHD 2021) also included a bushfire assessment for the site detailing the requirement of an Asset Protection Zone (APZ) within the subject site. In addition, the RFS submitted a concurrence letter for the project (RFS 2021) which recommends the entire site should be treated as an inner protection area (IPA). To facilitate the implementation of this IPA the VMP area is comprised of the existing gas line easement adhering to IPA requirements as outlined in the concurrence letter with relevant excerpts provided in Appendix C (RFS 2021) and the Bushfire Assessment (GHD 2021).

1.2. Scope and objectives of the VMP

The overall objective of this VMP is to provide a vegetation management framework for the proposed subdivision in accordance with IPA requirements. This includes the revegetation of native vegetation throughout the identified VMP area where appropriate.

This VMP covers an establishment period (estimated to be six months) followed by a five-year maintenance period, or until the objectives and performance criteria outlined in this VMP are met. The objectives of the VMP are summarised in **Table 1** and the VMP condition requirements are outlined in Table 2.

Table 1: VMP objectives

Objectives	Approach
Improve ecological health and integrity	Revegetate the site with native terrestrial and macrophyte species using appropriate species Maximisation of biodiversity and ecological values Undertake ongoing maintenance weed control
Maintain, and improve habitat values	Protect existing vegetation Increase native vegetation cover through revegetation Assist in the natural regeneration of native species Control weeds and prevent new outbreaks Revegetate core habitat and food source species Maintain and protect habitat characteristics

Table 2: VMP condition requirements outlined in Development Consent SSD-8859

Ref.	Condition	Condition requirement	Plan reference
1	B12	Prior to the commencement of any construction or other surface disturbance for the development, the Applicant must install and maintain suitable erosion and sediment control measures on-site, in accordance with the relevant requirements of the Managing Urban Stormwater: Soils and Construction - Volume 1: Blue Book (Landcom, 2004) guideline and the Erosion and Sediment Control Plan included in the CEMP required by condition C2.	Section 3.2.
2	B34	The 'On Site Detention Lot (Lot 12, as shown Subdivision Plan DA05 dated 30/06/2021, issue A.12)' must be entirely managed to the standards of an inner protection area as outlined in Appendix 4 of Planning for Bush Fire Protection 2019.	Section 4, and Appendix C
3	B35	Except for the areas denoted 'Grassy and Semi-Arid Woodlands' as depicted in Figure 5 of the bush fire report prepared by GHD, ref. 2127092, dated 17 August 2021, the entire development site and the road reserves must be entirely managed in perpetuity to the standards of an inner protection area as outlined in Appendix 4 of Planning for Bush Fire Protection 2019.	Section 4, Appendix C, and Table 8
4	B36	Landscaping within inner protection areas must comply with Appendix 4 of Planning for Bush Fire Protection 2019.	Section 4, Appendix C, Table 6, and Table 8
5	B37l	The estate road must comply with the following requirements for non-perimeter roads under Table 5.3b of Planning for Bush Fire Protection 2019: a minimum vertical clearance of 4m to any overhanging obstructions, including tree branches, is provided.	Table 6
6	B47	Prior to the commencement of construction, the Applicant must prepare a Landscape and Vegetation Management Plan to manage existing vegetation and landscaping works on site to the satisfaction of the Planning Secretary. The Plan must form part of the CEMP in accordance with condition C2 and must:	This document.
7	B47a	be prepared by an appropriately qualified bush regenerator;	Section 1.3.
8	B47b	be prepared in consultation with the Environment and Heritage Group;	Section 1.3

Ref.	Condition	Condition requirement	Plan reference
9	B47c	detail the locations, species, pot sizes, planting densities of plantings on-site, prioritising:	No plantings to be conducted on site.
10	B47c(i)	the reuse of existing juvenile native plants on site in proposed landscaping areas;	Section 3.3.
11	B47c(ii)	the collection and use of local native seed from site and reuse opportunities of these seeds in proposed landscaping areas;	Section 3.3.
12	B47c(iii)	the reuse of any native trees to be removed (including tree hollows, tree trunks and root balls) on site for habitat enhancement;	Section 3.3.
13	B47c(iv)	incorporating a diversity of local provenance native trees, shrubs and groundcover species; and	Section 3.3 and Appendix B.
14	B47c(v)	avoidance of nursery hybrids of locally occurring native species;	Section 4.3, Appendix B.
15	B47d	detail measures to protect native vegetation that would be retained on site and adjoining sites, from construction activities;	Section 3.
16	B47e	detail outcomes of consultation with local community restoration groups, Landcare groups, surrounding reserve managers (including National Parks and Wildlife Service and Western Sydney Parklands Trust) and Council for reuse opportunities off site where removed native trees are not able to be entirely re-used on site;	Section 3.3.1 and Table 7.
17	B47f	detail topsoil and weed management measures, and the monitoring of this;	Section 3.5, Section 4.2, Section 6, Appendix B, Table 7, and Table 8.
18	B47g	describe the monitoring and maintenance measures to ensure the on-going success of the revegetation and landscaping works and measures to replace any plant loss; and	Section 4.2.2, Section 4.3, Section 6, Appendix B, and Table 8.
19	B47h	detail how the landscaping on-site will comply with the principles of Planning for Bushfire Protection 2019 and meet the requirements of condition B36.	Section 4.1.
20	C1	Management plans required under this consent must be prepared in accordance with relevant guidelines, and include:	
21	C1a	detailed baseline data;	Section 2, Section 4.1, Figure 2, Table 3, and Table 4
22	C1b(i)	details of: the relevant statutory requirements (including any relevant approval, licence or lease conditions);	Section 1, and Section 1.1.
23	C1b(ii)	details of: any relevant limits or performance measures and criteria; and	Table 8 and Table 9.
24	C1b(iii)	details of: the specific performance indicators that are proposed to be used to judge the performance of, or guide the implementation of, the development or any management measures;	Table 8 and Table 9.

Ref.	Condition	Condition requirement	Plan reference
25	C1c	a description of the measures to be implemented to comply with the relevant statutory requirements, limits, or performance measures and criteria;	Section 3, Section 4, Section 6, Appendix B, Table 5, Table 6, Table 8 and Table 9.
26	C1d(i)	a program to monitor and report on the: impacts and environmental performance of the development; and	Section 6.
27	C1d(ii)	a program to monitor and report on the: effectiveness of the management measures set out pursuant to paragraph (c) above;	Section 6, Table 8 and Table 9.
28	C1e	a contingency plan to manage any unpredicted impacts and their consequences and to ensure that ongoing impacts reduce to levels below relevant impact assessment criteria as quickly as possible;	Section 6.3 and Table 9.
29	C1f	a program to investigate and implement ways to improve the environmental performance of the development over time;	Section 5., Section 5.1 and Section 6.
30	C1g(i)	a protocol for managing and reporting any: incident and any non-compliance (specifically including any exceedance of the impact assessment criteria and performance criteria);	Section 6, Section 6.1.3, Table 8, and Table 9
31	C1g(ii)	a protocol for managing and reporting any: complaint;	Section 6.1.3.
32	C1g(iii)	a protocol for managing and reporting any: failure to comply with statutory requirements; and	Section 5.1 and Section 6.1.3.
33	C1h	a protocol for periodic review of the plan.	Section 5.1 and Section 5.2.

1.3. Preparation and implementation of this plan

This VMP has been prepared by a Restoration Ecologist with over 5 years' experience in environmental consultancy and relevant Bachelor of Science degree.

Please note that this document was submitted to the Environment and Heritage Group on the 5 March 2025 to invite their comment on the plan. At the time of writing there has been no response.

A suitably qualified and experience bush regeneration contractor is required to implement this VMP. They should be a member of the Australian Association of Bush Regenerators (AABR) or should possess the required qualifications and experience for membership. In addition to this, team leaders should have, as a minimum, a Certificate III in Conservation & Land Management or equivalent. The contractor will need to conduct best practice bush regeneration techniques as described by Buchanan (2009).

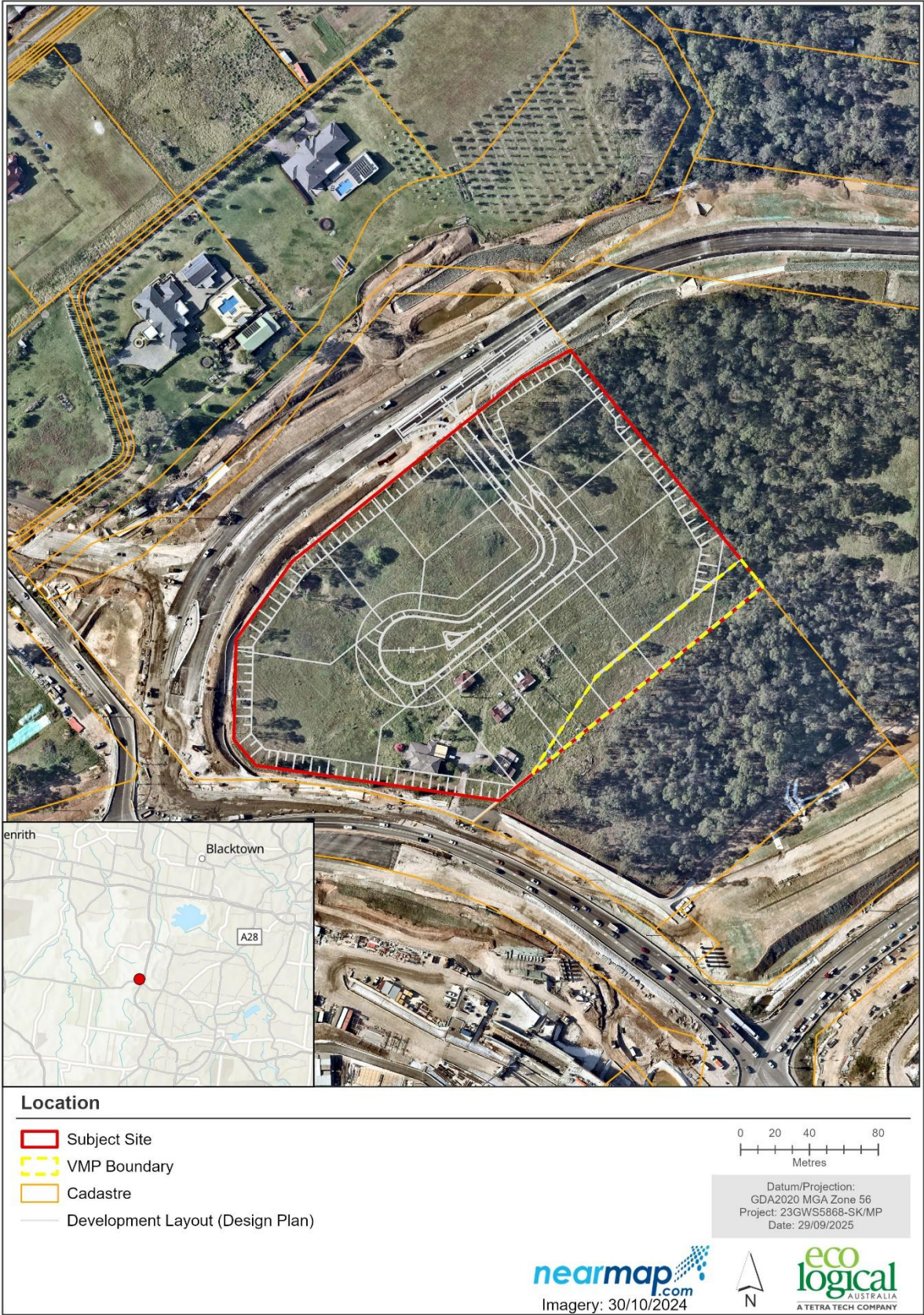


Figure 1: Site Location

2. Description of the site environment

2.1. Topography and hydrology

The site slopes from south to north with minimal undulations within the landscape. The site contains no watercourses although a 2nd order drainage line is present adjacent to the northern boundary. This drainage line flows into Ropes Creek and forms part of the Ropes Creek riparian corridor. The neighbouring property to the north of the site contains a rural farm dam adjacent to the boundary of the site.

2.2. Vegetation communities

The BDAR (GHD 2021) identified **one** (1) Plant Community Type (PCT) present within the site (**Table 3, Figure 2**). In 2022 the original PCT849 was redefined to PCT3320, which is what will be referred to in this VMP.

Table 3: Plant community types present within the subject site

PCT ID	PCT Name	Area within subject site (ha)	BC ACT Status
3320	Cumberland Shale Plains Woodland	1.15	CEEC
-	Exotic grassland	3.05	-
Total		4.2	

2.2.1. Cumberland Shale Plains Woodland (PCT 3320)

This PCT forms part of the Cumberland Plain Woodland community, this community is listed as a Critically Endangered Ecosystem Community (CEEC) under the Biodiversity Conservation Act (2016).

This PCT is characterised by a tall sclerophyll open forest with a sparse mid stratum of shrubs and small trees with grass groundcovers. The canopy of this PCT consists of *Eucalyptus tereticornis* (Forest Red Gum) and *Eucalyptus moluccana* (Grey Box) with the occasional *Eucalyptus crebra* (Narrow-leaved Ironbark) and *Eucalyptus fibrosa* (Red Ironbark). The shrub layer is comprised primarily of *Bursaria spinosa* (Blackthorn) and one or more species of Acacia of which *Acacia parramattensis* (Parramatta Wattle), *Acacia decurrens* (Black Wattle) and *Acacia falcata* (Hickory Wattle) are most common. Ground layer is comprised of grasses, forbs, climbers, and hardy ferns consisting primarily of *Microlaena stipoides* (Weeping Grass), *Themeda triandra* (Kangaroo Grass), *Dichondra repens* (Kidney Weed), *Brunoniella australis* (Blue Trumpet), *Cheilanthes sieberi* subsp. *sieberi* (Poison Rock Fern), *Grona varians* (Slender Tick-trefoil), *Aristida vagans* (Threeawn Speargrass) and *Glycine tabacina*.



Figure 2: Plant Community Types within and surrounding the VMP area

2.3. Existing vegetation on site

The subject site consists of historically cleared, open grazing lands and residential and rural land use, represented by minimal canopy and midstory cover with an understorey comprised of exotic and native species consistent with the PCT 3320. The site contains several mature native canopy species *Eucalyptus tereticornis* (Forest Red Gum), *Eucalyptus moluccana* (Grey Box) and *Araucaria cunninghamia* (Hoop Pine). A sparse distribution of midstory species comprised of *Acacia parramattensis* (Parramatta Wattle), *Lissanthe strigosa* (Heath Peach) and *Bursaria spinosa* (Blackthorn) forms the understorey with a mixed ground layer of exotic and native herbs and grasses. Horticultural plants such as *Agapanthus praecox* (Agapanthus), *Monstera deliciosa* (Swiss Cheese Plant), *Vinca major* (Periwinkle) and *Araucaria cunninghamia* (Hoop Pine) were recorded surrounding the four dwellings on site. The primary weeds present throughout the site consist of multiple stands of *Rubus fruticosus* (Blackberry) and *Vinca major* (Periwinkle) with a matrix of *Eragrostis curvula* (African Lovegrass), *Pennisetum clandestinum* (Kikuyu), *Cynodon dactylon* (Couch). A list of species recorded across the site is available in 8.

2.4. Priority weeds

The *Biosecurity Act 2015* and regulations provide specific legal requirements for state level priority weeds. Under the *Biosecurity Act 2015* all plants are regulated with a general biosecurity duty to prevent, eliminate or minimise any biosecurity risk they may pose. Any person who deals with any plant, who knows (or ought to know) of any biosecurity risk, has a duty to ensure the risk is prevented, eliminated, or minimised, as far as reasonably practicable.

Specific legal requirements apply to state determined priorities under the *Greater Sydney Regional Strategic Weed Management Plan 2023-2027*, while regional priorities include outcomes to demonstrate compliance with the general biosecurity duty and strategic responses in the region to achieve relevant management objectives (Greater Sydney LLS 2023). Weeds listed as 'other weeds of regional concern' under the plan warrant resources for local control or management programs and are a priority to keep out of the region. Inclusion in this list may assist Local Control Authorities and/or land managers to prioritise action in certain circumstances where it can be demonstrated the weed poses a threat to the environment, human health, agriculture etc.

Weed species identified during the field survey for this VMP include five (5) Weeds of National Significance (WoNS), and six (6) weeds listed as Regional Level Priority. There were five (5) weeds listed as other weeds of regional concern. The weeds present, their priority listing under the *Biosecurity Act 2015*, the associated asset / value at risk and whether they are WoNS, are presented in **Table 4**. A full list of weeds recorded during the current field survey is provided in **Appendix A**.

Table 4: Priority weeds identified within the study area

Scientific Name	Common Name	WoNS	Regional level priority weeds	Other weeds of regional concern	Biosecurity Act 2015
<i>Asparagus asparagoides</i>	Bridal Creeper	Yes	No	No	Containment
<i>Lantana camara</i>	Lantana	Yes	No	Yes	Containment
<i>Nassella neesiana</i>	Chilean needle grass	Yes	Yes	Yes	Containment
<i>Olea europaea</i>	African Olive	No	Yes	Yes	Containment
<i>Rubus fruticosus</i>	Blackberry	Yes	No	Yes	Containment
<i>Senecio madagascariensis</i>	Fireweed	Yes	No	Yes	Containment

2.5. Threatened species habitat

The BDAR (GHD 2021) highlighted the potential habitat of two threatened species to occur throughout the site. These species are:

- *Myotis macropus* (Southern Myotis)
- *Meridolum corneovirens* (Cumberland Plain Land Snail)

Targeted searches were undertaken within the BDAR, to determine the presence of these two species. These searches revealed the presence of Southern Myotis in the northwest corner of the site however, despite intensive surveys for the Cumberland Plain Land Snail, no presence within the site was recorded. In addition to these surveys, a preclearance survey and clearance supervision is required to complete clearing of vegetation across the site to identify potential fauna habitat. Subsequent clearance supervision of the removal of habitat features identified in the preclearance survey is required to minimise the potential impact to these species.

3. Preliminary works

3.1. Fencing

The VMP area constitutes a pipeline easement, and therefore temporary fencing during the construction period is not required. Sediment fencing should be used to prevent sediment movement into the VMP area and limit the spread of weed propagules in soil sediments during the construction period.

3.2. Soil and water management

An Erosion and Sediment Control Plan, as part of a Construction Environmental Management Plan, must be developed and implemented prior to the commencement of any on-ground works. Erosion and sediment control measures on-site should be in accordance with the relevant requirements of the Managing Urban Stormwater: Soils and Construction - Volume 1: Blue Book (Landcom, 2004) guideline.

3.3. Vegetation clearance and earthworks supervision

When clearing areas of existing vegetation in the development footprint a fauna ecologist or wildlife carer must be present when dealing with vegetation with potential to provide habitat in order to capture and release any displaced fauna. This fauna must be released into suitable habitat adjacent to the development footprint, with assistance provided by wildlife carers to attend to and care for injured fauna as needed.

The site contains four hollow bearing trees within the development footprint as identified within the BDAR (GHD 2021). Hollow bearing trees within the development footprint marked for removal must be retained for reuse. As the entire site is an IPA, no woody material (such as hollow stems, sections of trees, large woody material > 10 cm diameter) that may present a fire hazard should be reused on site. All-natural timber (i.e. fallen logs and branches) should be reused off-site. Viable seed and genetic material may be collected for plant propagation uses and all timber is to be cut into logs to be used as ground habitat for native fauna off-site. Woody material provides microhabitat for fauna species, soil stability and nutrient cycling. Exotic vegetation is to be taken off-site and should not be used in habitat enhancement.

When vegetation clearance is required in the VMP area then all these works must be undertaken or supervised by a suitably qualified and experienced restoration ecologist.

3.3.1. Community consultation

Prior to vegetation clearing being undertaken, the reuse of the vegetative and woody resources on site should be assessed and opportunities sought to use these materials. As per the conditions of consent issued by NSW Government (2022), where reuse of vegetative and woody resources on site is not possible, other reuse opportunities must be found in consultation with local community restoration groups, Landcare groups, National Parks and Wildlife Service, Western Sydney Parklands, and Council.

Juvenile native plants must also be retained for reuse within the VMP area, or, if reuse on-site is not possible, consultation made with groups identified previously to reuse them off-site. Juvenile plants will primarily consist of native tree and shrub species throughout the development footprint. As identified

from the BDAR and inspection these will primarily consist of but are not limited to *Lissanthe strigosa* (Peach Heath), *Acacia parramattensis* (Parramatta Wattle), *Eucalyptus moluccana* (Grey Box) and *Eucalyptus tereticornis* (Forest Red Gum). IPA requirements must be taken into consideration when determining if trees can be reused on site or if alternative opportunities for their reuse should be found.

Possible Junior Landcare and Landcare groups within the local Cecil Hills area who can be consulted for offsite reuse of vegetative and woody resources and juvenile native plants include but are not limited to:

- Greenway Park Public School Junior Landcare group,
- Austral Public School Junior Landcare group, and
- Lovett Bay Bushcare Landcare group.

Other potential groups who can be consulted if further opportunities for offsite reuse of woody materials are required include groups such as National Parks and Wildlife, Western Sydney Parklands and local Councils such as Liverpool City Council (LCC) and FCC. Some current projects that might provide woody resource reuse opportunities may include the following:

- Moondarra Drive – Shale Hills – Landscaping project,
- Community tree planting events run through Liverpool Council from March to October,
- National Tree Day,
- Local Environment Groups run through Liverpool Council such as the Elouera Bushland Reserve project, and
- FCC current works such as Prospect Creek, Curran Street Reserve, and Warragamba Crescent Reserve.

Consultation should take place prior to the removal of vegetation and woody resources on site to allow time for appropriate opportunities to be found.

When vegetation clearance is required in the VMP area then all these works must be undertaken or supervised by a suitably qualified and experienced restoration ecologist.

3.4. Pest control

During the initial site inspection, it was recorded that pest species use the site. It is the responsibility of the land holder to remove and protect the VMP area from all pest species and livestock. Pest control is the responsibility of the land holder, if pest control is required installation is to be undertaken by relevant contractors in consultation with Local Land Services (LLS) and FCC.

3.5. Soil preparation prior to revegetation

Due to the identified presence of asbestos within the dumped fill on site, a RAP (2021) and more recently, an ARAP (2023) have been prepared for the site outlining the required remediation actions prior to construction activities commencing across the site.

As per the concept civil plans the entire site is subject to the cut and fill plan illustrating that the entire site is to be cleared of all existing vegetation. However, the gas pipeline easement illustrates a cut and fill of - 0.25 m to + 0.25 m which may not require removal of existing vegetation according to the site landscape plan.

Considerable chemical change can occur between soil A and B horizons, with some B horizons highly sodic and prone to deflocculation, erosion, and water logging, which could significantly reduce revegetation success. For this reason, excavation, shaping and re-levelling activities within the VMP area, if required, should take particular care with the removal, stockpiling and replacement of soil horizons/strata to achieve final soil profiles that are appropriate for plant survival. Works should also have plans in place to minimise and remediate soil compaction where construction works are taking place in the VMP area. Furthermore, environmental hygiene is highly recommended to prevent the introduction or the transfer of pathogens or noxious/WoNS seed. Safe Work Method Statements (SWMS) need to incorporate these measures for machinery and all pedestrians including work teams, reporters etc.

After all construction works, including haul roads, are complete and civil construction vehicle movements are excluded then surfaces should be treated with appropriate topsoils, compost, and ameliorants to finished levels, ripped (where necessary) and cultivated to a light friable consistency. It is assumed that the civil contractor will undertake the soil preparation works but the exact requirements should be finalised in consultation with a suitably qualified and experienced Restoration Ecologist.

For this VMP it is assumed that all areas will require earthworks to provide a light friable soil for revegetation (Table 5).

Table 5: Indicative soil preparation work requirements

Task
Form and shape subgrade to 300mm below final levels
Install 225mm of suitable site topsoil consistent with the natural local soils
Install 75mm compost complying with AS4454-2012
Undertake soil testing and install suitable ameliorants depending on the results. An indicative example of what might be required includes: • 100g/m² Gypsum • 20g/m² microbial soil conditioner (e.g., Bactivate granular or equivalent) • 20g/m² quick-release multi-source 5:2:8 NPK organic granular fertiliser (e.g., Terralift TX10 + MYCORRHIZA or equivalent) • 120g/m² slow-release microbial native 14:1:4 NPK granular fertiliser (e.g., Troforte M Native, or equivalent)
Install to a depth of 300mm over subgrade
Rip and cultivate until light and friable

4. Vegetation management works

4.1. VMP Management Zones

This VMP outlines one management zone (MZ) with an area totalling 0.28 hectares, the location of which is shown in **Figure 3**. The VMP area must adhere to the requirements of an Inner Protection Area Bushfire requirements, outlined in **Table 6**.

Table 6: IPA requirements

Strata	Requirement
Trees	Canopy cover should be less than 15% (at maturity) Trees (at maturity) should not touch or overhang the building Lower limbs should be removed to a height of 2m above the ground Tree canopies should be separated by 2 to 5m Preference should be given to smooth barked and evergreen trees
Shrubs	Create large discontinuities or gaps in the vegetation to slow down or break the progress of fire towards buildings Shrubs should not be located under trees Shrubs should not form more than 10% ground cover Clumps of shrubs should be separated from exposed windows and doors by a distance of at least twice the height of the vegetation
Grasses	Should be kept mown (as a guide grass should be kept no more than 100mm in height) Leaves and vegetation debris should be removed
Groundcovers	Vines and other climbing species should be avoided along walls and pergolas
Other	Litter fuels should be kept below 1cm in height and be discontinuous Low flammability vegetation species should be used

4.1.1. MZ1: Pipeline Easement

MZ1, approximately 0.28 ha, is a pipeline easement comprising existing vegetation. This area is expected to experience minimal impact from construction works and currently has approximately 80% exotic species cover. Although the Jemena Planting of Vegetation Near Gas Pipelines Guideline (2021), identifies either a 3 m or 10 m clearance zone (depending on pipe size) above gas pipelines where planting is excluded, in this instance Jemena has requested that the entire easement be excluded from planting (pers comm. 2025). Therefore, no revegetation will be undertaken in MZ1. In addition, to avoid erosion from bare earth, general weed control will not be undertaken either and only management of priority weeds will be undertaken in this management zone.

4.2. Weed control

4.2.1. Primary and secondary weed control

Priority weeds, including woody weeds in the understorey will require treatment. Secondary and maintenance weed control will be required only for priority weed re-emergence. During these works, care must be taken to avoid any off-target damage to natural regeneration of native species.

Primary weed control will include the removal of priority exotic species outlined in the Biodiversity Development Assessment Report (GHD 2021). Juvenile *Olea europaea subsp. cuspidata* (African Olive) plants can be hand-pulled, provided the whole root is removed. Large *Ligustrum* spp. (Privet) plants can be treated using cut and paint method. Chemical and mechanical control techniques will be required in follow up treatments. Secondary and follow up treatments of regenerating woody, herbaceous and monocot exotic weeds including *Olea europaea subsp. cuspidata* (African Olive) seedling growth will be required. For more information on specific weed control techniques, see **Appendix B**.

4.2.2. Maintenance

Following primary and secondary weed removal works, all areas will require ongoing maintenance to control priority weed regrowth from the soil seed bank. Maintenance work is to be undertaken by a qualified bush regeneration contractor(s) as per specifications provided in **Appendix B**.

Maintenance will be undertaken on a regular basis in the peak growing seasons (i.e. spring and summer), with less frequent visits necessary during cooler periods (i.e. autumn and winter). Maintenance work may also include actions to encourage native regeneration in areas of lower resilience where it is not occurring naturally. These actions include techniques such as soil disturbance, niche seeding and transplanting, where appropriate.

4.3. Revegetation

No revegetation action is required for this VMP.



Figure 3: VMP management zones

5. Implementation schedule

The VMP area will be managed with an establishment period expected to be six months and a five-year maintenance period.

An indicative implementation schedule has been provided in **Table 7**.

5.1. Adaptive management

As this is a long-term project that will be implemented over five years, an adaptive management approach will be implemented that enables the successful contractor to learn from and respond to successful and unsuccessful techniques used on the site.

The success of the works will be determined by meeting the performance criteria identified in **Table 8**. Contractors have the flexibility to implement different techniques to those specified here providing that performance criteria are met. Any major departures from the VMP or proposed changes to performance criteria must be undertaken after the opportunity for inspection with FCC and approved in writing by FCC.

5.2. VMP management in-perpetuity

The VMP is to be re-evaluated upon completion of all works described within this VMP and at least every five years after that to ensure the site meets the performance criteria. These inspections are to include surveys of both priority and environmental weed populations. Areas that do not conform to the performance criteria at the completion of works are required to be rehabilitated using the methods outlined within this VMP and may result in the extension of the VMP management period until performance criteria are achieved.

Table 7: Indicative implementation schedule

Task	Establishment	Year 1				Year 2				Year 3				Year 4				Year 5			
		1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
Civil works																					
Install construction and sediment fencing																					
Install information signage																					
Soil and water management																					
Community consultation																					
Weed control																					
Establishment																					
Secondary																					
Maintenance																					
Other works																					
Monitoring and reporting																					

Key	Civil construction activities
	Vegetation management works

6. Monitoring and reporting

The bush regeneration contractor will monitor the vegetation for changes over time. Information gained through the monitoring and reporting process will identify works that have and have not been successful, and the reasons for their success or failure.

The aim of monitoring is to measure the effectiveness of the control actions being undertaken to achieve the desired outcome. It will identify non-conformance and provide the land manager with the ability to implement corrective actions. Information derived from the results of monitoring will also be used in adaptive management (i.e. learning from past experience to inform future priorities and work plans). For example, as annual grass weeds are removed, herbaceous and perennial weeds may establish.

Finally, monitoring and reporting will help determine and quantify the costs related to weed management and the cost effectiveness of the VMP.

6.1. Monitoring

Monitoring will be undertaken by photo monitoring and vegetation surveys. Monitoring will need to be implemented prior to works commencing to establish a benchmark for performance, and to occur on an annual basis until the completion of the project. Monitoring results will be included in the progress report.

6.1.1. Photo monitoring

Photo monitoring points should be set-up using a permanent reference point to provide a visual reference of changes in the vegetation. Photo monitoring to include:

- Set up a minimum of one photo monitoring point within the VMP area:
 - MZ1: Pipeline Easement – 1 photo monitoring point
- Mark the photo point with a six-foot star picket and map the location and bearing of each photo point.
- Take a digital photo of each photo point with the whole length of the star picket visible in the photo to act as a reference point.
- Organise the digital photos logically with each image labelled with a unique reference number indicating the location of the photo point, the direction of the photo and the date the photo is taken.

6.1.2. Vegetation surveys

As MZ1 will not require planting no formal vegetation survey will be conducted. The bush regenerator will inspect MZ1 for the re-emergence of priority weeds and facilitate their removal.

6.1.3. Progress reports

Progress reports are to be provided at the end of the establishment and on an annual basis until the completion of the project. This reporting includes the implementation of the monitoring actions

specified in **Section 6.1** and a description of the works that have been undertaken. These reports will be submitted to FCC. Reports will include at a minimum:

- The time period the report relates to,
- Qualifications and experience of contractors,
- Certification of seed and local provenance stock,
- A summary of works carried out within the period including
 - Date and time of site visits,
 - Works completed on the site at each visit,
 - A table detailing total person hours for each task carried out on-site,
 - Methods of weeding undertaken and details of herbicide use,
- Photo monitoring results to date,
- A description of any problems, incidents, and public complaints encountered during the implementation of the works outlined in this VMP and how they were overcome,
- Any observations made, including new plant species recorded (native and weed species), comments on rates of regeneration and any problems which impact on the implementation of the VMP,
- If applicable, the result of the implementation works in relation to the relevant performance criteria.

6.2. Performance criteria

The performance criteria are detailed in **Table 8**.

Failure to meet these performance criteria will mean that the maintenance period will be extended until they are achieved. Therefore, maintenance must continue until FCC agrees that the objectives and performance criteria have been met and the maintenance period has concluded. The author of this VMP, or an equally qualified and experienced person, must prepare a statement certifying the compliance of the performance criteria at the end of the VMP period.

If monitoring indicates that the VMP tasks are not resulting in achievement of the performance criteria, the task program will be revised. 111 Elizabeth Drive Pty Ltd and the bush regeneration contractor, in consultation with FCC can adapt these criteria as required in response to the success of rehabilitation works.

After the achievement of the performance criteria in **Table 8**, the following performance criteria will need to be achieved in perpetuity:

- Across the VMP area, < 2 % priority weeds cover
- No dumped garden waste within the VMP area

Table 8: Performance criteria

Zones	Establishment	Year 1	Year 2	Year 3	Year 4	Year 5
MZ1	- Commencement of all tasks outlined in the VMP or evidence of planning for their implementation. Civil construction works: - Sediment fencing installed. - Removal and disposal of all native and exotic vegetation throughout the VMP, completed under the supervision of a qualified ecologist. - All earthworks completed under the supervision of an ecologist or bush regenerator. - All rubbish and debris and debris are removed. - All soil preparation works completed to provide suitable conditions for revegetation. Vegetation management works: - Treat 100% of priority weeds - No erosion or sedimentation beyond the boundary of the development lot and all rubbish and debris are removed. - Monitoring and reporting undertaken in accordance with Section 6. - VMP Area conforms and is maintained to the IPA requirements outlined in Section 4.1 - No greater than 5% cover by priority weeds					

6.3. Risk assessment and corrective actions

The main risks identified for this VMP area:

- Failure to maintain the condition of the vegetation within the VMP
- Improper management of vegetation leading to risk within MZ1 regarding the pipeline easement
- Failure to meet the performance criteria included within this VMP

The VMP includes priority weed control management throughout the life of the VMP. The chances of weed invasion affecting the success of the VMP is considered **medium** due to alternative performance criteria and strict minimal management to be undertaken in MZ1.

Possible extreme weather condition impacts from drought or flood are hard to predict and would have a **medium** impact on the VMP area. The potential for extreme weather events to occur is incredibly difficult to determine. If extreme weather events were to occur, the risk to achieving the objectives in the VMP could range from **medium** to **high**, depending on the frequency and severity of the events.

Appropriate management measures have been specified in the risk management table below (**Table 9**).

Table 9: Risk assessment

Objective	Potential risk	Likelihood	Consequence	Risk level	Trigger	Management strategy (remedial action)	Related monitoring
Maintain, and improve habitat values in line with VMP area regulations	Damage to areas from public interactions	Possible	Moderate	Medium	Noted human impact to vegetation during monitoring visit, including tyre tracks, dumped rubbish, litter, campfires	Construct or repair permanent exclusion fence around VMP area Ensure signage is included to encourage the public to decrease their impact on the environment	Monitoring outlined in Section 6 .
	Improper management leading to MZ1 not adhering to pipeline easement requirements	Unlikely	High	Medium	Management is noted to not meet requirements as shown in Section 4 during monitoring visits	Ensure proper training and staff inductions for the VMP	Monitoring outlined in Section 6 . Training as to proper management in each zone to be carried out.
Ensure the performance criteria included in this VMP are met.	Weed presence does not decrease to acceptable levels across VMP period as shown in Table 8 .	Possible	Moderate	Medium	Weed cover is higher than the weed cover levels for each year and zone described in Table 8 recorded during monitoring visits	Increase weed control measures and visits until weeds are under the required level Use additional weed suppression strategies such as jute matting appropriate areas	Monitoring outlined in Section 6 .
	New weed outbreaks	Possible	Minor	Low	New weed species detected during monitoring visit	Increase edge maintenance and weed management works to suppress new weed invasion	Monitoring outlined in Section 6 .
	Strict weed management criteria for MZ1, impacts the success of the VMP performance.	Possible	Moderate	Medium	Noticeable new weed outbreaks in MZ1 during monitoring visits	Increase edge maintenance and weed management works to suppress new weed invasion Increase weed management within MZ1 as required to meet performance criteria in Table 8 .	Monitoring outlined in Section 6

7. Cost

The cost of implementation for the establishment and five-year maintenance period is approximately **\$48,000** exclusive of GST and CPI. An indicative annual costing timeline for the establishment period to Year 5 is provided **Table 10**. Costs should be reassessed at the end of the establishment works based on the results of the management undertaken to that point. Rates and costs are based on typical commercial rates. Assumptions that have been made regarding the estimation of costs have been outlined below.

7.1. Construction and preparation works

It is assumed that all soil preparation works and vegetation clearing will be undertaken by the civil contractor under the supervision of a qualified Ecologist or Bush Regenerator. No costs have been provided in this VMP for the soil preparation, vegetation clearing or supervision by a suitably qualified and experienced restoration ecologist.

Civil construction activities are identified in **Table 7** and have not been included in **Table 10**.

7.2. Vegetation management works

7.2.1. Weed control techniques

Bush regeneration contractors will implement the weed control treatments identified in this VMP. These works have been estimated to cost **\$1,740** for a team of two bush regenerators, including a supervisor, per day. The cost of bush regeneration works includes the costs of herbicide, vehicles and equipment which are required to implement the VMP.

Specific weed control techniques are available in **Appendix B**.

7.2.2. Monitoring and reporting

Monitoring and reporting can be undertaken either by the bush regeneration contractor or by the project ecologist. This includes:

- The initial set up of the photo points and conducting the baseline surveys at the end of the establishment period
- Preparing monitoring reports, including photo points and vegetation surveying at the end of the establishment period and annually until the end of Year 5.

7.3. Pest control

Costs for pest control works over the length of the maintenance period are difficult to predict and as such have not been included in the costings. The need and level of pest control works will be assessed in the monitoring reports and an approach will be determined in consultation with FCC.

Table 10: Indicative implementation costs

Treatment	Establishment	Year 1	Year 2	Year 3	Year 4	Year 5	Total
Weed control							
Establishment	\$ 4,327	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 4,327
Maintenance - Years 1-2	\$ -	\$ 4,847	\$ 3,808	\$ -	\$ -	\$ -	\$ 8,655
Maintenance - Years 3-5	\$ -	\$ -	\$ -	\$ 3,231	\$ 2,423	\$ 2,423	\$ 8,078
Associated costs							
Disbursements	\$ 433	\$ 485	\$ 381	\$ 323	\$ 242	\$ 242	\$ 2,106
Monitoring & Reporting	\$ 4,087	\$ 4,087	\$ 4,087	\$ 4,087	\$ 4,087	\$ 4,087	\$ 24,522
Totals	\$ 8,847	\$ 9,418	\$ 8,276	\$ 7,641	\$ 6,753	\$ 6,753	\$ 47,689

8. References

- Brodie, L. 1999. *The National Trust Bush Regenerators Handbook*. National Trust of Australia (NSW).
- Buchanan, R.A. 2009. *Bush regeneration: recovering Australian landscapes*. 2nd ed., TAFE NSW, Sydney.
- Commander LE (Ed.) 2021 *Florabank Guidelines – best practice guidelines for native seed collection and use* (2nd ed). Florabank Consortium: Australia
- GHD 2021. *Elizabeth Drive Biodiversity Assessment - Bushfire assessment*.
- Greater Sydney Local Land Services (LLS) 2023. *Greater Sydney Regional Strategic Weed Management Plan 2023-2027*. Online resource: [Regional Strategic Weed Management Plans - Local Land Services](#)
- Jemena 2021. *Guideline Planting of Vegetation Near Gas Pipeline (GAS-960-GL-PL-003)*. Revision Number: Rev 0.
- Landcom 2004. *Managing Urban Stormwater: Soils and Construction*, Vol 1.
- Martens Consulting Engineers 2021. *Remedial Action Plan: Proposed Commercial Subdivision, 1111-1141 Elizabeth Drive, Cecil Park NSW*. Dated June, report ref: P1706121JR07V02.
- Mortlock, W. 2000. *The Hawkesbury-Nepean Catchment Management Authority (2000) Florabank Guideline 10: Seed collection ranges for revegetation*. Online resource: <http://www.florabank.org.au/files/documents/Guideline%20No.%2010%20-%20Seed%20collection%20ranges%20for%20revegetation.pdf>
- NSW Department of Primary Industries (DPI) 2018. *NSW Weed Control Handbook - A guide to weed control in non-crop, aquatic and bushland situations*. Online resource: <https://www.dpi.nsw.gov.au/biosecurity/weeds/weed-control/management-guides/noxious-enviro-weed-control>
- NSW Government 2024. *Biodiversity Conservation Act 2016 No 63*. <https://legislation.nsw.gov.au/view/html/inforce/current/act-2016-063>
- NSW Government 2023. *BioNET Vegetation Classification. Cumberland Shale Plains woodlands*. Online Resource: <https://vegetation.bionet.nsw.gov.au/LoginPR.aspx?ReturnUrl=%2fUserRegistration.aspx>
- NSW Government 2022. *Development Consent Elizabeth Drive Subdivision (SSD-8859)*.
- NSW Rural Fire Service (RFS) 2021. *State Significant Development – Highway Service Centre. Request for comments – exhibited Environmental Impact Statement (EIS) 1111 Elizabeth Dr Cecil Park NSW 217, 2/4/DP2954*.
- NSW Rural Fire Service (RFS) 2019. *Planning for Bush Fire Protection: A Guide for Councils, Planners, Fire Authorities, Developers and Homeowners*. Issued December 2019. Australian Government Publishing Service, Canberra.
- Office of Environment and Heritage (OEH) 2013. *The Native Vegetation of the Sydney Metropolitan Area. Volume 2: Vegetation Community Profiles*. Version 2.0. NSW Office of Environment and Heritage, Sydney.
- Suddaby, T. and Liew, E. 2008. *Best Practice Management Guidelines for Phytophthora cinnamomi within the Sydney Metropolitan Catchment Management Authority Area*. Botanic Gardens Trust, Royal

Botanic Gardens, Sydney. Online resource:

<http://www.spiffa.org/uploads/2/6/7/5/2675656/bestpracticeguidelinesforp.cinnamomiinsmcma.pdf>

Sydney Environmental Group 2023. *Addendum Remedial Action Plan, 1111-1141 Elizabeth Drive, Cecil Park NSW*. Dated October, report ref: 2033-ARAP-01-170823.v1f. Prepared for Landen Property (c/- A&N Design Group)

Appendix A Existing vegetation

Table 11: Exotic species present on site

Botanical Name	Common Name
<i>Anagallis arvensis</i>	Scarlet Pimpernel
<i>Araujia sericifera</i>	Moth Vine
<i>Asparagus asparagoides</i>	Bridal Veil Creeper
<i>Bidens pilosa</i>	Cobblers' Pegs
<i>Briza subaristata</i>	Briza
<i>Cerastium glomeratum</i>	Mouse-ear Chickweed
<i>Chloris gayana</i>	Rhodes grass
<i>Cirsium vulgare</i>	Spear Thistle
<i>Conyza sp.</i>	Fleabane
<i>Cynodon dactylon</i>	Common Couch (Bermuda Grass)
<i>Cyperus eragrostis</i>	Umbrella Sedge (Tall Flat Sedge)
<i>Ehrharta erecta</i>	Panic Veldtgrass
<i>Eragrostis curvula</i>	African Lovegrass
<i>Gamochaeta americana</i>	American Cudweed
<i>Gomphocarpus physocarpus</i>	Balloon Cotton Bush
<i>Lantana camara</i>	Lantana
<i>Medicago marina</i>	Costal Medick
<i>Modiola caroliniana</i>	Red Flowered Mallow
<i>Monstera deliciosa</i>	Swiss Cheese Plant
<i>Nassella neesiana</i>	Chilean Needle Grass
<i>Olea europaea subsp. cuspidata</i>	African Olive
<i>Oxalis corniculata</i>	Creeping Oxalis
<i>Paspalum dilatatum</i>	Paspalum
<i>Pavonia hastata</i>	Pink Pavonia
<i>Pennisetum clandestinum</i>	Kikuyu Grass
<i>Plantago lanceolata</i>	Lambs Tongue
<i>Rubus fruticosus</i>	Blackberry
<i>Senecio madagascariensis</i>	Fireweed

Botanical Name	Common Name
<i>Senecio pterophorus</i>	Winged Groundsel
<i>Senna pendula</i> var <i>glabrata</i>	Cassia
<i>Setaria parviflora</i>	Setaria
<i>Sida rhombifolia</i>	Paddy's Lucerne (Common Sida)
<i>Solanum nigrum</i>	Blackberry Nightshade
<i>Solanum pseudocapsicum</i>	Winter/Jerusalem Cherry
<i>Solanum sisymbriifolium</i>	Sticky Nightshade
<i>Sonchus oleraceus</i>	Common Sow Thistle
<i>Sporobolus fertilis</i>	Parramatta Grass
<i>Symphiotrichum subulatum</i>	Aster-Weed
<i>Trifolium repens</i>	White Clover
<i>Verbena bonariensis</i>	Purple Top
<i>Vicia sativa</i>	Common Vetch
<i>Vinca major</i>	Blue Periwinkle

Table 12: Native species present on site

Botanical Name	Common Name
<i>Acacia parramattensis</i>	Parramatta Wattle
<i>Aristida vagans</i>	Threeawn Spear Grass
<i>Araucaria cunninghamii</i>	Hoop Pine
<i>Arthropodium milleflorum</i>	Vanilla Lily
<i>Asperula conferta</i>	Common Woodruff
<i>Bothriochloa macra</i>	Redleg Grass
<i>Brunoniella australis</i>	Blue Trumpet/Yam
<i>Bursaria spinosa</i>	Blackthorn
<i>Centella asiatica</i>	Indian Pennywort
<i>Chloris ventricosa</i>	Tall Chloris
<i>Commelina cyanea</i>	Scurvy Weed
<i>Cyperus gracilis</i>	Slender Flat Sedge
<i>Desmodium varians</i>	Slender Tick Trefoil
<i>Dichondra repens</i>	Kidney Weed

Botanical Name	Common Name
<i>Einadia hastata</i>	Berry saltbush
<i>Einadia trigonos</i>	Fish Weed
<i>Entolasia stricta</i>	Wiry Panic
<i>Eucalyptus moluccana</i>	Grey box
<i>Eucalyptus tereticornis</i>	Forest Red Gum
<i>Euchiton sphaericus</i>	Annual Cudweed
<i>Fimbristylis dichotoma</i>	Common Fringe Sedge
<i>Geranium solanderi</i>	Native Geranium
<i>Glycine microphylla</i>	Small Leaved Glycine
<i>Glycine tabacina</i>	Variable Glycine
<i>Juncus usitatus</i>	Common Rush
<i>Lissanthe strigosa</i>	Heath Peach
<i>Microlaena stipoides</i>	Weeping Grass
<i>Oplimenus aemulus</i>	Wavy Beard Grass
<i>Pratia purpurascens</i>	White Root
<i>Rumex brownii</i>	Browne's/Swamp Dock
<i>Solanum prinophyllum</i>	Forest Nightshade
<i>Sporobolus creber</i>	Slender Rats Tail Grass/Native Parramatta Grass
<i>Sporobolus elongata</i>	Slender Rats Tail Grass
<i>Themeda triandra</i>	Kangaroo Grass
<i>Veronica plebeia</i>	Trailing Speedwell

Appendix B Weed management techniques

Weed Control

Weed control involves a combination of mechanical, physical, and chemical techniques to remove the weeds and prevent regrowth. Weed control will be undertaken across the entire zone. A selection of the best suited weed control method within the site depends on a number of factors, including:

- The species or combination of weeds being targeted,
- The density of weeds present,
- Resources available (time, labour, equipment, and finances),
- weather condition on the day.

Weed control techniques

Details of specific weed control techniques to be used include, cut-and-paint, scrape-and-paint, herbicide-spraying, and hand weeding are provided in Brodie (1999). The principles of bush regeneration and techniques to trigger natural regeneration are to be in accordance with the Bradley Method and other techniques described in Buchanan (2009). Management techniques for different types of weeds are provided below.

Annual grasses

Annual grasses should be hand removed or spot sprayed where isolated or in low concentrations. Larger patches of annual grasses may be slashed/brush cut in late spring to early summer, after flowering, but prior to seed set. For most species, slashing/brush cutting prior to late spring through to early summer will promote vigorous growth and should not occur. However, some annual grasses can grow and produce seed at any time of the year depending on climatic conditions, such as high rainfall and warm temperatures. Monitoring of annual species should be undertaken and if new growth occurs, the same treatment will be applied to the new growth to prevent seed production. Individual plants should be hand removed, bagged, and disposed of appropriately offsite.

Perennial grasses

Perennial grasses, such as *Sporobolus africanus* (Parramatta Grass) or *Pennisetum clandestinum* (Kikuyu Grass), will be hand removed where isolated or in low concentrations. Larger patches may be slashed prior to seed production in spring or summer (depending on the growth cycle of the species) and the regrowth spot-sprayed 2-3 weeks later, when it is actively growing and approximately 10 cm in length. Monitoring of these species will occur and if new seed production occurs. The same treatment will be applied again as required. However, slashing will not reduce the presence of exotic grasses on its own. It must always be combined with targeted removal to reduce densities and allow for native regeneration. Individual plants should be hand removed, bagged, and disposed of at a registered green waste facility.

Woody weeds

Primary control of trees such as *Erythrina crista-galli* (Coral Trees) following vegetation removal, should be implemented by using the cut and paint or drill and fill method using a non-selective herbicide. The most appropriate method to be used depends on the size of the individual to be removed and will be determined by the bush regeneration contractor. Primary weed control should use techniques that will

not encourage flushes of secondary weed growth. All seedlings of woody weeds will be hand-pulled or spot-sprayed with a non-selective herbicide.

Follow-up treatment of woody weeds, including *Erythrina crista-galli* (Coral Trees) will be controlled by the cut and paint or drill and fill method using a non-selective herbicide.

The most appropriate method to be used depends on the size of the individual to be removed and will be determined by the bush regeneration contractor. Primary weed control should use techniques that will not encourage flushes of secondary weed growth. All seedlings of woody weeds will be hand-pulled or spot-sprayed with a non-selective herbicide.

Creepers and climbers

The control of exotic vines should be managed by skirting at chest height then spraying the target once it is on the ground. This should be done with a dicot specific herbicide such as Grazon®. Follow up treatments will likely be necessary and should be done when the germinating vines are still saplings.

The control of creepers varies depending on the species. For the most part, seedlings will be hand pulled, while mature plants can be controlled by the stem-scrape method or spot spraying using a non-selective herbicide. The precise method to be used will be determined by the bush regeneration contractor depending on the species, size, and reproductive status of the individual. All vegetative material removed should be bagged, removed from site, and disposed of appropriately.

Herbaceous weeds

Where necessary, individual plants of herbaceous weeds, including *Conyza bonariensis* (Flax-leaf Fleabane), will be hand pulled prior to flowering. Where large swaths of these species occur, they will be sprayed using a non-selective herbicide. If high densities of mature stands occur, weeds may be slashed first using a brush cutter and any subsequent regrowth sprayed. Regular monitoring of these species will be required to prevent seed production. All vegetative material that is pulled out and has the potential to regrow if deposited on ground will be bagged and removed from site.

Management of weed waste

All weed propagules, especially priority weeds, will be bagged and disposed of as directed by legislation at a facility licensed to receive green waste. All weed waste without propagules will be composted onsite in small unobtrusive piles.

Herbicide use

The use of herbicide to control weeds should be carefully considered. Herbicide must only be used for the purpose described on the product label, as per the NSW *Pesticides Act 1999*. Herbicide use should assess potential long-term impacts of the technique, including whether the proposed works address the source of the weed infestation. However, herbicide application forms an important and useful component of an integrated weed management approach and can be the most appropriate method for the control and eventual eradications of some weed species.

Herbicide use should occur during the active growing season for plants to encourage the chemical uptake into the plant. The selection of herbicides should also consider the type of weed and the location. Where non-selective herbicides are required for use, glyphosate is the most suitable. A glyphosate-based herbicide, formulated for use near waterways, will be used if works require herbicide application near waterways. (e.g. Roundup Biactive®).

Broad-leaf selective herbicide may be used as per the NSW Weed Control Handbook (DPI 2018). However, this type of herbicide is extremely toxic to aquatic life and must not be used in or adjacent to, waterways.

Registration and records must be kept in accordance with the NSW *Pesticides Regulation 2017*.

Bush regeneration contractors

In accordance with Condition 34(d) of the Conditions of Consent, the rehabilitation requirements detailed in this VMP must be implemented under the supervision of the supervising Ecologist or Bush Regenerator.

The supervising Bush Regenerator should be a member of AABR or should possess the required qualifications and experience for membership. In addition to this, they should have, as a minimum, a Certificate III in Conservation & Land Management or equivalent. The contractor will need to conduct best-practice bush regeneration techniques as described by Buchanan (2009).

A flexible approach to this site is recommended since techniques may need to be changed or modified to suit site conditions. This approach is consistent with adaptive management and allows the contractor to develop and build on-site knowledge whilst implementing this VMP. Monitoring will assist in the development of the VMP actions in subsequent years.

Hygiene protocols

To avoid introducing soil pathogens/diseases, in particular Phytophthora (Root rot disease), onto the site, a hygiene protocol should be undertaken as per the guidelines developed by the Royal Botanic Gardens in 'Best Practice Management Guidelines for Phytophthora cinnamomi with the Sydney Metropolitan Catchment Management Authority.'

For Bush Regenerators all tools and boots should be washed down and thoroughly cleaned of soil/mud using a solution of water and disinfectants prior to undertaking works onsite. All machinery should be thoroughly cleaned of all soil/mud/debris prior to working within the VMP area.

Appendix C Bushfire management requirements

NSW Rural Fire Service concurrence letter (RFS 2021), extracts relevant to VMP:

Except for the areas denoted 'Grassy and Semi-Arid Woodlands' as depicted in Figure 5 of the bush fire report, prepared by GHD, ref. 2127092, dated 17 August 2021, the entire development site and the road reserves must be entirely managed in perpetuity to the standards of an inner protection area (IPA) as outlined in Appendix 4 of *Planning for Bush Fire Protection 2019*. Landscaping within inner protection areas (IPAs) must comply with Appendix 4 of *Planning for Bush Fire Protection 2019*. In this regard, the following principles are to be incorporated:

- A minimum 1-metre-wide area, suitable for pedestrian traffic, must be provided around the immediate curtilage of the building.
- Planting is limited in the immediate vicinity of the building,
- Planting does not provide a continuous canopy to the building (i.e. trees or shrubs are isolated or located in small clusters),
- Landscape species are chosen to ensure tree canopy cover is less than 15% (IPA) at maturity and trees do not touch or overhang buildings,
- Avoid species with rough fibrous bark, or which retain/shed bark in long strips or retain dead material in their canopies,
- Use smooth bark species of trees species which generally do not spread fire up the bark into the crown,
- Avoid planting of deciduous species that may increase fuel at surface/ ground level (i.e. leaf litter),
- Avoid climbing species to walls and pergolas,
- Locate combustible materials such as woodchips/mulch, flammable fuel stores away from the building,
- Locate combustible structures such as garden sheds, pergolas, and materials such as timber garden furniture away from the building; and
- Low flammability vegetation species are used.

