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West Culburra

Vegetation Management Plan

Sealark Pty Limited, C/- Allen Price Pty Ltd

DOCUMENT TRACKING

Project Name	West Culburra - Vegetation Management Plan
Project Number	22GWS3093
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This document has been prepared by Eco Logical Australia Pty Ltd with support from James Harris and Rebecca Lockart (Allen Price).

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Template 2.8.1

Declaration of Accuracy

Project details	
EPBC Number and DA Number	2023/09524 and SSD 3846
Project Name	West Culburra Mixed-use Subdivision, NSW
Proponent and ACN/ABN	Sealark Pty Ltd - 075 795 587
The proposed action	To construct a mixed-use development and associated infrastructure, as varied by the variation request dated 8 August 2024.
Location of the action	Culburra Road, Culburra Beach Lot 1 DP 1279350, Lot 3 DP 1279350 and Lot 1 DP 1305809 (formerly Lots 5 and 6 DP 1065111) Shoalhaven
Date of the preparation of the Vegetation Management Plan	4 February 2026
Person accepting responsibility for the Vegetation Management Plan	Andrew Whitford, Principal Consultant, Eco Logical Australia

In making this declaration, I am aware that section 491 of the Environment Protection and Biodiversity Conservation Act 1999 (Cth) (EPBC Act) makes it an offence in certain circumstances to knowingly provide false or misleading information or documents to specified persons who are known to be performing a duty or carrying out a function under the EPBC Act or the Environment Protection and Biodiversity Conservation Regulations 2025 (Cth). The offence is punishable on conviction by imprisonment or a fine, or both. I am authorised to bind the approval holder to this declaration and that I have no knowledge of that authorisation being revoked at the time of making this declaration.

Signed



Full Name (print) Andrew Whitford
Organisation (print) Eco Logical Australia
Date 06/02/2026

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Abbreviations

Abbreviation	Description
AABR	Australian Association of Bush Regenerators
ACHA	Aboriginal Cultural Heritage Assessment
ACHMP	Aboriginal Cultural Heritage Management Plan
AHIMS	Aboriginal Heritage Information Management System
AHIP	Aboriginal Heritage Impact Permit
BA Act	<i>NSW Biosecurity Act 2015</i>
BC Act	<i>NSW Biodiversity Conservation Act 2016</i>
CEMP	Construction Environmental Management Plan
ELA	Eco Logical Australia Pty Ltd
ER	Environmental Representative
EPBC Act	<i>Commonwealth of Australia Environment Protection and Biodiversity Conservation Act 1999</i>
FFA	Flora and Fauna Assessment
L&E	Land and Environment
LEP	Local Environmental Plan
LGA	Local Government Area
LLS	Local Land Services
MNES	Matters of National Environmental Significance
NPWS	National Parks and Wildlife Services
OEMP	Operations Environmental Management Plan
PCT	Plant Community Type
RSPAMP	Regional Strategic Pest Animal Management Plan
SCC	Shoalhaven City Council
SWMS	Safe Work Method Statements
TEC	Threatened Ecological Community
VMP	Vegetation Management Plan
VPA	Voluntary Planning Agreement
WoNS	Weeds of National Significance

1. Project background

1.1. Introduction

The West Culburra Mixed-use Development project is a Concept DA Approved development proposed by Sealark Pty Ltd, located within the Shoalhaven Local Government Area (LGA), approximately 15 km south-east of Nowra (Figure 1). The subject site located at Part Lot 1 DP 1279350, Lot 3 DP 1279350 and Lot 1 DP 1305809 (formerly Lots 5 and 6 DP 1065111), Culburra Road West Culburra.

A Vegetation Management Plan (VMP) for the proposed development is required under the approved SSD3846 Concept Approval DA and the EPBC approval decision (EPBC2023/09524). This VMP has been prepared to jointly address the requirements of both approvals.

Under the Development Consent No: SSD 3846, Appendix 2 – Applicant's Management and Mitigation Measures for the mixed-use development of the site, the statement of commitments require that:

- As part of the first stage of the subdivision registration the developer will provide a vegetated foreshore reserve (in current natural state) that exceeds 100m in width between the edge of the foreshore road reserve and the Mean High-Water Mark and the Crookhaven River.
- As part of the first stage of the subdivision registration the developer will provide a vegetated woodland reserve (in current natural state) which provides a natural entry feature to the Culburra Beach village.

Prior to the release of the Subdivision Works Certificate for that stage of the development, the developer will prepare a Vegetation Management Plan for the foreshore and woodland reserves to guide future management of this land. Additionally, the approval decision (EPBC 2023/09524) has been made subject to the following conditions from the Department of Climate Change, Energy, the Environment and Water (DCCEEW) regarding the management of the proposed development:

- *Condition 4: Prior to the **commencement of the Action** the approval holder must submit a Construction Environmental Management Plan and a Vegetation Management Plan to the department for the Minister's approval. The approval holder must not **commence the Action** unless the **Minister** has approved the Construction Environmental Management Plan and a Vegetation Management Plan in writing.*
- *Condition 5: To avoid and mitigate **harm** as a result of the Action on **protected matters**, the approval holder must commence implementing the approved Construction Environmental Management Plan and approved Vegetation Management Plan no later than the **commencement of the Action**. The approval holder must continue to implement the approved Construction Environmental Management Plan until the completion of **construction** and the approved Vegetation Management Plan until the expiry date of this approval or as otherwise agreed upon and approved by the **Minister**.*
- *Condition 6b: The approval holder must achieve the following environmental outcomes in the approved Construction Environmental Management Plan and approved Vegetation Management Plan:*
 - *By implementing the Vegetation Management Plan: To prevent and avoid any **harm** to **protected matters** that are retained within the **Action area** during the period of approval.*

- *Condition 7: The Construction Environmental Management Plan and Vegetation Management Plan must be prepared by a suitably qualified ecologist. All commitments, including environmental outcomes, management measures, corrective measures, trigger values and performance indicators in the Construction Environmental Management Plan and Vegetation Management must be SMART and based on referenced or included evidence of effectiveness. The Construction Environmental Management Plan and Vegetation Management must be consistent with the Environmental Management Plan Guidelines.*

This VMP has also been prepared to address the conditions above as well as other conditions which specifically relate to the implementation of a VMP, as detailed in Table 2. The VMP has been prepared consistent with the EPBC Act Environmental Management Plan Guidelines (DCCEEW 2024a). This VMP is required to uphold the consent conditions attached to the approval decision EPBC 2023/09524 made under section 130(1), 133(1) and 134(1) of the *Environmental Protection and Biodiversity Conservation Act 1999* (EPBC Act). In summary, this VMP is intended to satisfy both the requirements of SSD 3846 and EPBC 2023/09524.

1.2. Background

The proposed action has a long assessment history at State level under Part 3A and Part 4 of the EP&A Act. In 2013 Sealark Pty Ltd submitted a concept development application for a mixed-use subdivision under the NSW EP&A Act (SSD 3846). This development was approved by the NSW L&E Court in December 2021. The approved development is for a mixed-use development which indicatively includes the following:

- Implementation of a Soil and Water Management Plan
- Clearing of certain vegetation to facilitate future development including permanent asset protection zones
- Relocation of existing services
- Construction of new roundabouts on Culburra Road, including all lead in/lead out road works
- Construction of a footpath and kerb and gutter from the new western roundabout on Culburra Road to the Town Centre
- Construction of new internal roads, roundabouts, drainage works, and footpaths
- Construction of temporary fire trails and emergency bushfire egress
- Construction of utility services (water, sewer electricity, telecommunications)
- Construction of permanent water quality measures
- Establishment of public reserves including a foreshore reserve, woodland reserve and other open space areas including new playing fields and a club house
- Embellishment of public reserves including implementation of vegetation management plans on foreshore reserve and woodland reserve areas
- Subdivision of the subject land to create residential allotments, industrial allotments, medium density allotments, integrated housing allotments, commercial allotments, and subsequent buildings on those allotments.

1.3. Scope and objectives of the VMP

The overall objective of the VMP is to provide a management framework to minimise direct and indirect impacts to biodiversity values within the VMP Area, being the foreshore and woodland reserves in accordance with the requirements of the approved concept development (SSD3846), and across retained native vegetation areas under the EPBC approval decision.

The West Culburra Development is proposed to be undertaken in stages – both to obtain development construction approval and for the development of the site. This VMP addresses the overall concept DA site and VMP requirements of the Concept DA approval and EPBC consent.

The VMP covers construction and an initial five-year VMP implementation period, along with a VMP maintenance period for the lifetime of the controlled action's approval, or until the objectives and performance criteria outlined in this VMP are met. Under the current EPBC approval decision, the period for which the approval has effect, or the lifetime of the approval, is until 21 February 2035 (EPBC 2023/09524). The overall objective of the VMP is to provide a management framework for the conservation of native vegetation and fauna habitat in retained native vegetation within the subject land. Broad objectives for this VMP are to:

- Conserve and preserve the existing vegetation;
- To guide weed management within areas of native vegetation;
- Undertake rehabilitation works in degraded areas of native vegetation;
- Undertake native vegetation protection measures;
- Manage native vegetation to a level that reflects the cover, diversity, and density of the indigenous vegetation and PCTs of the VMP area; and
- Provide educational material to promote responsible management of native vegetation areas.

1.4. Commitments of the VMP

The overall aim of the VMP is to provide a management framework for the conservation of native vegetation and fauna habitat within the VMP area. This VMP covers this initial period, and the objectives and performance indicators outlined in this VMP to be met. The VMP is aimed at achieving key performance indicators within a five-year period however it is understood that the EPBC Act approval requires implementation of the VMP for the life of the approval which is until 21 February 2035. To account for the implementation for the life of the approval, ongoing maintenance and monitoring actions are proposed in the VMP area for a 10-year period. The related objectives for and the commitments of the VMP are summarised in Table 1 and the VMP condition requirements are summarised in Table 2.

Prior to the transfer of the VMP area to Shoalhaven City Council, an appropriate legal mechanism will be established to facilitate the transfer (e.g. a Voluntary Planning Agreement (VPA)), which is expected to include compliance with specific targets, such as meeting PCT benchmark conditions of the corresponding PCTS within the VMP area. The land transfer process is separate to the VMP.

Table 1: Overall objectives of the VMP and table of commitments as per SSD 3846

Commitment	Objectives	Approach	Section in this report
Ensure the implementation of the VMP improves and maintains the condition of the vegetation within the VMP area (performance criteria will be required to be met prior to SCC taking ownership of the VMP area).	Improve and maintain the condition of the native vegetation within the 14.85 ha of the VMP areas via natural regeneration and revegetation to meet the VMP performance criteria.	<ul style="list-style-type: none"> Remove priority and general weeds to enable native vegetation in all strata to regenerate and improve in condition. Adhere to the planting recommendations within this VMP. Protect existing native vegetation across the VMP area during construction and post construction through the installation of fencing, signage and sediment and erosion control measures consistent with Section 3. 	Section 3, Section 4, and Section 5. Appendix C Table 7, Table 8, Table 9.
Ensure the performance criteria included in this VMP are met.	At the end of the initial five year VMP timeline and until the period for which the approval has effect, ensure priority weeds cover <5% of all zones, all other weeds cover <5% of all zones, and native cover is no less than 50% dependant on the zone.	<ul style="list-style-type: none"> Remove priority and general weeds to enable native mid-storey and understorey regeneration. Adhere to bush regeneration best practice techniques, descriptions and specifications referenced in Appendix C. Adhere to the management recommended within this VMP. 	Section 4 and 5. Appendix C. Table 12.
The developer will provide a vegetated foreshore reserve (in current natural state) that exceeds 100m in width between the edge of the foreshore road reserve and the Mean High Water Mark and the Crookhaven River as per SSD 3846.	To install and maintain the required boundary for the Foreshore Reserve to meet this commitment for the life of the approval.	<ul style="list-style-type: none"> Install boundary fencing where required to meet reserve requirements and maintain boundary fencing for the life of the approval or until ownership is transferred to SCC through a VPA and only after VMP targets are met. 	Section 1.6, Section 4, Figure 2, Figure 16, Figure 18 and Figure 21
The developer will provide a vegetated woodland reserve (in current natural state) which provides a natural entry feature to the Culburra Beach village as per SSD 3846.	To install and maintain the required boundary for the Woodland Reserve to meet this commitment for the life of the approval.	<ul style="list-style-type: none"> Install boundary fencing where required to meet reserve requirements and maintain boundary fencing for the life of the approval or until ownership is transferred to SCC through a VPA and only after VMP targets are met. 	Section 1.6, Section 4, Figure 2, Figure 16, Figure 18 and Figure 21
The developer will prepare a Vegetation Management Plan for the foreshore and woodland reserves to guide	To implement this Vegetation Management Plan (ELA 2026).	<ul style="list-style-type: none"> The preparation of this Vegetation Management Plan by a restoration ecologist and implementation by Sealark for 	This document

Commitment	Objectives	Approach	Section in this report
future management of this land as per SSD 3846.		the life of the approval or until ownership is transferred to SCC through a VPA and only after VMP targets are met.	

Table 2: VMP Condition requirements outlined in the EPBC Act approval (EPBC 2023/09524)

Condition	Condition requirement	Plan reference
3e	To avoid and mitigate harm to protected matters , the approval holder must ensure that all fencing that is installed in the Action area is fauna safe fencing.	Section 3.1
4	Prior to the commencement of the Action the approval holder must submit a Construction Environmental Management Plan and a Vegetation Management Plan to the department for the Minister's approval. The approval holder must not commence the Action unless the Minister has approved the Construction Environmental Management Plan and a Vegetation Management Plan in writing.	This VMP
5	To avoid and mitigate harm as a result of the Action on protected matters , the approval holder must commence implementing the approved Construction Environmental Management Plan and approved Vegetation Management Plan no later than the commencement of the Action . The approval holder must continue to implement the approved Construction Environmental Management Plan until the completion of construction and the approved Vegetation Management Plan until the expiry date of this approval or as otherwise agreed upon and approved by the Minister .	This VMP
6b	The approval holder must achieve the following environmental outcomes in the approved Construction Environmental Management Plan and approved Vegetation Management Plan: By implementing the Vegetation Management Plan: To prevent and avoid any harm to protected matters that are retained within the Action area during the period of approval.	This VMP
7	The Construction Environmental Management Plan and Vegetation Management Plan must be prepared by a suitably qualified ecologist. All commitments, including environmental outcomes, management measures, corrective measures, trigger values and performance indicators in the Construction Environmental Management Plan and Vegetation Management must be SMART and based on referenced or included evidence of effectiveness. The Construction Environmental Management Plan and Vegetation Management must be consistent with the Environmental Management Plan Guidelines, and must include:	Section 1.1, Section 1.4, Section 4, Section 5, Section 7, Table 1, Table 8, Table 9, Table 10, Table 12, Table 14, Table 15, and Appendix C. Please note impact assessments of the development project on Matters of National Environmental Significance are included in impact

Condition	Condition requirement	Plan reference
		assessment reporting and not in this document.
7a	Details of the relevant protected matters and a reference to EPBC Act approval condition to which the plan refers.	Section 1.1, Section 1, Section 3.3
7b	A table of commitments made in the plan to achieve the environmental outcomes, and a reference to exactly where these commitments are detailed in the plan.	Section 1.4, Table 1.
7c	Commitments capable of ensuring that the environmental outcomes are achieved.	Table 1, Section 5.
7d	Reporting and review mechanisms to demonstrate compliance with the commitment made in the plan.	Section 7.
7e	An assessment of risks relating to achieving the environmental outcomes and risk management strategies and/or mitigation measures that will be applied to address identified risks.	Section 7.4, Table 15
7f	Impact avoidance, mitigation and/or repair measures, and the timing of these measures.	Section 3, Table 10 and Table 15.
7g	Controlling feral pests, including measures relevant to the <i>Threat Abatement Plan for Predation by Feral Cats</i> .	Section 3.4.
7h	A monitoring program, which must include: <ul style="list-style-type: none"> i) Performance indicators ii) Trigger values for corrective measures iii) Proposed corrective measures if trigger values are reached iv) Trigger values for corrective measures 	Section 7, Table 12, Table 14, Table 15,, Appendix C.
7i	Reference to other relevant plans or conditions of approval (including state or territory approval conditions).	Section 1.1, and Section 1.2.

1.5. Preparation and implementation of this plan

This VMP has been prepared by Restoration Ecologists with over 5 years’ experience in environmental works and a relevant Bachelor of Science degree and has been prepared in line with the Environmental Management Plan guidelines from DCCEEW (2024).

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

Please note that the field surveys that support this VMP were conducted in November 2022. Prior to implementation the condition of the vegetation must be assessed by a restoration ecologist or bush regenerator and the VMP management zones adjusted accordingly.

Table 3: Environmental management roles and responsibilities

Title	Role	Responsibilities
Civil construction company	Proper management of the development footprint	<ul style="list-style-type: none"> • Construction and preliminary works including: • Set up of temporary fencing during the construction period and permanent fauna friendly fencing (Appendix D) for the lifetime of the VMP • Providing informative signage and gates for bush regeneration contractors to access the VMP area while blocking access to others • Proper management of soil and water impacts during the construction phase of the project • Set up of sediment fencing around the construction area. • Clearance of vegetation and earthworks where required in the development footprint under the supervision of an ecologist • Required management of soil in preparation of rehabilitation works
Bush regeneration contractor	Implement the vegetation management plan	To implement the recommendations of this VMP, or a VMP that has been approved for this project, with best practice and general principles of bush regeneration in accordance with the Bradley Method and other methods described in Buchanan (2000)
Ecologist	Supervision during preclearance/clearance works	Ensure fauna is safely captured and relocated where vegetation preclearance/clearance has taken place and to care for fauna if injuries occur. To supervise the placement of all fauna habitat augmentation features.
Environment Protection Agency	Environmental emergency contact	Manage environmental emergencies that have the potential to happen within the action area.
Landholder (Sealark)	Ensure the proper management of the action area over the life of the project	Implementation of management in accordance with this VMP, or if alterations are needed, these alterations are approved by the relevant consent authorities (unless the alteration falls under Condition 11 (EPBC 2023/09524) mentioned in Section 7.3). Management of the project is done in accordance with the conditions outlined in the EPBC Act approval (EPBC 2023/09524). Ensure the management of the action area for the life of the approval. Sealark Pty Ltd is to fund and enforce implementation of the VMP until 21 February 2035 or until the VMP areas are transferred to Council, whichever milestone is later. Sealark Pty Ltd is to ensure VMP performance criteria are met prior to handover to Council and ensure management is in accordance with other management plans required by the EPBC Act approval (EPBC 2023/09524).
Local Land Services	Involvement in consultation	Where required be in consultation with the landholder for matters such as pest control.
Restoration Ecologist	Preparation of this VMP	Ensure this VMP meets the Development Consent Conditions, the EPBC conditions outlined in the EPBC Act approval (EPBC 2023/09524), and the Environmental management plan guidelines (DCCEEW 2024a) and ELA has not knowingly provided false or misleading information in reference to this VMP.

Title	Role	Responsibilities
Shoalhaven City Council	Involvement in consultation	<p>Where required be in consultation with the landholder for matters such as pest control or alterations to the vegetation management plan approved by the relevant consent authority (unless the alteration falls under Condition 11 mentioned in Section 7.3).</p> <p>Prior to handover to Shoalhaven City Council, Council will review monitoring reports, which are to be provided to SCC as per Section 7.2, and verify the VMP performance criteria (Section 7.3) are met. If there are alterations to the VMP management, Council will review and verify these alterations are appropriate, justified and are achieved or able to be achieved within the appropriate timeline.</p>

1.6. Key Terms

For the purpose of this VMP, the following terminology has been adopted:

- Action area: to Part Lot 1 DP 1279350, Lot 3 DP 1279350 and Lot 1 DP 1305809 West Culburra NSW.
- Development footprint: The area of the action area to be developed, specifically the proposed mixed-use development (Figure 2). This area is outside the scope of the VMP area.
- VMP area: The proportion of the action area to be retained and managed by this VMP being the foreshore reserve and woodland reserve areas (Figure 2).
- Implementation period: Refers to the first five years of implementation of this VMP.

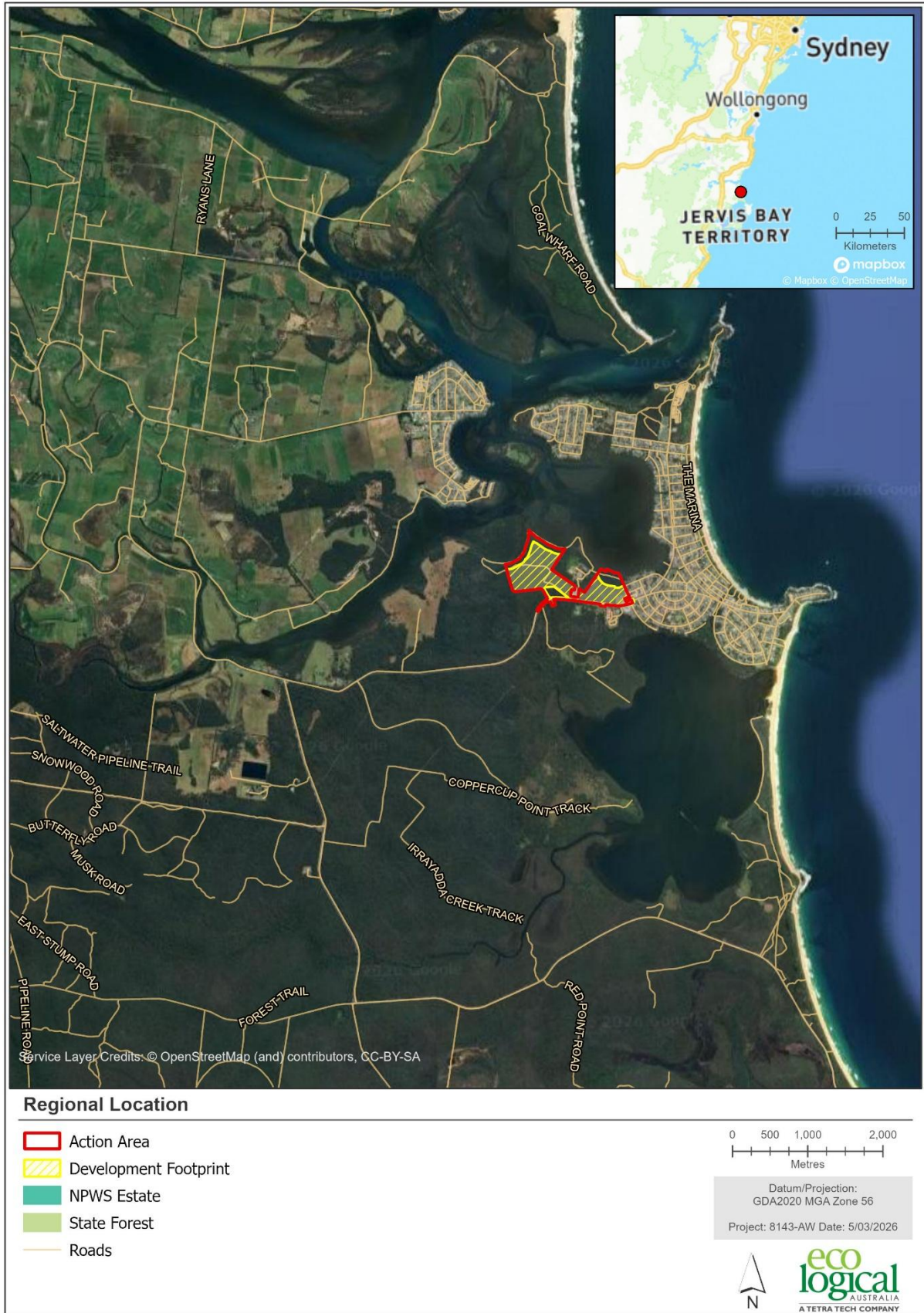


Figure 1: Location of the site

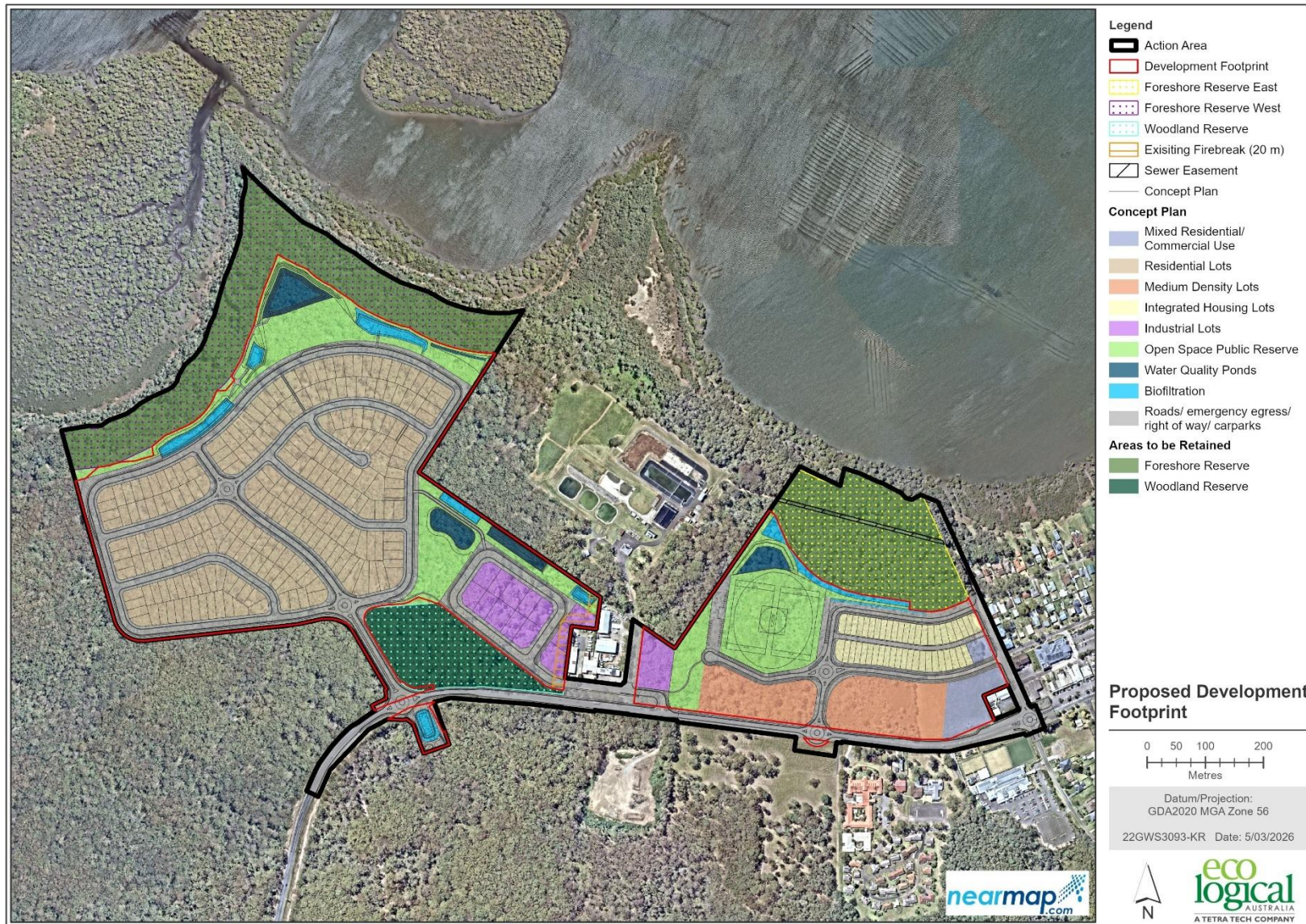


Figure 2: Development footprint and retention areas (Foreshore and Woodland Reserve areas)

2. Description of the environment

2.1. Location

The proposed development is located approximately 15 km south-east of Nowra adjacent to the existing suburb of Culburra Beach. It is within the catchment of both the Crookhaven River and Lake Wollumboola within the Shoalhaven Local Government Area (LGA). It is bound by Culburra Road and remnant vegetation to the south and Crookhaven River to the north. Bushland forms the western boundary, with urban and residential areas adjoining the eastern boundary along Canal Street East. The centre of the subject land borders the Culburra Beach Wastewater Treatment Plant on three sides, which is accessed via Strathstone Street. A small portion of the subject land also sits south of Culburra Road. The southern boundary of the subject land is nearby (separated by Culburra Road) to the Lake Wollumboola BioBank Site which is owned by Sealark Pty Ltd (registered in 2019) which has been proposed to form a future extension to Jervis Bay National Park. The development area covers 68.07 ha and is comprised of both remnant native vegetation and cleared land.

2.2. Topography and hydrology

The subject land fronts the Crookhaven River, mangroves and Canns Point. The general topography is relatively even, and low lying with most of the site elevated to >5m AHD above the Crookhaven River estuary. Immediate foreshore areas are moderately steep and transitional between the study area and the estuary. Relief across the site is approximately 20m with slopes ranging from 2.5 – 5.0% (Toon 2013). The soil landscapes on the subject land are generally red Podzolic Soils on simple slopes and best fit the Greenwell Point soil landscape type which are described as “gently undulating rises on siltstone”, which are predominantly found on ridges and elevated areas of the site (SLR 2013).

The hydrology of the site is described as having drainage that ranges from good to poor, with poor draining areas associated with lower points of landscape elevation (Toon 2013). There are no watercourses draining the site. The water table across the landscape is described as generally being close to the surface, however areas of “standing water” are few and highly ephemeral, and there are no ponds, swamps, or permanent freshwater wetlands (SLR 2013).

2.3. Ecological values and constraints

The VMP areas at West Culburra hold several sensitive ecological values and constraints. These include:

- locations of hollow bearing trees (HBTs),
- threatened ecological communities (TECs),
- locations of identified threatened species,
- locations of Aboriginal Heritage sites, including a 10m buffer surrounding each site,

The locations of these features are shown for each VMP area in Figure 3, Figure 4 and Figure 5. The location of features such as HBTs, TECs and threatened species are derived from the Biodiversity Development Assessment Report (ELA 2025) and the specific number and location of these features have the potential to change over time. New instances of these features are to be updated throughout the lifetime of the project. The locations of Aboriginal Heritage sites are derived from the Aboriginal Cultural Heritage Assessment (ACHA) (AA 2024a). If additional locations of Aboriginal Heritage sites are identified,

these features are to be updated throughout the lifetime of the project. Currently, there are no locations of erosion concern, however if locations are identified, these features are to be updated and managed throughout the lifetime of the project.

Potential sources of erosion could include soil movement during heavy rainfall events or during high winds during the construction phase of the development. These types of erosion have potential to occur wherever there is bare soil and soil and water management measures are non-existent or inadequate. ELA has reviewed the comprehensive preliminary Soil and Water Management Plans prepared by SEEC (Drawing number SWMP01- SWMP23) which show how the clearing is proposed to be undertaken in stages, and the soil and water management controls that are to be implemented during each stage. The Soil and Water Management Plans have been prepared in accordance with Blue Book Volume 1 (Landcom, 2004).

Potential sources of erosion during the operational phase of the development include stormwater outlets or waterflow down steep embankments. ELA has reviewed the Preliminary Engineering Drawings (Drawing number 25405-4000; SEEC 2025) which show the infrastructure that will be used to manage stormwater. As shown on the Preliminary Engineering Drawings, stormwater will be managed using a series of ponds. Water will enter the ponds through a pipe network and the release of the stormwater into the receiving environment will be controlled using weirs and level spreaders. The batters downstream of the weirs will be designed with a 1:4 slope with scour protection to control water flow and erosion in accordance with Council's standards. Given the design measures outlined above, ELA considers the operational phase of the development will have a very low risk of erosion and therefore erosion hazards are not included on the maps in Figure 3, Figure 4 and Figure 5.

The maps in Figure 3, Figure 4 and Figure 5 are to be provided to relevant stakeholders that will require them for on ground reference. Additional information surrounding some of the above features are identified in Section 2.4, Section 2.5 and Section 3.3.

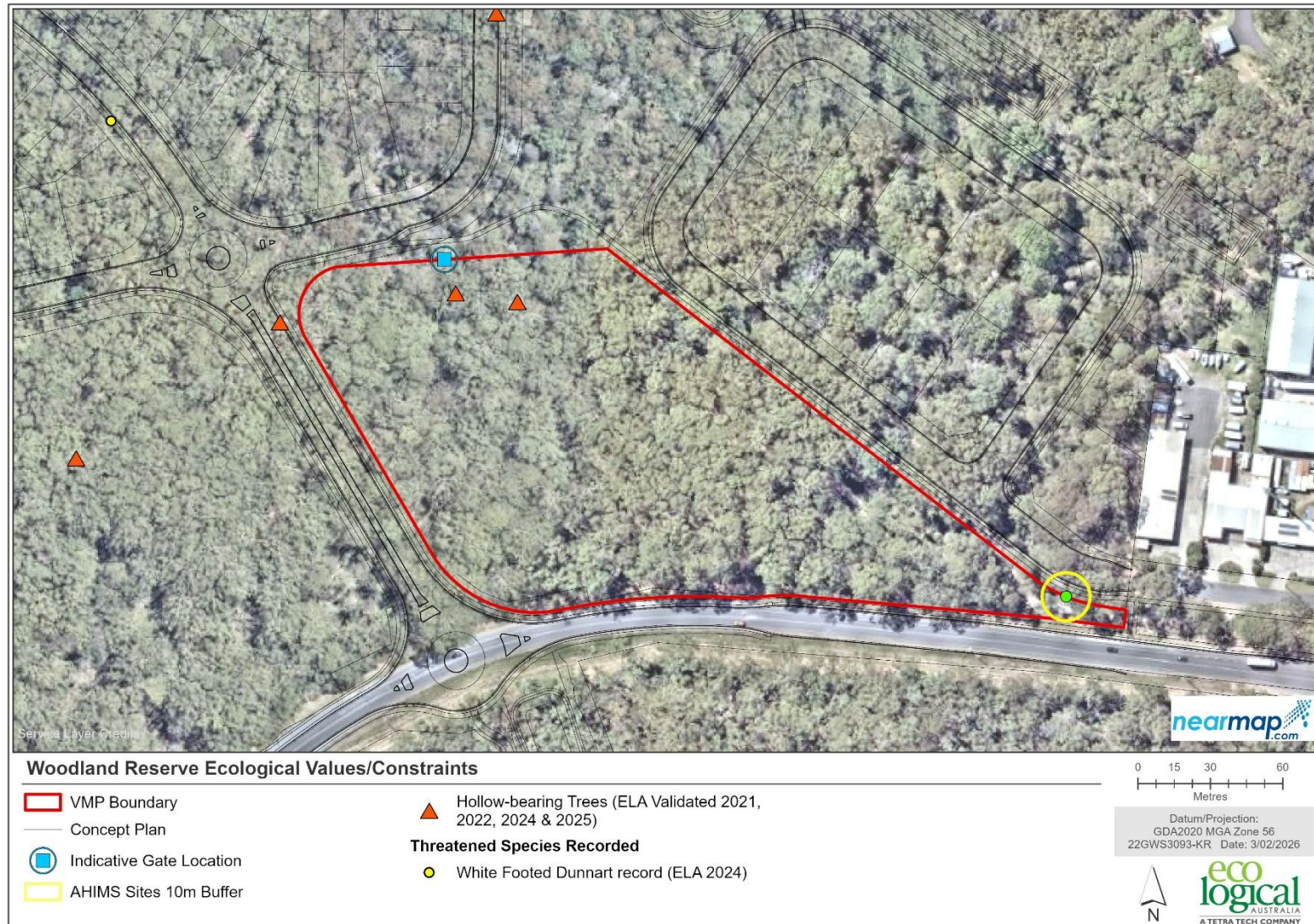


Figure 3: Ecological values/constraints of Woodland Reserve

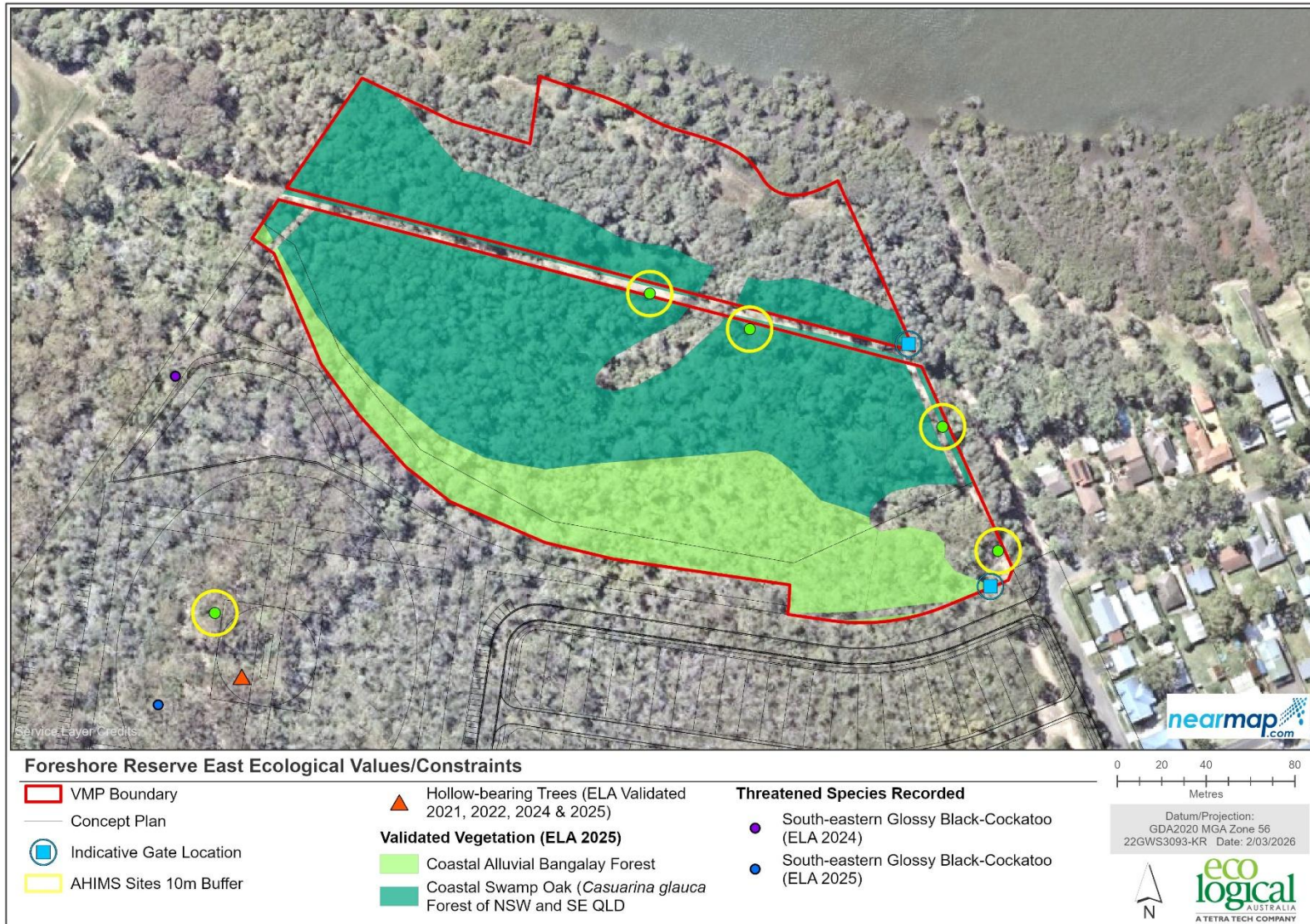


Figure 4: Ecological values/constraints of Foreshore Reserve East

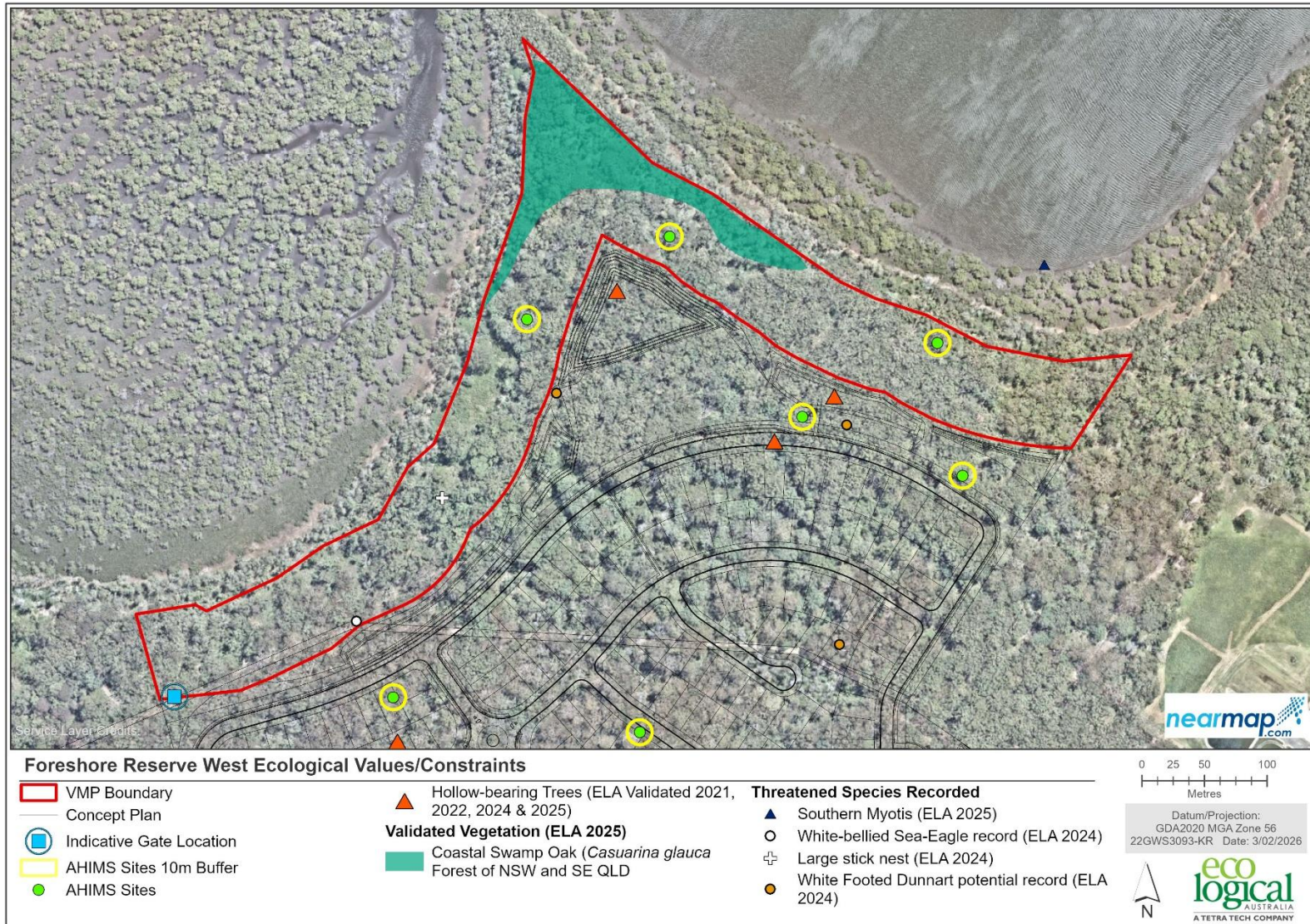


Figure 5: Ecological values/constraints of Foreshore Reserve West

2.4. Vegetation Communities

The subject land is currently comprised of largely regrowth remnant native vegetation and a small portion of cleared land not currently used for any specific purpose. The land was partially cleared historically for agricultural purposes and private native forestry, and the vegetation present is likely to represent regrowth vegetation between 50 – 60 years old. This has been determined through the interpretation of historic imagery, previous land uses, relative age of the canopy and very low occurrence of HBTs across the subject land (ELA 2022). Despite the previous land clearing, most native vegetation is in good condition with minimal weed cover (SLR 2013). To the best of ELAs knowledge, the subject land has not recently been affected by floods, fires (including the 2019/20 summer fires) or other significant natural disasters.

Open forest and woodland occur across most of the subject land providing a range of habitats and resources for a variety of native fauna species (SLR 2013). This vegetation includes five Plant Community Types (PCTs), **two** of which are associated with TECs listed under the BC Act and EPBC Act (Table 2, Figure 6). PCT 4051 South Coast Lowland Red Gum-Swamp Oak Forest is associated with Coastal Swamp Oak Forest of New South and Southeast Queensland, which is listed as endangered under the EPBC Act (1999). However, this community was not present within the proposed development footprint and is in an area proposed for retention and zoning as C2 – Environmental Conservation under Shoalhaven Local Environmental Plan (SLEP 2014) and the Environmental Protection (ecology) zone under 7a SLEP 1985. The PCTs found within the VMP area, their BC Act listing, EPBC Act listing, and area within the subject site and VMP area are summarised in Table 4.

Table 4: PCTs and associated TECs in the action area and VMP area

Plant Community Type (PCT)	Area (ha) in subject land	Area (ha) in VMP	BC Act listing	EPBC Act listing
PCT 3273 South Coast Lowland Shrub-Grass Forest	50.25	9.02	N/A	N/A
PCT 4019 Coastal Alluvial Bangalay Forest	5.62	1.15	Associated with TEC Swamp Sclerophyll Forest on Coastal Floodplains of the New South Wales North Coast, Sydney Basin and South East Corner Bioregions	Associated with TEC River-flat Eucalypt Forest on Coastal Floodplains of Southern New South Wales and Eastern Victoria
PCT 4051 South Coast Lowland Red Gum-Swamp Oak Forest	3.99	3.80	N/A	Associated with Coastal Swamp Oak (<i>Casuarina glauca</i>) Forest of NSW and SE QLD

Plant Community Type (PCT)	Area (ha) in subject land	Area (ha) in VMP	BC Act listing	EPBC Act listing
PCT 4102/4094/4040 South Coast Bracelet Honey-myrtle Sea Rush Saltmarsh/Estuarine Club Rush-Arrowgrass Wetland/South Coast Selliera-Sea Rush Swam Oak Saltmarsh	0.70	0.59	Associated with Coastal Saltmarsh in the New South Wales North coast, Sydney Basin and South East Corner Bioregions. PCT 4040 is associated with Swamp Oak Floodplain Forest of the New South Wales North Coast, Sydney Basin and South East Corner Bioregions.	Associated with Subtropical and Temperate Coastal Saltmarsh. PCT 4040 is associated with Coastal Swamp Oak (<i>Casuarina glauca</i>) Forest of New South Wales and South East Queensland ecological community.
PCT 4091 Grey Mangrove-River Mangrove Forest	0.59	0.53	N/A	N/A
Cleared (Existing 4WD tracks)	4.85	0.32	N/A	N/A
Total	68.01	15.41	-	-

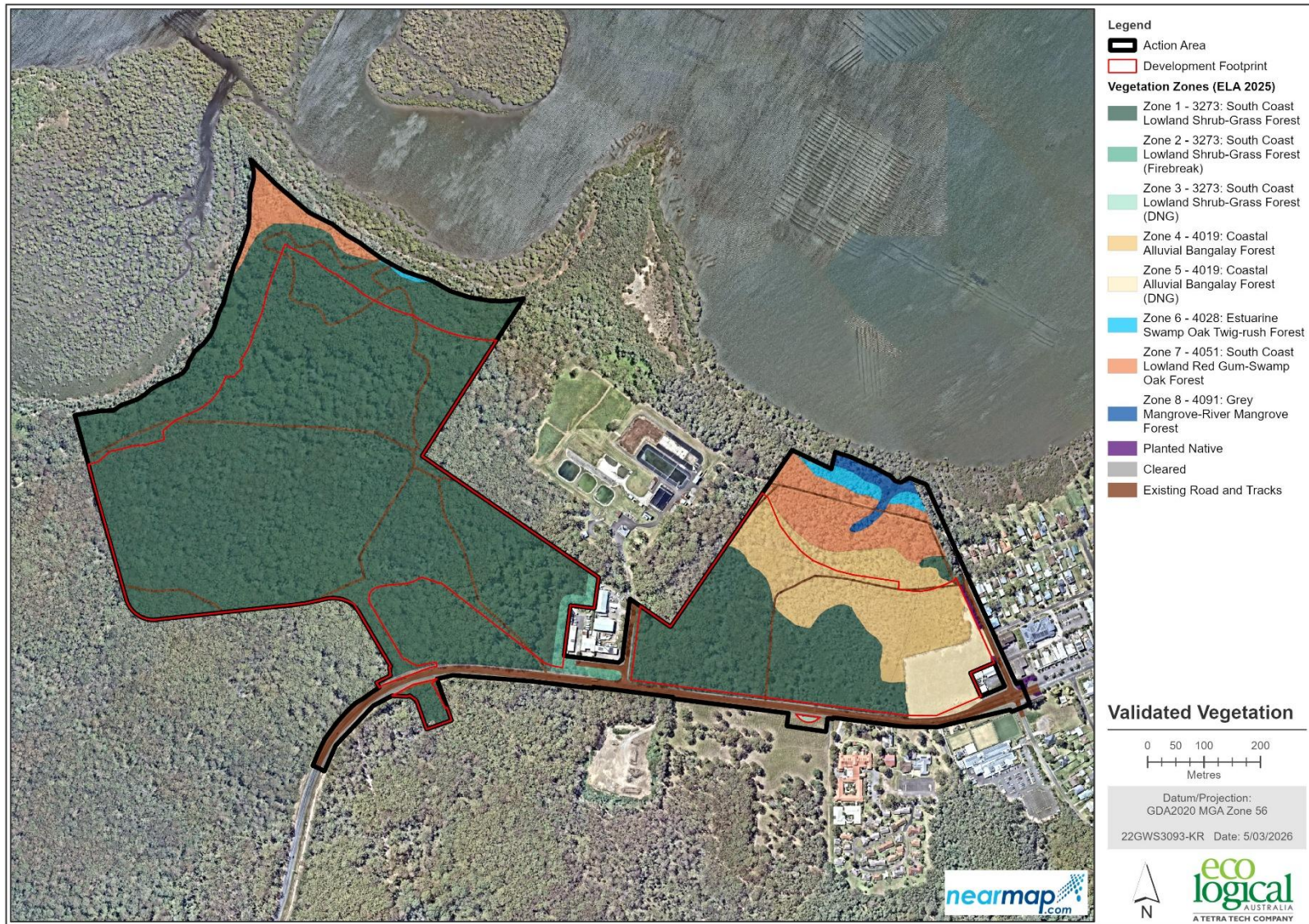


Figure 6: Validated vegetation communities

2.4.1. PCT 4051: South Coast Lowland Red Gum-Swamp Oak Forest (Associated with Coastal Swamp Oak Forest)

Coastal Swamp Oak Forest typically occurs on unconsolidated sediments, including alluvium deposits at elevations of <20 m ASL that are typically found within 30 km of the coast. The ecological community is typically found where groundwater is saline or brackish but can occur in areas where groundwater is relatively fresh. It is typically found on coastal flats, floodplains, drainage lines, lake margins, wetlands, and estuarine fringes where soils are at least occasionally saturated, water-logged or inundated. These are typically associated with low-lying coastal alluvial floodplains and alluvial flats (DotEE 2018).

The canopy layer of this community is dominated by Swamp Oak (*Casuarina glauca*) which forms a relatively uniform upper layer, with height and density dependent on the local environmental conditions (Figure 7). In freshwater settings, Broad-leaved Paperbark (*Melaleuca quinquenervia*) are likely to emerge as a canopy or sub-canopy co-dominant (DotEE 2018). The midstorey is typically characterised by species such as Boobiella (*Myoporum spp.*), Swamp Paperbark (*M. ericifolia*) and Prickly-leaved Tea Tree (*M. styphelioides*), with groundcover represented by Sea Rush (*Juncus kraussii*), Creeping Brookweed (*Samolus repens*), Lesser Joyweed (*Alternanthera denticulata*), Tall Sedge (*Carex appressa*), Common Reed (*Phragmites australis*) and Scurvy weed (*Commelina cyanea*).

The community at the site is in good condition overall and dominated by natives. There is some sign of degradation related to Lantana (*Lantana camara*) infestations; however, these are generally small and isolated. Introduced species are not common, but the most obvious include Paddys' Lucerne (*Sida rhombifolia*), Cats' Ears (*Hypochaeris radicata*), Bitou Bush (*Chrysanthemoides monilifera ssp. rotundata*), Lantana, Fireweed (*Senecio madagascariensis*), Winter Senna (*Senna septemtrionalis*) and Plantain (*Plantago spp.*).

Approximately 3.9 ha of this community would be retained within the VMP area (Figure 8).



Figure 7: South Coast Lowland Red Gum-Swamp Oak Forest (PCT 4051) in the action area.

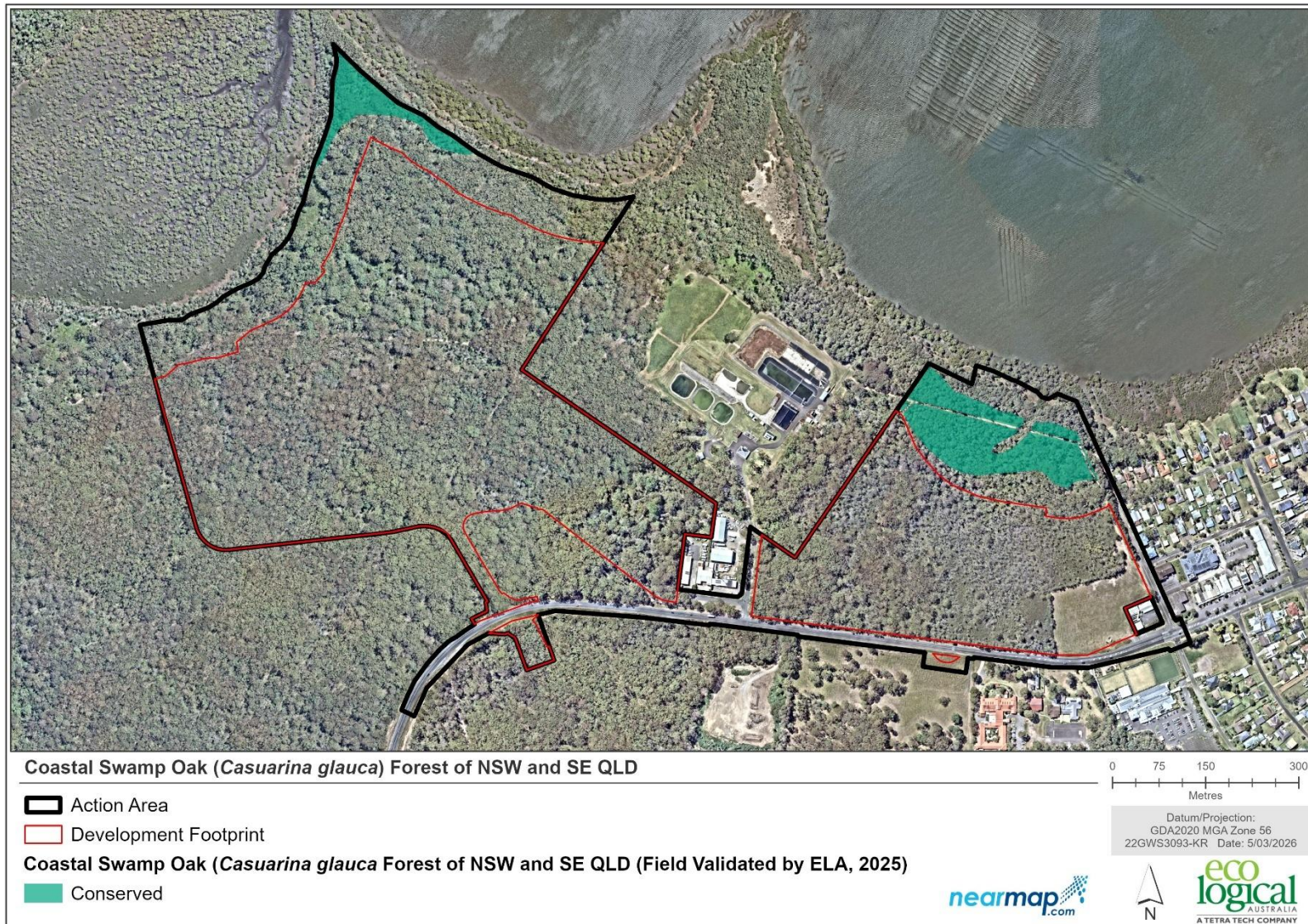


Figure 8: Proposed impact and conservation areas for Coastal Swamp Oak (*Casuarina glauca*) Forest

2.4.2. PCT 3273: South Coast Lowland Shrub-Grass Forest

This PCT occurs mostly in the Woodland Reserve VMP area but also in the portions of the Foreshore Reserve VMP area furthest from the water.

It is considered a tall to very tall sclerophyll open forest with a sparse dry shrub layer and a ground cover layer to include grasses, graminoids and ferns. The upper stratum is characterised most commonly by *Corymbia gummifera* (Red Bloodwood), *Eucalyptus pilularis* (Blackbutt), *Corymbia Maculata* (Spotted Gum), *Eucalyptus Globoidea* (White Stringybark), *Eucalyptus Sclerophylla* (Hard-leaved Scribbly Gum), and *Eucalyptus paniculata subsp. paniculata* Grey Ironbark).

The mid-storey is characterised frequently by *Allocasuarina littoralis* (Black She-oak), as well as *Banksia spinulosa* (Hairpin Banksia), *Acacia binervata* (Two-veined Hickory), *Leptospermum polygalifolium* (Jellybush), and *Pittosporum undulatum* (Native Daphne).

The groundcover is characterised by *Entolasia marginata* (Bordered Panic), *Microlaena stipoides* (Weeping Grass), *Imperata cylindrica* (Blady Grass), *Dianella caerulea* (Blue Flax-lily), *Pteridium esculentum* (Bracken Fern), *Themeda triandra* (Kangaroo Grass), *Lomandra longifolia* (Spiny-headed Mat-rush), *Lepidosperma laterale* (Variable Sword-sedge), *Brunoniella pumilio* (Dwarf Blue Trumpet) and *Entolasia stricta* (Wiry Panic).

Common exotic species include Bitou Bush, Fireweed, Lantana, Paddy's Lucerne, Paspalum, Common Centaury (*Centaureum erythraea*), Cats' Ears, Winter Senna and Whiskey Grass (*Andropogon virginicus*) which are concentrated along tracks and in previously cleared areas.

2.4.3. PCT 4019: Coastal Alluvial Bangalay Forest

This PCT occurs in the Foreshore Reserve VMP area.

It is described as a tall or very tall sclerophyll open forest that commonly includes Melaleucas as well as dry shrubs with a ground cover layer of ferns and sedges. This PCT is found on low-lying damp coastal alluviums. The upper stratum is usually dominated by *Eucalyptus Botryoides* (Bangalay), but *Eucalyptus longifolia* (Woollybutt), and *Eucalyptus robusta* (Swamp Mahogany) are rarely found.

The mid-storey generally includes taller species such as *Melaleuca linariifolia* (Flax-leaved Paperbark) and *Livistona australis* (Cabbage Fan Palm), and rarely *Melaleuca ericifolia* (Swamp Paperbark) and *Melaleuca decora*.

The groundcover is characterised *Pteridium esculentum* (Bracken Fern), very frequently *Oplismenus imbecillis* (Creeping Beard Grass), *Gahnia clarkei* (Tall Saw-sedge), *Calochlaena dubia* (Rainbow Fern), *Entolasia marginata* (Bordered Panic) and *Imperata cylindrica* (Blady Grass), occasionally with *Hypolepis muelleri* (Harsh Ground Fern). Bitou Bush and Lantana occur as scattered individuals throughout and form dense thickets along exposed margins.

2.4.4. PCT 4102/4094/4040: South Coast Bracelet Honey-myrtle Sea Rush Saltmarsh/Estuarine Club Rush-Arrowgrass Wetland/South Coast Selliera-Sea Swamp Oak Saltmarsh

This is consistent with the vegetation mapping ELA conducted in 2017 as part of the Framework for Biodiversity Assessment Major Projects Offset policy (FBA) credit calculations.

PCT4102 is recommended to be assigned with caution as this PCT is defined by 5 x 5 metre non-standard plots that are smaller than the standard 400 metre squared plots. The known plots of this PCT are south from the Bermagui River area and is described as a very tall estuarine closed shrubland, shrubland or rarely sedgeland/rushland, occurring at the edges of backwaters, coastal lakes or lagoons on the South Coast botanical division. This PCT has a mid-dense layer of shrubs or small trees which most commonly includes *Melaleuca armillaris* subsp. *armillaris* (Bracelet Honey Myrtle) and less frequently *Myoporum acuminatum* (Boobialla) or *Avicennia marina* subsp. *australasica* (Grey Mangrove). A sparse ground layer is present that is largely comprised of *Juncus kraussii* subsp. *australiensis* (Sea Rush) and sometimes accompanied by a sparse groundcover layer of species that can tolerate brackish conditions such as, *Machaerina juncea* (Bare Twig-rush), *Samolus repens* (Creeping Brookweed), *Sarcocornia quinqueflora* subsp. *quinqueflora*, or *Cynodon dactylon* (Couch).

Stands of PCT 4094 are likely to be small and difficult to sample using standard techniques. This PCT characterised as a mid-high to tall forbland or sedgeland occurring in waterlogged areas on tidal flats, estuarine swamps and low-lying floodplains along the NSW coast. The canopy or shrub layer in this PCT is very sparse, but when present is commonly comprised of *Casuarina glauca* (Swamp Oak) and rarely *Melaleuca ericifolia* (Swamp Paperbark). The mid-dense to dense groundcover layer commonly includes *Triglochin striata* (Streaked Arrowgrass) and frequently includes *Bolboschoenus caldwellii* and *Juncus kraussii* subsp. *australiensis* (Sea Rush). The groundcover layer also occasionally include *Lachnagrostis filiformis*, *Sarcocornia quinqueflora* subsp. *quinqueflora* and *Selliera radicans* (Swamp Weed).

This PCT is characterised by a tall to very tall forbland or rushland, or a mid-high to tall open woodland, woodland or open forest and occurs on tidal flats, margins of coastal saline lakes and very low-lying areas of coastal alluvial flats on the south coast of NSW. This PCT occurs on the upper part of the saltmarsh gradient. A sparse canopy layer is usually present and is commonly comprised of *Casuarina glauca* (Swamp Oak) and occasionally *Melaleuca ericifolia* (Swamp Paperbark). The sparse to mid-dense ground layer is mostly comprised of *Selliera radicans* (Swamp Weed) and *Juncus kraussii* subsp. *australiensis* (Sea Rush). The ground layer commonly has sparse cover of *Leptinella longipes* and occasionally *Sarcocornia quinqueflora* subsp. *quinqueflora*, *Triglochin striata* (Streaked Arrowgrass), *Lachnagrostis filiformis* and *Samolus repens* (Creeping Brookweed).

The vegetation community was present in the basin area in good condition with some indications of disturbance including remnants of an old vehicle track. The canopy is dominated by *Eucalyptus robusta* (Swamp Mahogany) with other trees including *Corymbia gummifera* (Red Bloodwood), *Eucalyptus racemosa* (Narrow-leaved Scribbly Gum), *Eucalyptus pilularis* (Blackbutt), *Eucalyptus punctata* (Grey Gum), and *Eucalyptus botryoides* (Bangalay). The midstorey comprised *Allocasuarina littoralis* (Black She-oak), *Acacia binervata* (Two-veined Hickory), *Melaleuca linariifolia* (Flax-leaved Paperbark), *Kunzea ambigua* (Tick Bush) and *Leptospermum polygalifolium* (Tantoon). The groundcover was dominated by dense cover of *Gahnia sieberiana* (Red-fruit Saw-sedge) with other species including *Lomandra longifolia* (Spiny-headed Mat-rush), *Dianella revoluta* (Blue Flax-lily), *Machaerina juncea* (Bare Twig-rush), *Hibbertia empetrifolia*, *Empodisma minus* (Spreading Rope-rush), *Lomandra multiflora* (Many-flowered Mat-rush), *Entolasia marginata* (Bordered Panic), *Imperata cylindrica* (Blady Grass), *Poa sieberiana*, *Juncus usitatus*, *Lobelia purpurascens* (Whiteroot), *Dichondra repens* (Kidney Weed) and *Hydrocotyle laxiflora* (Stinking Pennywort).

2.4.5. PCT 4091: Mangroves in estuaries

This PCT is described as a low, mid-high or tall mangrove open forest or woodland that sometimes includes a saltmarsh ground layer and occurs on tidal flats on coastal NSW.

The tree canopy is dominated by *Avicennia marina* subsp. *australasica* (Grey Mangrove) with *Aegiceras corniculatum* (River Mangrove) commonly present, though less so than *Avicennia marina* subsp. *australasica*.

Where present, the ground layer is sparse to mid-dense. The species *Sarcocornia quinqueflora* subsp. *quinqueflora* occasionally occurs and rarely *Sporobolus virginicus* (Sand Couch) or *Samolus repens* (Creeping Brookweed).

This PCT is associated with sparse mangroves, a more consistent cover of saltmarsh species, and occurs at sites with less frequent or shorter periods of tidal inundation. Mangroves generally grow in saline soils between the mid-tide level and the extreme high tide mark. The root system comprises pneumatophores which can extend up to 30 m from the base of the tree and are designed to seek oxygen under conditions of anoxic sediments and tidal inundation. Numerous seedlings are produced but rarely grow to maturity, due to the availability of suitable conditions such as light and nutrients.

PCT 4091 is the only community in the Mangrove Swamps vegetation class that extends along the length of the coast.

2.4.6. Weeds

The *Biosecurity Act 2015* (BA Act) and regulations provide specific legal requirements for the State level priority weeds (Table 3). Under the BA Act 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, so far as reasonably practicable.

Specific legal requirements apply to State determined priorities under the South East 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 (South East LLS 2023, SCC 2025). 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 on this list is intended to 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 are generally minor components on the study site (SLR 2013). While most vegetation cover is composed of good to very good condition native vegetation, localised patches of introduced weed species can be found throughout the VMP area, located predominantly along tracks and where there have been localised disturbances (e.g., camp sites, dumped vehicles). A list of recorded weeds can be found in Appendix A.

Four Weeds of National Significance (WoNS) were identified at the within the VMP area (Table 5), one of which have been listed as Regional level priority weeds. There are four species listed as priority weeds in the Shoalhaven LGA.

Table 5: Weeds of National Significance and State priority identified within the VMP area.

Scientific Name	Common Name	WoNS	Regional priority weeds	Shoalhaven LGA priority weeds	WoNS Listing
<i>Asparagus aethiopicus</i>	Asparagus Fern	Yes	No	No	Containment /Asset Protection
<i>Chrysanthemoides monilifera</i> subsp. <i>rotundata</i>	Bitou Bush	Yes	No	Containment	Eradication /Containment
<i>Lantana camara</i>	Lantana	Yes	Yes	Containment	Containment /Asset Protection
<i>Senecio madagascariensis</i>	Fireweed	Yes	No	Containment	Containment /Asset Protection
<i>Sporobolus fertilis</i>	Giant Parramatta Grass	No	No	Containment	No

2.5. Aboriginal heritage

2.5.1. Assessment history and conditions

An ACHA (AA 2024a) was undertaken on Lot 1 and Lot 3 DP 1279350 at Culburra Road, Culburra Beach completed under Aboriginal Heritage Impact Permit (AHIP) #5076. The locations of the Aboriginal Heritage sites found within the Action area and the VMP area are shown in Figure 9, Figure 10, Figure 11 and Figure 12.

The ACHA and the following Aboriginal Cultural Heritage Management Plan (ACHMP) was undertaken and created to address and satisfy conditions B13 through to B24 of the Concept Approval DA (SSD 3846) and to assess the significance of Aboriginal Heritage objects within the action area as part of the development applications being prepared in accordance with the Concept Approval DA (SSD 3846) under Part 4 of the *Environmental Planning and Assessment Act 1979*. Conditions B13 to B24 are as follows:

B13. The Applicant must conduct formal consultation with the Aboriginal Community in accordance with clause 60 of the National Parks and Wildlife Regulation 2019.

B14. The consultation activities described in Condition B13 must be undertaken prior to the commencement of Construction. The outcomes of consultation and any amendments made to the Concept Proposal to address Aboriginal cultural values and heritage impacts must be detailed in an Aboriginal Cultural Heritage Assessment report, which is to be submitted to Council.

B15. Prior to commencement of construction of any approved stage for the Concept Proposal, an Aboriginal Cultural Heritage Management Plan must be prepared for:

a. The Crookhaven River middens located in the Foreshore Reserve as identified in the Sealark Supplementary Report to the Aboriginal Cultural Heritage Assessment, prepared by Dr Johan Kamminga, dated 14 April 2020;

b. Other already identified places of cultural significance, and any identified in ongoing consultation with the Aboriginal community; to ensure the ongoing conservation, management, and protection of the area.

B16. The ACHMP required by condition B15 must:

- a. Be prepared in collaboration with representatives of the Aboriginal community by a suitably qualified and experienced person;*
- b. Be in accordance with conservation of cultural significance as identified by the Aboriginal Community;*
- c. Ensure an appropriate management buffer zone to conserve the significance of the Crookhaven middens being no less than 40 metres from the outside edge of the middens;*
- d. Detail the practical measures for the management and conservation of the middens (including who is responsible for the implementation of those measures) and outline the routine of ongoing protective care including periodic monitoring and maintenance; and*
- e. Include details of how the maintenance program would be funded over the long -term and support ongoing Aboriginal engagement.*

B17. Inductions should be delivered to all contractors regarding the significance of Aboriginal cultural heritage, prior to any on site works. The induction should be provided by local Aboriginal people and cover all significant Aboriginal heritage values and procedures related to Aboriginal objects, known sites, and unexpected finds.

B18. Where disturbance is proposed in the immediate vicinity of known Aboriginal sites and objects, testing should be undertaken where practicable and feasible, such as Dprobe or auger hole transects or other such archaeological subsurface testing methodology to determine the nature and extent of the site and objects, so as to minimise any direct and indirect impacts.

B19. All archaeological subsurface testing, or other such archaeological field investigations should be undertaken with engagement of the Aboriginal Community, supported as appropriate by suitably qualified and experienced archaeologists with expertise in Aboriginal cultural heritage.

B20. If impacts are anticipated outside of previously assessed and surveyed areas further Aboriginal heritage research and investigation will be required. This will involve archaeological survey with the Aboriginal Community and preparation of a supplementary Aboriginal heritage impact assessment report which is to be submitted to the Planning Secretary for approval.

B21. If unrecorded or unexpected Aboriginal sites or objects are identified prior to or during the course of development, all works in the immediate vicinity of the works shall cease and Heritage NSW should be notified. Further works should not be carried out in the area unless and until permitted to do so by Heritage NSW, subject to any conditions imposed by Heritage NSW. The Planning Secretary may also require a supplementary Aboriginal heritage impact assessment report to be submitted to the Planning Secretary for approval.

B22. Prior to construction of any approved stage of the Concept Proposal, the Applicant must provide a report to Council documenting consultation with the Aboriginal Community, in relation to the interpretation of Aboriginal heritage values within the Concept Proposal area or amendments to the concept design to ensure ongoing conservation of Aboriginal heritage.

B23. Subsequent to detailed design of the Concept Proposal, and subject to any further consultation, heritage assessment or investigation, given the potential for Aboriginal Objects in the development area, an Aboriginal Heritage Impact Permit should be obtained, where required, with any subsequent development application for the Concept Proposal.

B24. During works, known areas of Aboriginal heritage significance, including objects, and sites, should be protected from harm with suitable protective fencing or other such measures.

2.5.2. Mitigation measures

The ACHA Austral Archaeology (AA) (2024a) identified 14 Aboriginal Heritage sites within the action area. Seven of these sites will fall within the VMP area and will not be impacted by proposed development works.

Further information surrounding the Aboriginal Heritage sites within the VMP area, further details of management surrounding the action area as well as the consultation and involvement from the Aboriginal Community in the development of the ACHMP can be found in the ACHA (2024a) and ACHMP (2024b) located on the West Culburra Development website (<https://www.sealark.com.au/property-development-projects/west-culburra/>).

The recommendations relevant to the Aboriginal Heritage sites within the VMP area are as follows:

- The restricting site access to the public.
- To consider ways to ensure Aboriginal people can access foreshore middens to enable site monitoring and cultural teaching.
- To employ the local Aboriginal community members with experience in land management to assist in the management of Sealark properties across the region.
- That the client considers co-management of crown land between both the Council and the Aboriginal community.
- To enable local Aboriginal community members to collect and propagate seeds as part of a broader long-term environmental program to rehabilitate cleared blocks with local flora species of cultural relevance.
- Prior to and ground disturbing works or activities, an Aboriginal Heritage Impact Permit (AHIP) will be required for sites identified in the ACHA as being subject to impacts (AA 2024b).
 - If the concept design is altered, additional impact permits may be required
 - Temporary boundary fencing must be installed no less than:
 - 40m from any midden associated with the Crookhaven River Midden Complex
 - 10m from the listed boundary of any Aboriginal Heritage Information Management System (AHIMS) registered artefact site
 - Temporary boundary fencing is to be either steel construction fencing, or parawebbing.

A map of the AHIMS site locations within the Action area as well as in proximity to the Action area (AA 2024a) is shown in Appendix E.

As per the ACHMP (AA 2024b), an incidental finds policy is to be established, to preserve any cultural materials unearthed during the ground disturbance activities associated with the West Culburra project. The following must be adhered to:

- Aboriginal objects are protected under the NPW Act regardless of if they are registered on AHIMS or not. If suspected Aboriginal objects, such as stone artefacts are located during future works, works must cease in the affected area and an archaeologist called in to assess the finds. If the finds are found to be Aboriginal objects, Heritage NSW must be notified under section 89A of the NPW Act. Appropriate management and avoidance or approval under a section 90 AHIP must then be sought if Aboriginal objects are to be moved or harmed.
- Incidental finds are to be added to the West Culburra artefact assemblage, as identified during test excavations in 2023, and reburied with these. Consultation with the Aboriginal Community is ongoing, and the final location of this reburial is to be determined.
- Artefact materials recovered in this capacity will be considered as having been subject to a cultural collection, and there will be no requirement to analyse any such collected materials.
- In the extremely unlikely event that human remains are found, works must immediately cease, and the NSW Police are to be contacted. If the remains are suspected to be Aboriginal in origin, Heritage NSW and the Aboriginal Community must also be contacted at this time to assist in determining appropriate management.
 - The notification to the Aboriginal Community and Heritage NSW is to include details of the remains and their location.
 - An appropriate “no-go” area must be established. The extents of this area will be determined through consultation with NSW Police, Heritage NSW, the Aboriginal Community, and (if necessary) a suitably qualified archaeologist.

There is to be no native vegetation clearing within the VMP area. If vegetation removal is required within the VMP area, the Construction Environmental Management Plan (CEMP)/ Operations Environmental Management Plan (OEMP) (ELA 2026) and the Aboriginal Cultural Heritage Management Plan (ACHMP) (2024b) is to be referred to for proper management of Aboriginal Heritage sites.

Management of AHIMS must be undertaken in accordance with the ACHA (AA 2024a), the ACHMP (AA 2024b) and the NPWS Act 1974.

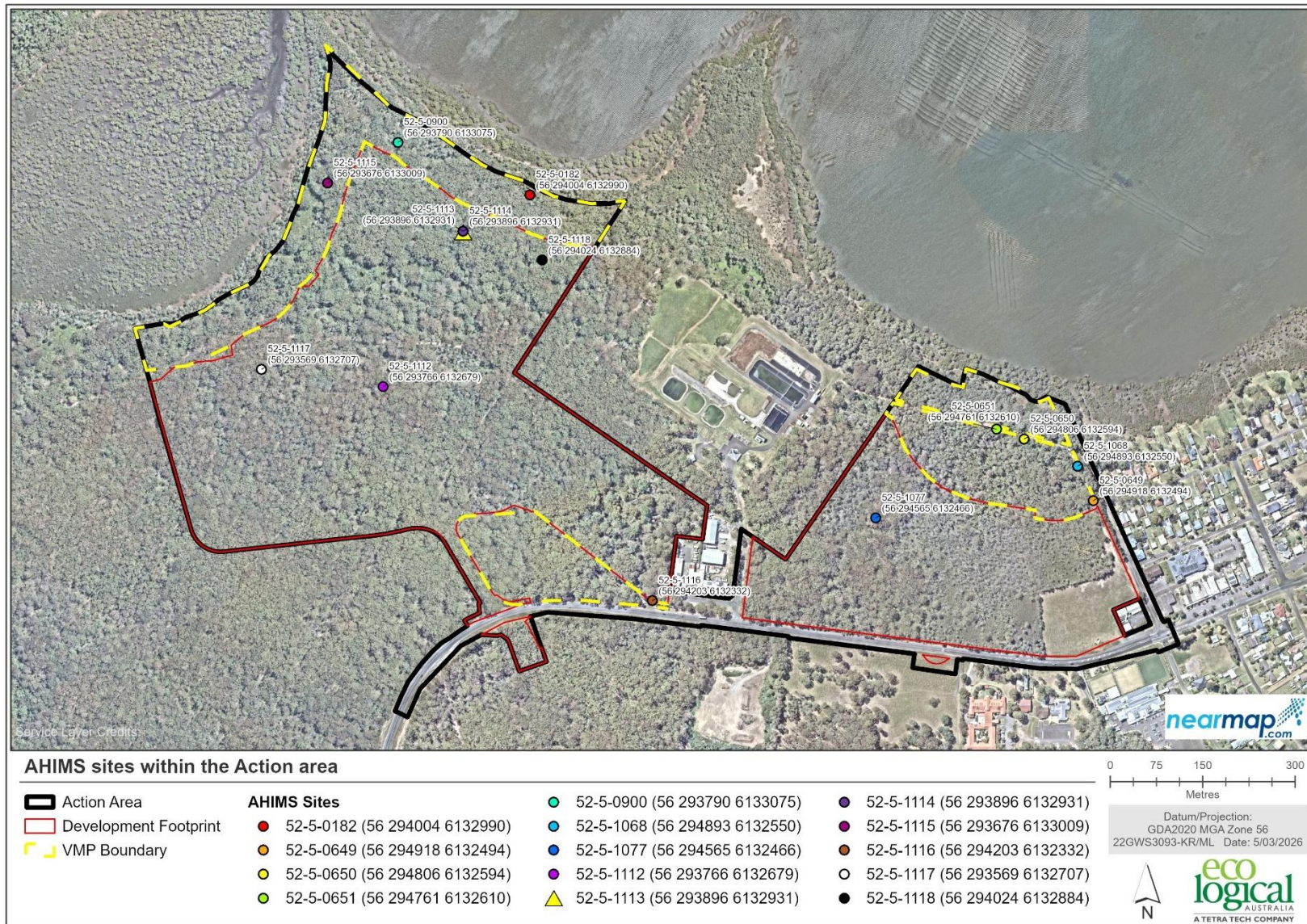


Figure 9: AHIMS site locations within the Action area

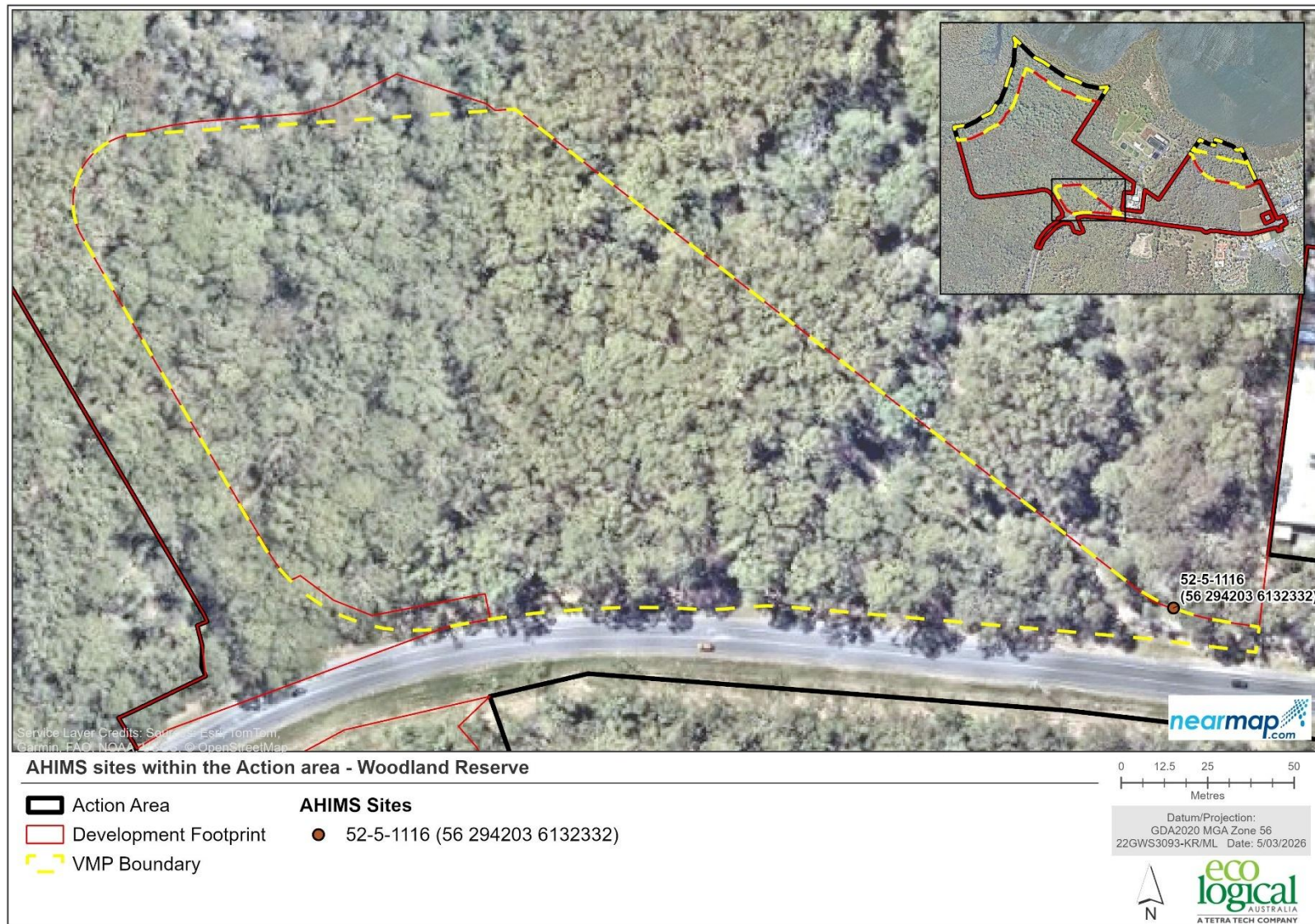


Figure 10: AHIMS site locations within the Woodland Reserve VMP area

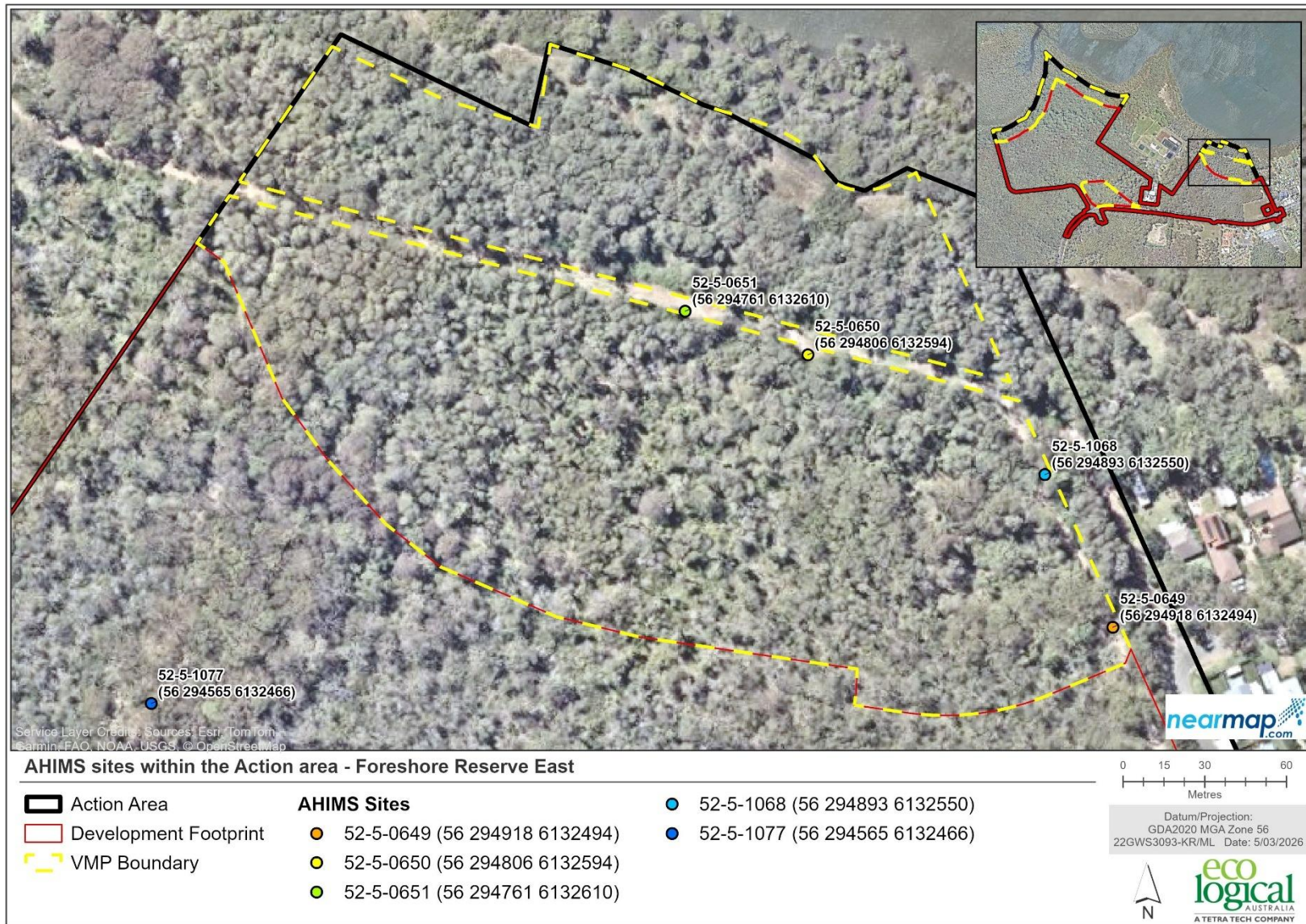


Figure 11: AHIMS site locations within the Foreshore Reserve East VMP area

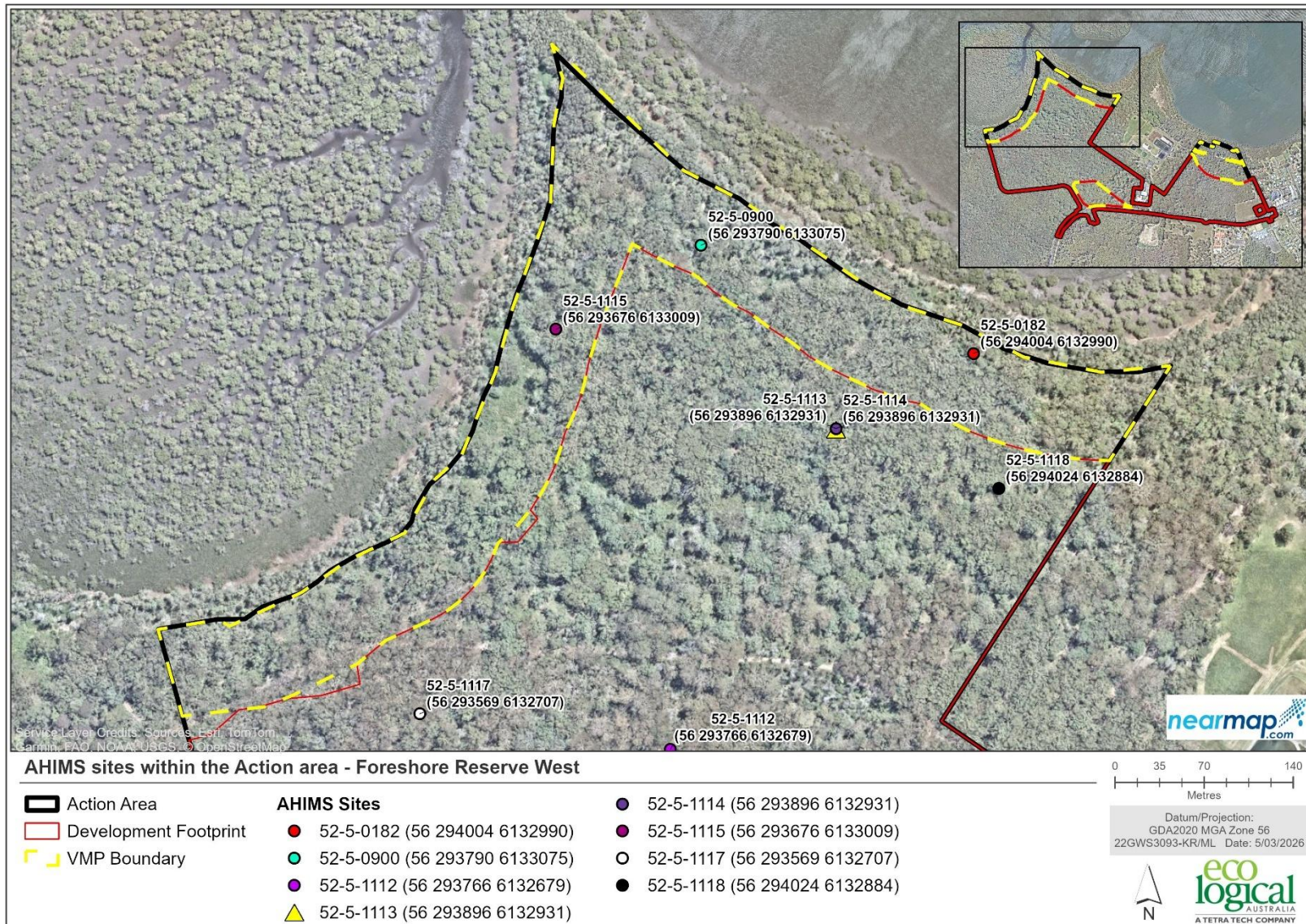


Figure 12: AHIMS site locations within the Foreshore Reserve West VMP area

3. Construction and preliminary works

The developer (Sealark Pty Ltd) or their nominated contractor shall be responsible for the following works.

3.1. Fencing and interpretation signage

3.1.1. Fencing during the construction period

Once works adjacent to each VMP area commence, the edge of that VMP area where it borders the development footprint is to be fenced with temporary fencing to prevent civil construction machinery from entering the VMP area unless under supervision from a suitably qualified ecologist or bush regenerator. Temporary fencing can be steel construction fencing, parawebbing, or bunting) Temporary fencing will also give the bush regeneration contractor easier access to the site to transport tools and equipment that will need to be used throughout the duration of the VMP implementation period. Existing site access tracks can be used until alternative access has been made, but where works have commenced in adjacent lots, the VMP area must have temporary fencing installed either side of the access track. These controls are required to be properly maintained across the VMP area while construction is occurring in adjacent areas. Anyone onsite at this stage in VMP works is required to undergo site inductions.

3.1.2. Permanent fencing and management of unauthorised access

The VMP area must be protected from disturbance by unauthorised access at the end of the construction period using permanent fencing or barriers. Examples of suitable fencing are provided in Figure 13, but any fencing which allows for fauna movement but restricts motorised vehicle access into the VMP area is suitable. This fencing must be properly maintained and be fauna safe fencing which allows for fauna movement but restricts motorised vehicle access into the VMP area. Fauna safe fencing is defined as fencing that does not use barbed wire and that allows the safe passage of protected matters (EPBC 2023/09524). Further information is shown in Appendix D. Where the VMP area is continuous with adjacent bushland then boundary marking can be used instead to delineate the VMP area.



Rural fencing



Bollard fencing

Figure 13: Examples of suitable fencing to border the VMP area

3.1.3. Signage and gates

During the construction period, temporary information signage will be installed on the construction fencing to notify there is an endangered community present on site and there is to be no entry into the VMP area (without an ecologist or bush regenerator present).

Permanent information signage will be positioned at strategic locations to advise the public of the importance of the bushland and its habitat. Signage will also contain the following information:

'The vegetation within this area is protected. Activities such as firewood collection, bush rock removal, picking of native flowers and dumping of garden waste are prohibited'.

Adjacent property owners are to be provided an environmental information fact sheet as supplied in Appendix F. This provides information on threatened species recorded or likely to occur within the conservation area. It also informs owners of ways to ensure the protection of bushland and highlights biodiversity aspects of the property.

Locked gates, bollards or other barrier types will be required at access points to prevent unauthorized vehicular or trail bike access but allow authorised access such as bush regeneration contractors.

3.2. Vegetation clearance and earthworks supervision

3.2.1. Pre-clearance and clearance works

The protection of diversity is important in fostering the long-term health of native ecological communities. There is some likelihood that vegetation removal during development may result in the displacement of fauna. Therefore, contractors must take care during clearance activities to minimise impacts/disruption to fauna. The *Bringing the bush back* manual (DoIPNR, 2003) provides practical management techniques to assist practitioners to minimise impacts to native fauna during revegetation works. Although clearing works are not expected to be undertaken within the VMP area, if, following approvals, such works are required within the VMP area, these works must be supervised by a suitably qualified and experienced ecologist. A detailed pre-clearance and clearance methodology for the site, including procedures for pre-clearance surveys, clearance works, and actions if native fauna or MNES are found to be breeding within the clearance area are available in the CEMP/OEMP (ELA 2026). This procedure must be followed for any clearing works required.

3.2.2. Reuse of cleared materials on site

Trees (and shrubs) removed within the development footprint may be of further use by providing suitable habitat features within the VMP area as stags, logs, hollows, debris, leaf litter, mulch or be used for soil stability and brush matting material in cleared areas, as well as a source of nutrient cycling. If vegetation is to be removed, natural timber >10 cm diameter including tree barrels and fallen logs/ branches, will be retained for use within the VMP area where suitable. Exotic vegetation is to be taken off-site and is not be used as mulch. Exotic timber is not recommended to be used as habitat enhancement but can be used only if approved by a suitably qualified and experienced restoration ecologist and will not regrow. Reuse of any vegetation, including mulch, within the VMP area needs to be approved by a suitably qualified and experienced restoration ecologist to ensure it does not impact on the ability of the site to achieve the performance criteria.

Where HBTs are removed from the development footprint, procedure and rates of replacement of HBT within the CEMP/OEMP (ELA 2026) will be adhered to.

The placement of all faunal habitat augmentation features and the nest box installation is to be carried out under the supervision of a qualified ecologist. The number of hollows to be replaced within the area to be cleared will be identified and recorded during the preclearance inspection and installed prior to the removal of the HBTs.

Suitable quantities of viable seed and genetic material present that can be reasonably collected will be collected for plant propagation uses and suitable quantities of timber is to be cut into logs to be utilised as ground habitat for native fauna.

3.3. Matters of National Environmental Significance

This VMP area contains potential habitat for **six** Matters of National Environmental Significance (MNES):

- *Pteropus poliocephalus* (Grey-headed Flying-fox)
- *Petaurus australis* (Yellow-bellied Glider)
- *Callocephalon fimbriatum* (Gang-gang Cockatoo)
- PCT 4019: Coastal Alluvial Bangalay Forest
 - Associated with the TEC Swamp Sclerophyll Forest on Coastal Floodplains of the New South Wales North Coast, Sydney Basin and South East Corner Bioregions under the BC Act.
 - Associated with TEC River-flat Eucalypt Forest on Coastal Floodplains of Southern New South Wales and Eastern Victoria under the EPBC Act.
- PCT 4051: South Coast Lowland Red Gum-Swamp Oak Forest
 - Associated with Coastal Swamp Oak (*Casuarina glauca*) Forest of NSW and SE QLD under the EPBC Act.

The above MNES have not been identified as species or ecological communities that are highly susceptible to cat predation (DCCEEW 2024b).

Any clearing within the action area is restricted to the development footprint and no clearing is permitted in the VMP area. Conditions 2 and 3 specifically relate to managing impacts to MNES and are detailed below. For any clearing that takes place in the development footprint refer to Section 2.1 of the CEMP/OEMP (ELA 2026).

3.4. Pest control

The cost and methodology of pest control within the VMP area is the responsibility of the landowner. This will be undertaken by suitably qualified employees or contractors and where required, in consultation with relevant authorities, LLS or SCC feral pest reporting guidelines (SCC 2025) will be undertaken when necessary, when monitoring demonstrated feral cats are impacting the VMP area and throughout the life of the VMP. In particular, predation by feral cats is a key threatening process under the EPBC Act and reducing the effects of feral cats on native biodiversity is an important part of pest control management. Under the Threat Abatement Plan for predation by feral cats 2024 (DCCEEW 2024b) there are actions that are the responsibility of local governments which may be applicable to pest control in the action

area. One of the most relevant objectives from this plan and its available management actions is listed below:

Objective 9: Reduce cat impacts around areas of human habitation and infrastructure (DCCEEW 2024b)

- *Establish cat-free suburbs near areas of high biodiversity value.*
- *Work with local communities to build support for expanding areas requiring 24/7 cat containment.*
- *Improve waste management so feral cat populations are not supported by access to refuse and introduced rodents.*
- *Disseminate information to local residents about the One Health benefits of reducing feral cat populations for improving outcomes for people and livestock production as well as wildlife.*
- *Implement feral cat control in consultation with local government staff. The following control measures can be used dependant on the appropriateness to the location :*
 - *Where feasible lend traps to community members and discourage trap-neuter-release.*
 - *Trapping and shooting.*
 - *Managing fire and grazing to maintain a complex ground vegetation layer (to reduce cats' hunting success.*
 - *Manipulating species interactions, for example be reducing rabbit and introduced rodent populations.*
- *Develop incentive programs for registration, identification and desexing packages, especially in areas of socioeconomic disadvantage.*

The following table outlines the responsibilities government agencies and land managers hold when considering feral cat management (LLS 2024) as well as control measures that are likely to be effective in the West Culburra area (Centre for Invasive Species Solutions 2023; Johnston & Algar 2020). Sealark Pty Ltd intends to create a cat free suburb by including clauses within sales contracts or S88B instruments for properties located in the Action area. Additionally, Sealark Pty Ltd is collaborating with LLS to implement a cat control program on the West Culburra site. The collaboration with LLS includes developing a comprehensive cat management plan for the West Culburra site which is expected to complement feral animal control programs on neighbouring Biodiversity Stewardship Sites, assuming cats are identified in the action area.

Table 6: Feral cat management responsibilities

Key stakeholders	Responsibilities and expectations
Government agencies	<p>LLS will provide support to Sealark Pty Ltd in the following ways</p> <ul style="list-style-type: none"> • Providing of pest animal education, extension services and capacity building initiatives for all land managers. • Facilitate the support of coordinated control programs delivered by Sealark Pty Ltd on the West Culburra site • LLS and National Parks and Wildlife Services (NPWS) will identify fauna being impacted by cats and areas of fauna at risk and facilitate in the implementation of programs to reduce risk or impact • Facilitate the development of a Regional Strategic Pest Animal Management Plan (RSPAMP) with appropriate stakeholders • Increase awareness of behaviours and impacts of feral cats and how to manage impacts as well as promote responsible pet ownership to reduce integration of domestic and feral cats
Land managers (Sealark Pty Ltd)	<p>Sealark Pty Ltd will undertake the following measures to reduce risks from cats on land under their care and control, including the risk of cats being introduced/released on their land or using their land as breeding habitat:</p> <ul style="list-style-type: none"> • Creating cat free suburbs through restrictions on title • Deploying motion sensor cameras to undertake monitoring of the initial presence of feral and domestic cats in the area as well as monitoring following control measures to determine the effectiveness and need for further control measures. • Reporting feral cat sightings, dumping or breeding activity through FeralScan • Implement feral cat control in consultation with local government organisations and LLS such as using cage traps. Traps will be required to be checked daily or monitored by motion sensor cameras. Trapped cats can be taken to the local pound to determine if the cat is feral or domesticated. • Monitoring of rabbit populations within the area (and control where required) is an additional control measure that can be adopted.

3.5. Soil management

3.5.1. Soil and water management plan

The proposal may alter hydrological processes within the subject land through an increase in impermeable surfaces. The proposal has the potential to generate a decrease in water quality from high-turbidity runoff during construction. Environmental impact management measures will be implemented to ensure that any site runoff is managed throughout the construction phase of the project.

A Soil and Water Management Plan (SWMP), will be developed and implemented prior to any on-ground works. The SWMP (SEEC 2025) is required to be in accordance with best practice management as described in Landcom (2004) and DoECC (2008). Additionally, a water quality, aquatic ecology and oyster aquaculture monitoring program has been undertaken (ELA 2026) and will continue to be undertaken where required.

Prior to construction commencement, the SWMP implementation will be required around the construction area to prevent sediment moving into the VMP area during the construction period thus limiting the spread of weed propagules contained within soil sediments.

3.5.2. Soil preparation prior to rehabilitation

Earthworks may be required for track rehabilitation or stabilisation within the VMP area. Inappropriately disrupted soil profiles and/or soil compaction resulting from these activities could hamper rehabilitation success, create future costs, or pose threats to ecological and cultural values. Therefore, it is assumed that the developer or their nominated contractor will undertake any decompaction (e.g., ripping) required in the VMP area (e.g., Zone 1) and leave reformed soils in VMP areas in suitable condition for rehabilitation post-construction. It is assumed that no removal of native vegetation will be undertaken in the VMP area during construction other than that which would be specifically approved for removal as part of the development consent.

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 impact on rehabilitation success. For this reason, if required, particular care will be required while undertaking activities such as excavation, shaping and re-levelling within the VMP area, as well as with the removal, stockpiling and replacement of soil horizons/strata to achieve final soil profiles that are appropriate for plant survival. Works must have plans in place to minimise soil compaction such as by only operating machinery under suitable conditions.

Table 7 will be referred to in preparation for revegetation works.

No works are expected in the mangrove vegetation community, and it is recommended that where possible work around the mangroves is limited or prevented. However, if works around mangroves are necessary, the installation of multi-barrier erosion controls will assist in maintaining mangrove area and sediment. Controls will include:

- Sediment fences and sandbags to ensure mangrove sediment integrity remains constant (clear away from roots)
- Sediment fencing to be placed on the downslope edge of any works adjacent to mangroves.
- Sediment fencing must not be installed using excavation that could impact pneumatophores but rather be secured by star pickets and weighted by sandbags.
- Diversion, collection, and treatment of stormwater runoff from exposed fill areas until vegetation becomes established.
- Floating pollution boom with drop mesh must be installed in the mangroves immediately adjacent to any VMP works to prevent any litter from washing into the mangroves and allowing for its collection.
- Additionally, removal of any rubbish amongst mangroves.
- Sediment fence & pollution boom to be checked daily.
- Ground coverings to be in place and pegged over exposed soil on completion daily.
- No heavy machinery to be used on embankment and roots of woody weeds will be left in situ to ensure soil retention.

Environmental hygiene is important in preventing the introduction or the transfer of pathogens or noxious/WoNS seed. Safe Work Method Statements (SWMS) must incorporate these measures for machinery and all pedestrians including work and monitoring teams etc.

Table 7: 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/m ² Gypsum • 20g/m ² microbial soil conditioner (e.g., Bactivate granular or equivalent) 20g/m ² quick-release multi-source 5:2:8 NPK organic granular fertiliser (e.g., Terralift TX10 + MYCORRHIZA or equivalent) 120g/m ² 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

3.6. Training

Due to the sensitive nature of the VMP area and the presence of six MNES, this VMP will require all staff to complete training/inductions before commencing works, including locations and requirements of tree/vegetation protection zones or known instances of any MNES within Section 3.3. Training and inductions that have been implemented will be recorded and must include environmental emergency contacts such as contacts for the Environmental Protection Agency (EPA), within the area as well as environmental emergency procedures for the VMP area.

4. Vegetation management zones

The total VMP area is approximately 15.41 ha. Of this, 15.27 ha is to be managed as management zones under the VMP. The additional 0.14 ha is made of easements within the Foreshore Reserve West (0.09 ha) and the Woodland Reserve (0.05 ha) that fall within the total VMP area, but will not be managed as a part of the VMP area (Section 4.4).

Three management areas have been identified for this VMP: the Woodland Reserve (Figure 16), Foreshore Reserve East (Figure 17) and Foreshore Reserve West (Figure 21).

Two sub-management zones have been defined within each management area:

- Woodland Reserve (2.82ha)
 - Zone 1 – Track & boundary rehabilitation (0.12ha)
 - Zone 2 – Bushland regeneration (2.70ha)
- Foreshore Reserve East (5.05ha)
 - Zone 1 – Boundary buffer/rehabilitation (0.3ha)
 - Zone 2 – Bushland regeneration (4.75ha)
- Foreshore Reserve West (7.41ha)
 - Zone 1 – Track rehabilitation (0.32ha)
 - Zone 2 – Bushland regeneration (7.09ha)

Further, where future development planning includes provision for public parks to adjoin Foreshore and Woodland Reserves, the integrity of these areas must be protected. Mitigation measures will be implemented at these interfaces to prevent the spread of turf grasses or movement of weed-seed laden or nutrified surface water from moving into native areas, such as through using wide concrete borders, paths, or indigenous buffer plantings as barriers. Bollards and other barriers at entrance/exit points paths will be required to prevent unauthorised vehicle and pedestrian access to bushland reserves.

4.1. Woodland Reserve

The Woodland Reserve VMP area is divided into two Management Zones as detailed in Section 4.1.1 and Section 4.1.2. Representative photos are attached as Figure 14 and Figure 15 with a map of the zones shown as Figure 16.

4.1.1. Management Zone 1: Track and boundary rehabilitation

Vegetation in Woodland Reserve Zone 1 is mapped as *PCT3273: South Coast Lowland Shrub-Grass Forest*. Zone 1 is approximately 0.12 ha in size and is represented by three relatively small areas of weed infestation along sections of track and reserve boundaries, to east, southeast and south (Figure 14). Weeds dominating in these areas are Lantana, Whiskey Grass, and other herbaceous and grass annuals. Because it is understood there is some potential for the occurrence of features of Indigenous cultural significance (Toon 2013), weed control actions that minimise disruptions to soils to avoid impacts to cultural heritage items are to be used. For example, Lantana will be controlled by cut and paint and/or spot spray methods leaving treated material on-site, while Whiskey Grass and other herbaceous weeds will be treated using chemical sprays.

Summary management aims for Zone 1 are:

- Assist natural regeneration through primary and secondary weed control
- Undertake brush matting with native material to promote native regeneration/colonisation
- Enhance habitat features across the zone (e.g., logs, rocks)
- Undertake ongoing monitoring to track progress and identify potential issues.



Figure 14: Woodland Reserve Zone 1 - Weeds and disturbance on southern boundary track and Lantana infestation

4.1.2. Management Zone 2: Bushland regeneration

Woodland Reserve vegetation in Zone 2 is mapped as *PCT3273: South Coast Lowland Shrub-Grass Forest*. The Zone is approximately 2.70 ha in size and is represented by good condition intact native bushland (Figure 15). Because it is understood there is some potential for the occurrence of features of Indigenous cultural significance (Toon 2013), weed control actions that minimise disruptions to soils to avoid impacts to heritage items are to be used.

Due to the good condition of native vegetation and low level of weed incursion there is a high probability that natural regeneration will be sufficient to improve and maintain native values following primary and secondary weed control. This will negate the requirement for revegetation planting.

Summary management aims for Zone 2 are:

- Assist natural regeneration through primary and secondary weed control
- Enhance habitat features across the zone (e.g., logs, hollows, rocks, woody debris)
- Undertake ongoing monitoring to track progress and identify potential issues.



Figure 15: Woodland Reserve Zone 2 – intact bushland



Figure 16: Woodland Reserve Management Zones

4.2. Foreshore Reserve East

The Foreshore Reserve East VMP area is divided into two Management Zones as detailed in Section 4.2.1 and Section 4.2.2. Representative photos are attached as Figure 17 with a map of the zone shown as Figure 18.

4.2.1. Management Zone 1: Boundary buffer/rehabilitation

Management Zone 1 occurs as a 5m buffer along the cleared linear pipeline easement dissecting the Foreshore Reserve East (Figure 17) and is approximately 0.3 ha in size. The easement adjacent to this zone will be used as a vehicle track, meaning disturbance and introduction of exotic species to this zone is likely. Increased disturbance and introduced species could result in more extensive works being required if performance criteria struggle to be met.

Vegetation within this zone is often dominated by Lantana and various herbaceous and grassy weeds. These areas are understood to be of potential Indigenous significance and weed control and rehabilitation actions that minimise soil disruptions to avoid impacts on items of cultural heritage are to be used. Weeds within this zone will be treated by cut and paint and/or spot spray methods leaving treated material on site.

Resilience in this zone is expected to be low and brush matting will be required. It is recommended brush matting be done using seed-laden trimmed native material following weed controls and be laid over treated or open areas to promote native regeneration/colonisation to compliment natural recruitment.

Summary management aims for Zone 1 are:

- Assist natural regeneration through primary and secondary weed control
- Undertake brush matting with native material to promote regeneration/colonisation
- Enhance habitat features across the zone (e.g., logs, rocks)
- Undertake ongoing monitoring to track progress and identify potential issues
- Ensure mangrove sediment integrity remains constant (clear away from roots)
- Remove any rubbish amongst mangroves

4.2.2. Management Zone 2: Bushland regeneration

Vegetation in foreshore reserve Management Zone 2 is represented by a combination of PCTs including:

- PCT 3273: South Coast Lowland Shrub-Grass Forest
- PCT 4019: Coastal Alluvial Bangalay Forest
- PCT 4051: South Coast Lowland Red Gum-Swamp Oak Forest
- PCT 4091: Grey Mangrove-River Mangrove Forest
- PCT 4102/4094/4040: South Coast Bracelet Honey-myrtle Sea Rush Saltmarsh/Estuarine Club Rush-Arrowgrass Wetland/South Coast Selliera-Sea Swamp Oak Saltmarsh

The Zone is approximately 4.75 ha in size. This area contains native vegetation in moderate to very good condition, however, Lantana still exists at moderate to high cover in the mid stratum (Figure 17). This is the case across much of the zone with up to 80% cover on the northern section of bushland and to 60% in the southern section (these two areas being dissected by the pipeline easement).

Zone 2 also consists of a partial mangrove forest towards the north of the zone. This area contains native vegetation and is in good condition.

Because it is understood there is some potential for the occurrence of features of Indigenous significance (Toon 2013), weed control actions that minimise disruptions to soils to avoid impacts to cultural heritage items are to be used. Lantana will be controlled by cut and paint and/or spot spray methods leaving treated material on-site. Other herbaceous weeds will be treated using chemical sprays.

Because bushland is in good condition there is a high probability that natural regeneration will be sufficient to improve and maintain native values following primary and secondary weed control. This will negate the requirement for planting vegetation.

Zone 2 is adjacent to proposed basins, dams, and biofiltration basins and while (as per Council instruction), these fall outside the remit of this VMP, any future plantings associated with these areas must utilise only local provenance indigenous species consistent with surrounding vegetation types.

Summary management aims for Zone 2 are:

- Assist natural regeneration through primary and secondary weed control
- Enhance habitat features across the zone (e.g., logs, hollows, rocks)
- Ongoing monitoring to track progress and identify potential issues.
- Ensure mangrove sediment integrity remains constant (clear away from roots).
- Clear any existing rubbish amongst mangrove vegetation



Figure 17: Foreshore Reserve East Zone 1 - Lantana occurring within areas of intact bushland



Figure 18: Foreshore Reserve East Management Zones

4.3. Foreshore Reserve West

The Woodland Reserve VMP area is divided into two Management Zones as detailed in Section 4.3.1 and Section 4.3.2. Representative photos are attached as Figure 19 and Figure 20 with a map of the zones shown as Figure 21.

4.3.1. Management Zone 1: Track rehabilitation

Foreshore Reserve Zone 1 occurs as tracks (Figure 19) occurring within vegetation represented by a combination of PCTs including:

- PCT 3273: South Coast Lowland Shrub-Grass Forest
- PCT 4051: South Coast Lowland Red Gum-Swamp Oak Forest
- PCT 4102/4094/4040: South Coast Bracelet Honey-myrtle Sea Rush Saltmarsh/Estuarine Club Rush-Arrowgrass Wetland/South Coast Selliera-Sea Swamp Oak Saltmarsh

It is approximately 0.32 ha in size. Up to 50% of these tracks are affected by weed incursion, predominantly grasses and herbaceous species, with soil disturbance in others. Both factors threaten the integrity of surround bushland. For this reason, the tracks will be closed off and rehabilitated over time. Following primary and secondary weed control there is a high probability natural regeneration of native species will occur, and so planting restoration is unlikely to be required. Instead, brush matting, using seed-laden trimmed native material should be laid over treated and/or open areas to promote native regeneration/colonisation.

Because it is understood there is some potential for the occurrence of features of Indigenous significance (Toon 2013), weed control actions that minimise disruptions to soils to avoid impacts to cultural heritage items are to be used. Lantana will be controlled by cut and paint and/or spot spray methods leaving treated material on-site. Other herbaceous weeds will be treated using chemical sprays.

Summary management aims for Zone 1 are:

- Assist natural regeneration through primary and secondary weed control
- Undertake brush matting with native material to promote regeneration/colonisation
- Enhance habitat features across the zone (e.g., logs, rocks, woody/leafy debris)
- Ongoing monitoring to track progress and identify potential issues.



Figure 19: Foreshore Reserve West Zone 1 - track areas

4.3.2. Management Zone 2: Bushland regeneration

Vegetation in Zone 2 is represented by a combination of PCTs including:

- PCT 3273: South Coast Lowland Shrub-Grass Forest
- PCT 4051: South Coast Lowland Red Gum-Swamp Oak Forest
- PCT 4102/4094/4040: South Coast Bracelet Honey-myrtle Sea Rush Saltmarsh/Estuarine Club Rush-Arrowgrass Wetland/South Coast Selliera-Sea Swamp Oak Saltmarsh

It is approximately 7.09 ha in size and contains native vegetation in very good condition (Figure 20). However, Lantana infestations at moderate cover levels (to 60%) are present throughout. Because of the probable high level of natural resilience, natural regeneration will likely be sufficient to maintain and native values following primary and secondary weed control, negating the requirement for revegetation.

Because it is understood there is some potential for the occurrence of features of Indigenous significance (Toon 2013), weed control actions that minimise disruptions to soils to avoid impacts to cultural heritage items are to be used. Lantana will be controlled by cut and paint and/or spot spray methods leaving treated material on-site. Other herbaceous weeds will be treated using chemical sprays (e.g., Roundup Biactive®).

Zone 2 is adjacent to proposed basins, dams, and biofiltration basins and while these fall outside the remit of this VMP, any future plantings associated with these areas must utilise only local provenance indigenous species consistent with surrounding vegetation types.

Summary management aims for Zone 2 are:

- Assist natural regeneration through primary and secondary weed control
- Enhance habitat features across the zone (e.g., logs, hollows, rocks)
- Ongoing monitoring to track progress and identify potential issues.



Figure 20: Foreshore Reserve West Zone 2 - bushland vegetation with moderate Lantana infestation

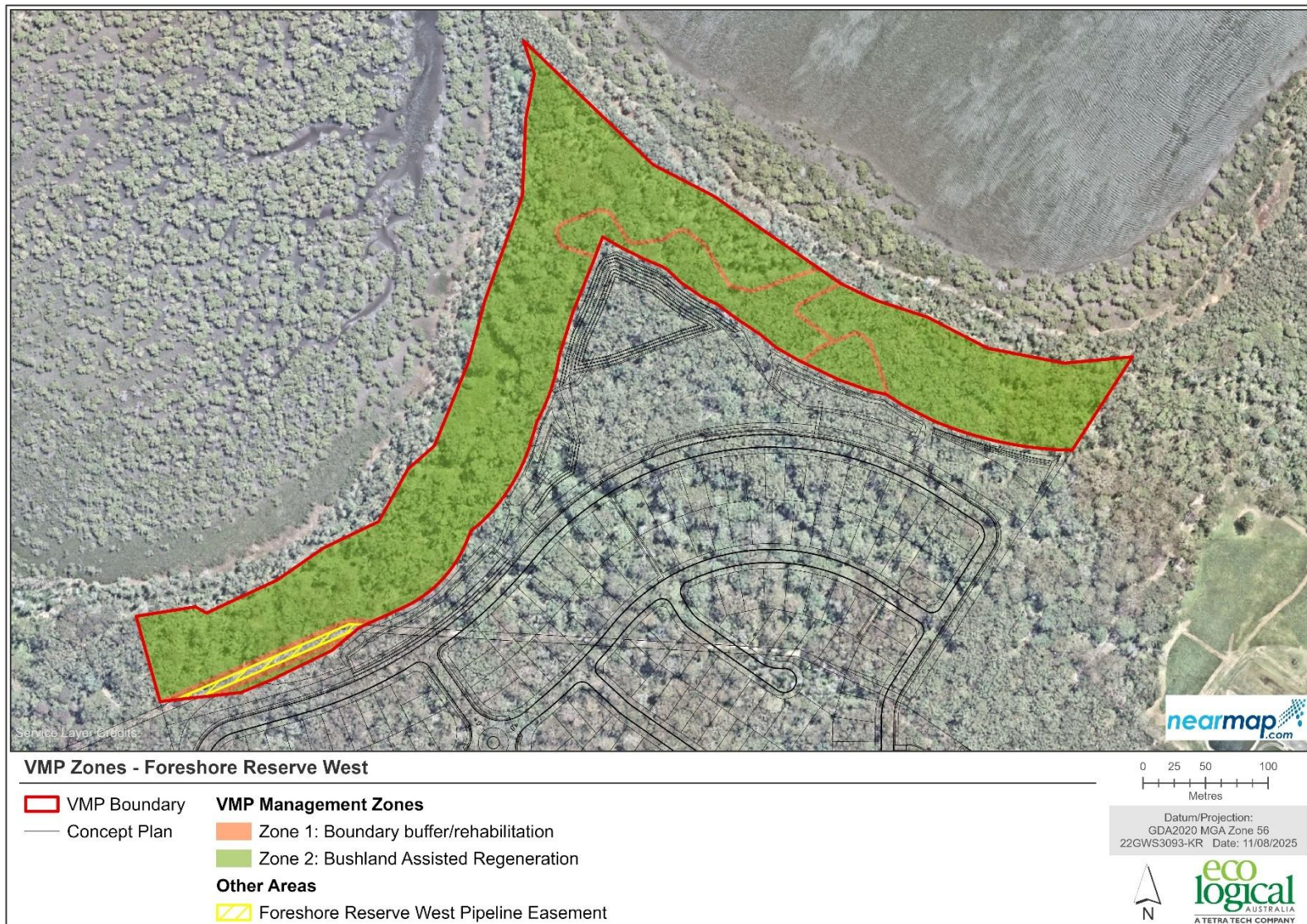


Figure 21. Foreshore Reserve West Management Zones

4.4. Other works outside of the VMP area

There is an easement for utility services along the southern boundary of the Woodland Reserve (Figure 16) which is approximately 0.05 ha in size. This easement will be managed separately from the VMP area and will be maintained to allow for vehicle access and utility services. Whilst the easement is initially located on Sealark's land, once the land is transferred to Council, it will become part of the public reserve. Utility service authorities will need access to the easement area from time to time for maintenance of the various services located within the easement.

There is also an additional pipeline easement along the southwest boundary of the Foreshore Reserve West (Figure 21) which is approximately 0.09 ha in size. This easement will be managed separately from the VMP area and will be maintained to allow for vehicle access and utility services to maintain the existing sewage infrastructure. Whilst the easement is initially located on Sealark's land, once the land is transferred to Council, it will become part of the public reserve. Utility service authorities will need access to the easement area from time to time for maintenance of the sewage infrastructure located within the easement.

The area dissecting the larger Foreshore Reserve East (Figure 18) is a cleared linear pipeline easement and is approximately 0.18 ha in size will be managed separately from the VMP area. The easement is also used as a vehicle track and there are sections of moderate to severe soil disturbance. It is recommended the cooperation of SCC be sought to stabilise soil in the short-term using materials such as crushed sandstone gravel. The easement will be in the control of and maintained by SCC and the track will be maintained for future use.

5. Vegetation management works

5.1. Primary and secondary weed control

Primary weed control is to be undertaken in Year 1 and would include initial treatment of woody weeds, exotic grasses, and groundcovers. WoNS, State Priority and Regional Priority weeds (such as Lantana - Figure 22) will be a key focus for control works. In addition, other herbaceous and grassy weeds common in cleared bushland areas will also be addressed (Figure 23). Woody weeds can be effectively treated using cut and paint method. Chemical spray treatments required for herbaceous weeds will be undertaken with care and in a way that does not impact on non-target native vegetation within the bushland reserves. Additional information on weed control approaches are provided in Appendix C.

Secondary weed controls - chemical and/or mechanical techniques, will be undertaken in Year 1 and Year 2 as follow-up treatments of weed regrowth, emergence, or colonisation in previously treated areas. Care must be taken during all control activities to avoid damage to standing or regenerating native species.



Figure 22: Lantana WoNS



Figure 23: Herbaceous weeds along cleared bushland tracks

5.2. Revegetation

Revegetation works are required across all Zone 1 areas. The recommended method of revegetation is brush matting, which is a form of direct seeding, and will include native groundcovers, grasses, shrubs, and canopy species. Brush matting is an effective and low cost means of mitigating soil erosion and facilitating native regeneration. In bushland settings, brush matting is most often used in open areas of degradation or disturbance such as on tracks (human or animal), clearings, or scours. The placement of woody or herbaceous materials helps to restrict water flows, trap sediment, and create conditions which are conducive for natural regeneration.

This technique involves laying woody material including logs, branches, leaves which also contains fruits or other seed structures prior to seed release. The placement of brush matting should aim to intercept and restrict surface water flows, thus when on slopes will be placed across the path of flow. It is assumed that material will be sourced from appropriate species of adjacent trees, shrubs, grasses and forbs from the development footprint, Zone 2, nearby locations, and/or from within the catchment region following current Florabank Guidelines (Harrison et al. 2021). See Florabank Guidelines (Module 14) for more information on this technique (Gibson-Roy et al. 2020).

Due to the current condition of the site, brush matting is considered an adequate form of revegetation. Tubestock installation is not expected to be required and has not been provided for within this VMP. Revegetation assumptions and densities are provided in Table 8 and Table 9. Table 9 shows the densities of additional revegetation recommended to meet performance criteria for each management zone.

Mulch and jute matting has not been allowed for. Prior to any revegetation works, the requirements for revegetation will be assessed to ensure that proposed methods are sufficient to achieve the performance criteria. If tubestock installation or other forms of direct seeding is used instead in these zones, methods will be consistent with current Florabank guidelines (Gibson-Royet al. 2021) and Appendix C. Appropriate planning and timelines for sourcing planting material or seed for direct sowings will be allowed for.

Table 8: Revegetation assumptions

Zone	Sum of Area (m ²)	Reveg area (%)	Reveg area (m ²)	Direct seeding (%)	Direct seeding (m ²)
Woodland Reserve					
Zone 1: Rehab	1,192	100	1,192	100	1,192
Zone 2: Regen	26,960	0	0	0	0
Foreshore Reserve East					
Zone 1: Rehab	2,959	50	1,480	100	1,480
Zone 2: Regen	47,493	0	0	0	0
Foreshore Reserve West					
Zone 1: Rehab	3,187	100	3,187	100	3,187
Zone 2: Regen	70,941	0	0	0	0
Totals	152,732	-	5,858	-	5,858

Table 9: Revegetation densities to be undertaken as equivalent direct seeding quantities

Zone	Revegetation Area (m ²)	Recommended densities (m ²) to establish				Totals
		Tree	Shrub	Herbs / Scramblers	Sedge / Grass	
Woodland Reserve						
Zone 1: Rehab	1,192	1/100	1/50	1	3	4,803
Zone 2: Regen	0	-	-	-	-	0
Foreshore Reserve East						
Zone 1: Rehab	1,480	1/100	1/50	1	3	5,963
Zone 2: Regen	0	-	-	-	-	0
Foreshore Reserve West						
Zone 1: Rehab	3,187	1/100	1/50	1	3	12,842
Zone 2: Regen	0	-	-	-	-	0
Total	5,858	59	117	5,858	17,574	23,608

5.3. Maintenance

Following primary and secondary weed treatment, all management zones will require ongoing works to treat weed regrowth, emergence, or colonisation from within or beyond the VMP area. Maintenance work will be undertaken by qualified bush regenerators as per specifications provided in Appendix C.

It is recommended maintenance activities occur on a regular basis during peak plant growing seasons (spring and summer), with less frequent visits required in cooler periods (autumn and winter).

Maintenance work can also include techniques to assist native regeneration such as biomass removal, soil disturbance, niche seeding and transplanting.

5.4. Fire for vegetation management

Ecological burns can be used to manage and maintain habitat for Protected Matters when implemented as part of a planned fuel reduction and ecological burning regime that prioritises long term habitat conservation. However, given the timeframe and the works proposed in the VMP, ecological burns have not been included as a management tool in this VMP. The NSW NPWS fire management guidelines (NSW NPWS 2004) recommends excluding certain communities, particularly estuarine and saline wetland forests, from fire management. Across the West Culburra site, this includes PCTs 4019, 4028, 4051, 4091. In addition, in wet sclerophyll forest (PCT 3273 on the West Culburra site) long fire intervals of between 25-60 years are recommended. Within the VMP boundary it is expected that native vegetation regeneration promoted by the weed control works implemented under the VMP will provide sufficient improvements in habitat quality for the Protected Matters.

If the need for ecological burns is identified in future, a fire management plan should be developed which would include specifications for frequency, intensity, intervals, fuel moisture levels and weather windows to meet conservation objectives while minimising risk. Further advice on ecological fire management can be found in the Biodiversity Conservation Trust's Guide to the application of fire as a management tool (Biodiversity Conservation Trust 2022), and the NSW NPWS guidelines for Ecologically Sustainable Fire Management (NSW NPWS 2004).

6. Implementation schedule

6.1. Implementation schedule

The VMP area will be managed by Sealark Pty Ltd until it is transferred to Council as a public reserve. An indicative implementation schedule has been provided in Table 10. Responsibilities have been identified as below.

The VMP revegetation and maintenance implementation may commence prior to civil development works commencing.

6.2. Adaptive management

As this is a long-term project implemented over several years, it is recommended an adaptive management approach be adopted to enable vegetation contractors to learn from and respond to successful and unsuccessful techniques used on site. The success of the works will be determined by meeting performance criteria identified in Table 12. Contractors have the flexibility to implement different techniques to those specified providing that performance criteria are met. Any major departures from the VMP or proposed changes to performance criteria must be approved in writing by SCC. Details surrounding the requirement for the change in management, results of the change in management and where required, clear targets related to the change in management needed to achieve the VMP performance criteria will be included within the monitoring reports.

6.3. VMP management after the initial five-year period (in perpetuity)

A prime goal of the first five-years of management is to substantially decrease existing weed cover and to assist native regeneration within the VMP area. The VMP area will undergo annual monitoring for the life of the approval to ensure the performance criteria continues to be met. If the VMP area is found to not meet performance criteria during inspections at this interval, monitoring will be required to be done more regularly, and this will be considered additional works. Inspections will be done in accordance with Section 7 of this VMP. Areas that do not conform will require further rehabilitation. Inspections will be conducted at least every three years in perpetuity by SCC following the lifespan of this VMP to ensure the VMP area continues to meet the performance criteria standards.

Table 10: Implementation schedule - Years 1-5

Task	Establishment works	Year 1				Year 2				Year 3				Year 4				Year 5			
		Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
Preliminary works																					
Install construction and sediment fencing	Construction and landscape contractor																				
Install temporary/permanent fencing or other access controls	Construction and landscape contractor																				
Install information signage	Construction and landscape contractor																				
Soil and water management	Construction and landscape contractor																				
Revegetation																					
Seed collection, cleaning, storage							Vegetation management contractor	Vegetation management contractor			Vegetation management contractor	Vegetation management contractor			Vegetation management contractor	Vegetation management contractor					
Site preparation							Vegetation management contractor	Vegetation management contractor			Vegetation management contractor	Vegetation management contractor			Vegetation management contractor	Vegetation management contractor					
Brush matting, supply and install							Vegetation management contractor	Vegetation management contractor			Vegetation management contractor	Vegetation management contractor			Vegetation management contractor	Vegetation management contractor					
Weed control																					
Primary		Vegetation management contractor	Vegetation management contractor	Vegetation management contractor	Vegetation management contractor																
Secondary					Vegetation management contractor	Vegetation management contractor	Vegetation management contractor	Vegetation management contractor	Vegetation management contractor												
Maintenance										Vegetation management contractor	Vegetation management contractor	Vegetation management contractor	Vegetation management contractor	Vegetation management contractor	Vegetation management contractor	Vegetation management contractor	Vegetation management contractor	Vegetation management contractor	Vegetation management contractor	Vegetation management contractor	Vegetation management contractor
Other works																					
Monitoring and reporting					Vegetation management contractor				Vegetation management contractor				Vegetation management contractor				Vegetation management contractor				Vegetation management contractor
Pest control		Construction and landscape contractor	Construction and landscape contractor	Construction and landscape contractor	Construction and landscape contractor	Construction and landscape contractor	Construction and landscape contractor	Construction and landscape contractor	Construction and landscape contractor	Construction and landscape contractor	Construction and landscape contractor	Construction and landscape contractor	Construction and landscape contractor	Construction and landscape contractor	Construction and landscape contractor	Construction and landscape contractor	Construction and landscape contractor	Construction and landscape contractor	Construction and landscape contractor	Construction and landscape contractor	Construction and landscape contractor
Key		Construction and landscape contractor																			
		Vegetation management contractor																			

Table 11: Implementation schedule - Years 6-10

Task	Year 6				Year 7				Year 8				Year 9				Year 10			
	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
Weed control																				
Primary																				
Secondary																				
Maintenance																				
Revegetation																				
Replacement brushmatting (if needed)																				
Other works																				
Monitoring and reporting																				
Pest control																				
Key	<div style="display: flex; justify-content: space-between; align-items: center;"> <div style="width: 15%;">Key</div> <div style="width: 85%;"> <div style="background-color: #FFD700; padding: 2px; margin-bottom: 2px;">Construction and landscape contractor</div> <div style="background-color: #90EE90; padding: 2px;">Vegetation management contractor</div> </div> </div>																			

7. Monitoring and reporting

Bush regeneration contractors and/or the land manager are to monitor VMP vegetation for changes over time. Monitoring is expected to assist in highlighting the effectiveness of vegetation management in achieving desired outcomes and help to identify works that have or have not been successful, and reasons for those outcomes. It is expected to also identify any non-conformance and provide the land manager with the knowledge to implement corrective actions. Information gained from monitoring can be used to form adaptive management decisions, inform future priorities, and work plans. Monitoring and reporting will also assist in determining and quantifying weed management related costs and their cost effectiveness.

Monitoring assessments will combine photo monitoring and vegetation surveys. These must be implemented prior to works commencing to establish benchmarks for performance and then occur on an annual basis until project completion.

7.1.1. Photo monitoring

Photo monitoring points must be established during baseline monitoring using permanent reference points to provide visual references of vegetation change over time. Photo monitoring are to include:

- A minimum two photo monitoring points per Management Zone for all three VMP areas for a total of 12 photo monitoring points
- Photo points marked with six-foot star picket
- Photo point location and bearing mapped
- Digital photo taken of each photo point showing whole length of the star picket as visible in the photo to act as a reference point, and
- Digital photos stored securely and organised logically with each image labelled with unique reference number indicating photo point location, photo direction and photo date.

7.1.2. Vegetation surveys

Quadrats (10 x 10 m) must be established during baseline monitoring within the VMP area to quantify vegetation change through time. A minimum of two quadrats per VMP Management Zone are expected to be established, for a total of 12, at photo point locations. Quadrat data will form the baseline for monitoring change against the performance criteria for the life of the VMP approval. Plot measures will include species richness of all strata including weed species and projected foliage cover for all species. If alternate spatial configurations are required to achieve the 100 m², this is to be noted in monitoring records.

7.2. Progress reports

Monitoring reports demonstrating progress towards VMP objectives must be provided to SCC and include a baseline report before the start of works and then on an annual basis for the lifetime of the approval and then every three years thereafter in perpetuity.

Sealark will be responsible for monitoring and meeting the VMP objectives until the handover of the VMP area to SCC. Following the handover of the VMP area, SCC will be responsible for monitoring of the VMP area and meeting the VMP objectives.

Reporting is to include information on the implementation of specified monitoring actions and a description of the management works undertaken. Reports will include (at a minimum):

- Reporting period
- Contractor details (e.g., qualifications/experience)
- Details surrounding the sourcing of the materials used during brush matting (e.g., sourcing range, species identity, seed/plant quantities)
- Works implemented summary, including
 - Date of site visits
 - Works conducted
 - Details of total person hours per task carried out (e.g., weed control, planting, seeding)
 - Details of weed control approaches (e.g., method, herbicide type, rate)
 - Details of restoration actions (e.g., brush matting, tubestock planting, seeding, planting number, planting area)
 - Details of assisted regeneration methods (e.g., installation of logs/woody debris/litter, biomass removal, habitat features)
- Photo point images and comments
- Quadrat monitoring results (e.g., diversity (native), cover (native/exotic), abundance (native/exotic))
- Issues/problems encountered and if/how these have been resolved
- Evidence of vertebrate pest species activity in the VMP area
- General observations (e.g., new plant species recorded (native and weed species), comments on rates of regeneration, details regarding rare or threatened entities found on site, faunal observations and interactions, social implications including community interactions (interest or complaints), rubbish dumping, trail bike activity, dog walking or other movement within site, breaches/damage to fences or vegetation)
- Progress towards performance criteria and any corrective actions required
- Summary comments on site attributes and progress to-date.
- If adaptive management is required including
 - details surrounding why a change in management was needed,
 - results of the change in management
 - and where required, clear targets related to the change in management needed to achieve the VMP performance criteria.

7.3. Performance criteria

VMP performance criteria are detailed in Table 12 and Table 13. Failure to meet performance criteria would require the maintenance period to be extended until these are achieved. Maintenance activities must continue until SCC is satisfied all VMP objectives and performance criteria have been met (Table 12 and Table 13), and until the maintenance period has concluded or until Council acceptance, whichever is later. The author of this VMP, the appointed Environmental Representative (ER) as per SSD conditions A19 and A20 of SSD 3846 shown below, or an equally qualified and experienced person must prepare a statement certifying the compliance of the performance criteria at the end of the controlled action's period for which the approval has effect.

Condition A19. The Applicant must appoint an Environmental Representative (ER) for the Concept Proposal to oversee the implementation of the conditions of this consent. The ER must be a suitably qualified and experienced person who was not involved in the preparation of the EIS, is independent from the design and construction personnel for the Concept Proposal and whose appointment has been approved by the Planning Secretary.

Condition A20. The ER must for the duration of construction works associated with approved stages of the Concept Proposal:

- a. receive and respond to communication from the Planning Secretary in relation to the environmental performance of the development;*
- b. consider and inform the Planning Secretary on matters specified in the terms of this consent;*
- c. consider and recommend to the Applicant any improvements that may be made to work practices to avoid or minimise adverse impact to the environment and to the community;*
- d. review documents required to be submitted under this consent and any other documents that are identified by the Planning Secretary, to ensure they are consistent with requirements in or under this consent and if so:

 - i. make a written statement to this effect before submission of such documents to the Planning Secretary (if those documents are required to be approved by the Planning Secretary); or*
 - ii. make a written statement to this effect before the implementation of such documents (if those documents are required to be submitted to the Planning Secretary/Department for information or are not required to be submitted to the Planning Secretary/Department);**
- e. regularly monitor the implementation of the documents required under this consent to ensure implementation is being carried out in accordance with the document and the terms of this consent;*
- f. as may be requested by the Planning Secretary, help plan, attend or undertake audits of the development commissioned by the Department including scoping audits, programming audits, briefings and site visits;*
- g. as may be requested by the Planning Secretary, assist the Department in the resolution of community complaints; and*
- h. prepare and submit to the Planning Secretary and other relevant regulatory agencies regular reports providing the information set out in the ER Protocol under the heading "Environmental Representative Monthly Reports". The reporting frequency and timeframe must be agreed with the Planning Secretary, prior to the commencement of any works associated with approved stages of the Concept Proposal.*

The approval holder, in consultation with the project manager and/or the bush regeneration contractor, and SCC, can adapt criteria in response to the success of rehabilitation works within the Minister of Climate Change and Energy's approval. The conditions in which the approval holder is not required to apply for approval is as EPBC 2023/09524:

Condition 11: The approval holder may choose to revise the plans required to be implemented under condition 5 without submitting them for approval under section 143A of the EPBC Act, if:

- *the taking of the Action in accordance with the revised plan would be consistent with the approved Action,*
- *the taking of the Action in accordance with the revised plan would be consistent with the conditions attached to this approval,*
- *the taking of the Action in accordance with the revised plan would not be likely to have a new or increased impact, and*
- *the approval holder notifies the department electronically that it has prepared a revised version of the plan (the 'revised plan'). In notifying the department, the approval holder must specify each condition which references the plan and provide the department with:*
 - *an electronic copy of the revised plan,*
 - *an electronic copy of the revised plan marked up with track changes to show the differences between the plan and the revised plan,*
 - *a comprehensive explanation of all differences between the plan and the revised plan,*
 - *a declaration that the approval holder has read and understands the Guidance on 'new or increased impact' relating to changes to approved management plans under EPBC Act environmental approvals, Commonwealth of Australia 2017,*
 - *a comprehensive analysis and detailed discussion on the likelihood that taking the Action in accordance with the revised plan will not have, or will be not likely to have, a new or increased impact,*
 - *written notice of the date on which the approval holder will implement the revised plan (the 'revised plan implementation date'), being at least 30 business days after the date of providing notice of the revision of the plan, or a date agreed to in writing with the department, and*
 - *a copy of the compliance report for the latest Annual Compliance Report period (ACR period) and a statement of any relevant history of compliance (including non-compliance) in relation to the plan.*
 - *The approval holder must commence implementation of the revised plan from the revised plan implementation date unless otherwise notified in writing by the Minister.*

In addition, the following performance criteria must be met in perpetuity:

- For the whole VMP area, < 5 % overall weed cover
- No dumped garden waste within the VMP area
- No bare areas > 5 m² or erosion from exposed surface
- Species richness and cover goals continue to achieve performance criteria for vegetation communities present on site as presented in Table 13.

Table 12: Performance criteria Year 1-5

Management Zones	Year 1	Year 2	Year 3	Year 4	Year 5
All Zones	<p>Commencement of all tasks outlined in the VMP or evidence of planning for their implementation</p> <p>Preliminary construction works: Tasks to be undertaken as per the Construction Environmental Management Plan (ELA 2026).</p> <p>Vegetation management works: Revegetation undertaken as specified in Table 10 and as needed to achieve the native cover performance criteria below by the end of Year 5. Revegetation, where required, to be undertaken with >75% of the species diversity for each stratum of each PCT as shown in Table 14. 75% survival of revegetation or equivalent regeneration by the end of Year 5 Treatment of any new weed infestations and no woody weeds present which are producing seeds No erosion or sedimentation beyond the boundary of the development lot. No bare areas > 5 m² or erosion from exposed surface. Monitoring and reporting undertaken in accordance with Section 7.</p>				
All Zones	Treat 100% of priority weeds Treat 80% of other weeds	<15% cover by priority weeds < 20% cover by all weeds	<10% cover by priority weeds <15% cover by all weeds	<5% cover by priority weeds <10% cover by all weeds	<2% cover by priority weeds <5% cover by all weeds
Zone 1	Native vegetation ground cover >10%.	Native vegetation ground cover >20%	Native vegetation ground cover >40%	Native vegetation ground cover >60%	Native vegetation ground cover >80%. Species diversity >40% for each strata of each PCT as shown in Table 14.
Zone 2	Native vegetation cover >40% of the relevant PCT cover targets detailed in Table 14. Maintain or enhance native species diversity in all strata.	Native vegetation cover >60% of the relevant PCT cover targets detailed in Table 14. Maintain or enhance native species diversity in all strata.	Native vegetation cover >80% of the relevant PCT cover targets detailed in Table 14. Maintain or enhance native species diversity in all strata.	Native vegetation cover >90% of the relevant PCT cover targets detailed in Table 14. Maintain or enhance native species diversity in all strata.	Native vegetation cover >100% of the relevant PCT cover targets detailed in Table 14. Maintain or enhance native species diversity in all strata.

Table 13: Performance criteria Year 6-10

Management Zones	Years 6-10 (performance criteria must be met at the end of each year unless otherwise stated)
All Zones	<p>Commencement of all tasks outlined in the VMP or evidence of planning for their implementation</p> <p>Construction works: Tasks to be undertaken as per the Construction Environmental Management Plan (ELA 2026).</p> <p>Vegetation management works: Revegetation undertaken as specified in Table 11 and as needed to achieve the native cover performance criteria below by the end of Year 10 Revegetation, where required, to be undertaken with 60% of the species diversity for each stratum of each PCT as shown in Table 14 75% survival of revegetation or equivalent regeneration by the end of Year 10 Treatment of any new weed infestations and no woody weeds present which are producing seeds No erosion or sedimentation beyond the boundary of the development lot. No bare areas > 5 m² or erosion from exposed surface. Monitoring and reporting undertaken in accordance with Section 7.</p>
All Zones	<p><2% cover by priority weeds <5% cover by all weeds Maintain or enhance native species diversity in all strata</p>
Zone 1	<p>Native vegetation groundcover equal to or >90% of the relevant PCT cover targets detailed in Table 14. On track to meet >60% of the relevant PCT cover targets for shrubs and canopy detailed in Table 14 by the end of Year 10.</p>
Zone 2	<p>Native vegetation for all strata equal to or >100% of the relevant PCT cover targets detailed in Table 14.</p>

Table 14: Benchmark conditions for vegetation communities within the VMP area

PCT - ID	PCT – Common name (community) (BioNet 2017)	Species Richness			Cover* (%)		
		Canopy	Shrub	Groundcover#	Canopy	Shrub	Groundcover#
PCT 3273	South Coast Lowland Shrub-Grass Forest	6	15	20	43	35	37
PCT 4019	Coastal Alluvial Bangalay Forest	3	10	18	13	25	80
PCT 4051	South Coast Lowland Gum-Swamp Oak Forest	3	10	18	13	25	80
PCT 4102/4094/4040	Saltmarsh communities	1	3	6	0	6	26
PCT 4091	Grey Mangrove-River Mangrove Forest	2	2	4	38	5	0

* Based on monthly average following average rainfall year. # Includes grasses, forbs and ferns

7.4. Risk assessment and corrective actions

The main risks identified for this VMP area:

- Failure to improve and maintain the condition of the vegetation within the VMP
- Failure to meet the performance criteria included within this VMP, including performance criteria regarding benchmark conditions

The VMP includes weed control management throughout the life of the VMP. This will include a focussed primary and secondary control of woody weeds, exotic grasses, and groundcovers in the first two years. There is a **medium** chance that the weed species within the VMP area will outcompete plantings and natural regeneration occurring, however with proper implementation of the VMP, this risk can be easily managed. Though there are areas of weed incursion within the Zone 1 locations, the chances of weed invasion affecting the success of the VMP is considered **low** due to the large portions and good condition of the Zone 2 locations within the VMP area.

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 15).

Table 15: Risk assessment

Commitment	Objective	Potential Risk	Likelihood	Consequence	Risk level	Trigger	Management strategy (remedial actions)	Related monitoring
Ensure the implementation of the VMP improves and maintains the condition of the vegetation within the VMP area (i.e. performance criteria are met prior to SCC taking ownership of the VMP area).	Improve and maintain the condition of the native vegetation within the 14.9 ha of the VMP area via natural regeneration and revegetation to meet the VMP performance criteria.	Weeds outcompete native regeneration and revegetation	Unlikely	Moderate	Low	Weed cover is higher than the weed cover levels for each year and zone described in Table 12 recorded during monitoring visits	Increase weed control measures and management visits until weeds are under the required level	Monitoring outlined in Section 7
		Low success rate of brush matting efforts due to	Possible	Minor	Low	Native cover, including comparison against	Reassess the need for additional brush	Monitoring outlined in Section 7

Commitment	Objective	Potential Risk	Likelihood	Consequence	Risk level	Trigger	Management strategy (remedial actions)	Related monitoring
		environmental factors				benchmarks, is lower than prescribed levels for each year and zone described in Table 12 recorded during monitoring visits	matting efforts Wait until favourable conditions if additional brush matting takes place Use additional strategies such as providing additional protection to brush matting efforts, or brush matting using more resilient species to aid in success Undertake other revegetation methods	

Commitment	Objective	Potential Risk	Likelihood	Consequence	Risk level	Trigger	Management strategy (remedial actions)	Related monitoring
							(e.g. tubestock, direct seeding, etc) if needed	
		Damage to areas from public interactions	Unlikely	Minor	Low	Noted human impact to vegetation during monitoring visit, including tyre tracks, dumped rubbish, litter, campfires	Construct or repair permanent exclusion fence around VMP area Include signage to encourage the public to decrease their impact on the environment	Monitoring outlined in Section 7
Ensure the performance criteria included in this VMP are met.	At the end of the initial five-year VMP timeline and until the period for which the approval has effect to ensure that weed cover is sufficiently low and native cover sufficiently high to ensure the sustainability of the appropriate vegetation community.	Weed presence does not decrease to acceptable levels across the life of the VMP period	Possible	Moderate	Medium	Weed cover is higher than the weed cover levels for each year and zone described in Table 12 recorded during	Increase weed control measures and visits until weeds are under the required level Mulch targeted	Monitoring outlined in Section 7

Commitment	Objective	Potential Risk	Likelihood	Consequence	Risk level	Trigger	Management strategy (remedial actions)	Related monitoring
						monitoring visits	areas for weed suppression	
		Native vegetation does not regenerate or revegetation does not survive sufficiently to achieve the required levels across the life of the VMP period	Possible	Moderate	Medium	Native cover, including comparison against benchmarks, is lower than prescribed levels for each year and zone described in Table 12 recorded during monitoring visits	Reassess if there is a need for additional brush matting, and if so, carry out additional brush matting during favourable conditions Use native species that have a higher likelihood of competing with weed species Undertake other revegetation methods	Monitoring outlined in Section 7

Commitment	Objective	Potential Risk	Likelihood	Consequence	Risk level	Trigger	Management strategy (remedial actions)	Related monitoring
							(e.g. tubestock, direct seeding, etc) if needed	
		New weed outbreaks	Likely	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 7

8. Costs

The implementation cost of this VMP over the first five years is approximately **\$500,000** (exclusive of GST and CPI). The implementation costs of this VMP after the first five years, for the remaining lifetime of the approval, is approximately **\$200,000** (exclusive of GST and CPI). An indicative annual costing timeline is provided in Table 16 and Table 17). Costs are based on typical commercial rates. Assumptions regarding the estimation of costs have been outlined below.

Costs are indicative of the current site condition and what is estimated to be required to meet performance criteria at the time this VMP was written. Requirement for additional treatments and therefore costs for treatments such as weed control and revegetation will be adjusted where required, if performance criteria is found to not be met within monitoring reports.

8.1. Construction and site preparation works

Construction activities associated with site preparation are identified in Table 12 and these items have not been included in Table 16.

8.2. Vegetation management works

8.2.1. Weed control

Bush regenerators will implement weed controls identified in this VMP. These works have been estimated to cost **\$2,900** for a team of four, including a supervisor, per day. The cost of bush regeneration works also includes the use of herbicide, vehicles, and equipment required to implement the VMP.

8.2.2. Direct seeding treatments

Bush regenerators will implement revegetation via direct seeding actions such as brush matting to achieve the revegetation outcomes identified in this VMP. Costs for revegetation treatments via direct seeding have been estimated based on assumptions regarding natural resilience once weed control is commenced. Prior to any projected revegetation treatments, the requirements for revegetation via direct seeding is to be assessed to ensure that works are sufficient to achieve the performance criteria. If additional revegetation events or revegetation approaches are required such as tubestock or other forms of direct seeding works, this would be an additional cost.

It is assumed that mulch of appropriate native species will be installed in the Zone 1 management areas as needed and under supervision of a suitably qualified and experienced Restoration Ecologist. Because the exact quantity of material is unknown this has not been costed in the VMP but is assumed to be undertaken by the developer or their nominated contractor.

8.2.3. Monitoring and reporting

An allowance for monitoring and reporting actions as identified for this VMP including for:

- Initial setup of the photo points and conducting the baseline surveys
- Preparation and delivery of yearly reports for the lifetime of the approval.

8.2.4. Permanent fencing and access controls

The cost for fencing and access points includes supply and install excluding GST. Access points are to consist of standard farm gates. Fences will consist of the following:

- Star picket posts connected via four (4) plain wire strands.
- Corner and strainer posts inclusive of stays and fittings.
- Posts will be concreted into position as required.

Permanent fencing will be implemented along the boundary of the VMP areas that are accessible to the public or border other infrastructure and access roads. All permanent fencing structures and access controls are to be implemented by the civil construction company.

Table 16: Indicative VMP program costing for Years 1-5

Treatment	Year 1	Year 2	Year 3	Year 4	Year 5	Total
Supply and install permanent fencing and access controls	\$ 55,779	\$ -	\$ -	\$ -	\$ -	\$ 55,779
Revegetation						
Seed collection, cleaning, storage	\$ -	\$ 2,647	\$ 1,765	\$ 882	\$ -	\$ 5,294
Site Preparation	\$ -	\$ 3,284	\$ 2,189	\$ 1,095	\$ -	\$ 6,568
Brush matting, supply and install	\$ -	\$ 17,514	\$ 11,676	\$ 5,838	\$ -	\$ 35,027
Weed control						
Primary - Year 1	\$ 109,182	\$ -	\$ -	\$ -	\$ -	\$ 109,182
Secondary - Year 2	\$ -	\$ 83,398	\$ 16,680	\$ -	\$ -	\$ 100,078
Maintenance - Year 3 - 5	\$ -	\$ -	\$ 45,847	\$ 40,116	\$ 28,654	\$ 114,617
Associated costs						
Disbursements	\$ 10,918	\$ 8,340	\$ 6,253	\$ 4,012	\$ 2,865	\$ 32,388
Monitoring & Reporting	\$ 12,728	\$ 6,364	\$ 6,364	\$ 6,364	\$ 6,364	\$ 38,183
Totals	\$ 188,607	\$ 121,546	\$ 90,773	\$ 58,306	\$ 37,884	\$ 497,116

Table 17: Indicative VMP program costing for Years 6-10

Treatment	Year 6	Year 7	Year 8	Year 9	Year 10	Total (6-10)
Weed Control						
Maintenance	\$ 28,654	\$ 28,654	\$ 28,654	\$ 28,654	\$ 28,654	\$ 143,272
Revegetation						
Replacement brush matting, if required	\$ -	\$ -	\$ 8,596	\$ -	\$ -	\$ 8,596
Associated Costs						
Disbursements	\$ 2,865	\$ 2,865	\$ 2,865	\$ 2,865	\$ 2,865	\$ 14,327
Monitoring & Reporting	\$ 6,364	\$ 6,364	\$ 6,364	\$ 6,364	\$ 6,364	\$ 31,819
Totals	\$ 37,884	\$ 37,884	\$ 46,480	\$ 37,884	\$ 37,884	\$ 198,014

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Appendix A Weeds recorded at study site

Botanical Name	Common Name
<i>Acetosella vulgaris</i>	Sorrel
<i>Anagallis arvensis</i>	Scarlet Pimpernel
<i>Andropogon virginicus</i>	Whiskey Grass
<i>Anthoxanthum odoratum</i>	Sweet Vernal Grass
<i>Arrhenatherum elatius</i>	Oat Grass
<i>Asparagus aethiopicus</i>	Asparagus Fern
<i>Axonopus fissifolius</i>	Narrow-leaved Carpet Grass
<i>Briza subaristata</i>	Quaking Grass
<i>Cenchrus clandestinus</i>	Kikuyu Grass
<i>Centaurium erythraea</i>	Common Centaury
<i>Chrysanthemoides monilifera subsp. rotundata</i>	Bitou Bush
<i>Conyza bonariensis</i>	Flax-leaf Fleabane
<i>Cynodon dactylon</i>	Couch
<i>Cyperus eragrostis</i>	Tall Nutgrass
<i>Ehrharta erecta</i>	Panic Veldtgrass
<i>Eragrostis mexicana</i>	Mexican Lovegrass
<i>Holcus lanatus</i>	Panic Veldtgrass
<i>Hypochaeris radicata</i>	Yorkshire Fog
<i>Juncus cognatus</i>	Rush
<i>Lantana camara</i>	Lantana
<i>Medicago sp.</i>	Burr Medic
<i>Paspalum dilatatum</i>	Paspalum
<i>Passiflora edulis</i>	Common Passionfruit
<i>Pavonia hastata</i>	Pink Pavonia
<i>Plantago lanceolata</i>	Lamb's Tongue
<i>Romulea rosea</i>	Onion Grass
<i>Senecio madagascariensis</i>	Fireweed
<i>Senna pendula</i>	Senna
<i>Senna septemtrionalis</i>	Winter Senna
<i>Setaria parviflora</i>	Bristlegrass
<i>Sida rhombifolia</i>	Paddy's Lucerne
<i>Sisyrinchium macranthum</i>	Blue Pigroot

Botanical Name	Common Name
<i>Sporobolus africanus</i>	Parramatta Grass
<i>Sporobolus fertilis</i>	Giant Paramatta Grass
<i>Taraxacum officinale</i>	Dandelion
<i>Trifolium repens</i>	White Clover

Appendix B Native species at study site

Botanical Name	Common Name
<i>Acacia binervata</i>	Two-Veined Hickory
<i>Acacia suaveolens</i>	Sweet Wattle
<i>Acacia ulicifolia</i>	Prickly Moses
<i>Acianthus fornicatus</i>	Pixie Caps
<i>Acmena smithii</i>	Lilly Pilly
<i>Acronychia oblongifolia</i>	White Aspen, Yellow Wood
<i>Adiantum aethiopicum</i>	Common Maidenhair
<i>Allocasuarina littoralis</i>	Black She-Oak
<i>Amyema congener subsp. congener</i>	Variable Mistletoe
<i>Amyema pendula</i>	Drooping Mistletoe
<i>Angophora floribunda</i>	Rough-Barked Apple
<i>Anisopogon avenaceus</i>	Oat Spear Grass
<i>Aristida vagans</i>	Three-Awn Spear Grass
<i>Arthropodium milleflorum</i>	Pale Vanilla-Lily
<i>Austrostipa rudis</i>	Veined Spear-Grass
<i>Austrostipa rudis subsp. australis</i>	Veined Spear-Grass
<i>Avicennia marina</i>	Grey Mangrove
<i>Banksia spinulosa</i>	Hairpin Banksia
<i>Baumea acuta</i>	Pale Twig-Rush
<i>Baumea juncea</i>	Bare Twig-Rush
<i>Baumea rubiginosa</i>	Soft Twig-Rush
<i>Billardiera scandens</i>	Hairy Apple Berry
<i>Boronia polygalifolia</i>	Dwarf Boronia
<i>Bossiaea prostrata</i>	Creeping Bossiaea
<i>Breynia oblongifolia</i>	Coffee Bush
<i>Brunoniella pumilio</i>	Dwarf Blue Trumpet
<i>Burchardia umbellata</i>	Milkmaids
<i>Caesia parviflora</i>	Pale Grass-Lily
<i>Callistemon linearis</i>	Narrow-Leaved Bottlebrush
<i>Calochlaena dubia</i>	Rainbow Fern
<i>Carex inversa</i>	Knob Sedge
<i>Carex longibrachiata</i>	Drooping Sedge

Botanical Name	Common Name
<i>Cassytha glabella</i>	Slender Devil's Twine
<i>Casuarina glauca</i>	Swamp Oak
<i>Centella asiatica</i>	Indian Pennwort
<i>Centella cordifolia</i>	Swamp Pennywort
<i>Clematis aristata</i>	Old Man's Beard
<i>Clematis glycinoides</i>	Headache Vine
<i>Comesperma sphaerocarpum</i>	Broom Milkwort
<i>Commelina cyanea</i>	Scurvy Weed
<i>Corymbia gummifera</i>	Red Bloodwood
<i>Cryptostylis erecta</i>	Hooded Orchid
<i>Cryptostylis subulata</i>	Large Tongue Orchid
<i>Cymbopogon refractus</i>	Barbed Wire Grass
<i>Cynodon dactylon</i>	Couch
<i>Cyperus polystachyos</i>	Bunchy Sedge
<i>Desmodium brachypodum</i>	Large Tick-Trefoil
<i>Desmodium rhytidophyllum</i>	Desmodium
<i>Desmodium varians</i>	Slender Tick-trefoil
<i>Deyeuxia quadriseta</i>	Reed Bent Grass
<i>Dianella caerulea</i>	Blue Flax-Lily
<i>Dichelachne inaequiglumis</i>	Plume Grass
<i>Dichelachne sp</i>	Plume Grass
<i>Dichondra repens</i>	Kidney Weed
<i>Digitaria parviflora</i>	Small-Flowered Finger Grass
<i>Drosera spatulata</i>	Spoon Leaved Sundew
<i>Echinopogon caespitosus</i>	Bushy Hedgehog-Grass
<i>Echinopogon ovatus</i>	Rough-Bearded Grass
<i>Elaeocarpus reticulatus</i>	Blueberry Ash
<i>Empodisma minus</i>	Spreading Rope-Rush
<i>Entolasia marginata</i>	Bordered Panic
<i>Entolasia stricta</i>	Wiry Panic
<i>Eragrostis brownii</i>	Brown's Lovegrass
<i>Eragrostis leptostachya</i>	Paddock Lovegrass
<i>Eucalyptus botryoides</i>	Bangalay
<i>Eucalyptus globoidea</i>	White Stringybark

Botanical Name	Common Name
<i>Eucalyptus longifolia</i>	Woollybutt
<i>Eucalyptus paniculata</i>	Grey Ironbark
<i>Eucalyptus pilularis</i>	Blackbutt
<i>Eucalyptus punctata</i>	Grey Gum
<i>Eucalyptus robusta</i>	Swamp Mahogany
<i>Eucalyptus sclerophylla</i>	Hard-Leaved Scribbly Gum
<i>Euchiton sphaericus</i>	Star Cudweed
<i>Eustrephus latifolius</i>	Wombat Berry
<i>Exocarpos cupressiformis</i>	Native Cherry
<i>Fimbristylis dichotoma</i>	Forked Fimbry
<i>Gahnia aspera</i>	Saw-Sedge
<i>Gahnia clarkei</i>	Tall Saw-Sedge
<i>Gahnia radula</i>	Thatch Saw-Sedge
<i>Galium leiocarpum</i>	Maori Bedstraw
<i>Geitonoplesium cymosum</i>	Scrambling Lily
<i>Glochidion ferdinandi</i>	Cheese Tree
<i>Glyceria sp.</i>	Sweet Grass
<i>Glycine clandestina</i>	Twining Glycine
<i>Glycine tabacina</i>	Variable Glycine
<i>Gonocarpus micranthus</i>	Creeping Raspwort
<i>Gonocarpus tetragynus</i>	Common Raspwort
<i>Gonocarpus teucrioides</i>	Raspwort
<i>Goodenia paniculata</i>	Branched Goodenia
<i>Hardenbergia violacea</i>	Purple Coral Pea
<i>Hemarthria uncinata</i>	Mat Grass
<i>Hibbertia aspera</i>	Rough Guinea Flower
<i>Hibbertia empetrifolia</i>	Trailing Guinea Flower
<i>Hibbertia empetrifolia subsp. empetrifolia</i>	Trailing Guinea Flower
<i>Hibbertia scandens</i>	Golden Guinea Flower
<i>Homalanthus populifolius</i>	Bleeding Heart
<i>Hydrocotyle sibthorpioides</i>	Marsh Pennywort
<i>Hydrocotyle tripartita</i>	Pennywort
<i>Hypericum gramineum</i>	Small St John's Wort
<i>Hypoxis hygrometrica</i>	Golden Weather-Grass

Botanical Name	Common Name
<i>Imperata cylindrica</i>	Blady Grass
<i>Juncus kraussii</i>	Sea Rush
<i>Juncus usitatus</i>	Common Rush
<i>Kunzea ambigua</i>	Tick Bush
<i>Lagenophora gracilis</i>	Slender Lagenophora
<i>Lagenophora stipitata</i>	Blue Bottle-Daisy
<i>Lepidosperma filiforme</i>	Common Rapier Sedge
<i>Lepidosperma laterale</i>	Variable Sword Sedge
<i>Lepidosperma neesii</i>	Stiff Rapier Sedge
<i>Lepidosperma urophorum</i>	Rapier Saw Sedge
<i>Leptospermum continentale</i>	Prickly Tea-Tree
<i>Leptospermum juniperinum</i>	Pricky Tea-Tree
<i>Leptospermum polygalifolium</i>	Copper Glow Tea Tree
<i>Leptospermum trinervium</i>	Flaky-barked Tea-Tree
<i>Lepyrodia scariosa</i>	Film Bud Iris
<i>Leucopogon juniperinus</i>	Prickly Beard-Heath
<i>Lindsaea linearis</i>	Screw Fern
<i>Livistona australis</i>	Cabbage Tree Palm
<i>Lobelia anceps</i>	Angled Lobelia
<i>Logania pusilla</i>	Tiny Logania
<i>Lomandra filiformis subsp. coriacea</i>	Wattle Mat-Rush
<i>Lomandra filiformis subsp. filiformis</i>	Wattle Mat-Rush
<i>Lomandra longifolia</i>	Spiny-headed Mat-Rush
<i>Lomandra multiflora subsp. multiflora</i>	Many-flowered Mat-Rush
<i>Lomandra obliqua</i>	Twisted Mat-Rush
<i>Lomatia ilicifolia</i>	Holly Lomatia/Native Holly
<i>Marsdenia rostrata</i>	Milk Vine
<i>Melaleuca decora</i>	White Feather Honey Myrtle
<i>Melaleuca ericifolia</i>	Swamp Paperbark
<i>Melaleuca hypericifolia</i>	Hillock Bush
<i>Melaleuca linariifolia</i>	Narrow-Leaved Paperbark
<i>Melaleuca styphelioides</i>	Prickly Paperbark
<i>Melaleuca thymifolia</i>	Thyme Honey-Myrtle
<i>Microlaena stipoides</i>	Weeping Grass

Botanical Name	Common Name
<i>Morinda jasminoides</i>	Sweet Morinda
<i>Myoporum acuminatum</i>	Boobiolla
<i>Myrsine howittiana</i>	Brush Muttonwood
<i>Myrsine variabilis</i>	Muttonwood
<i>Notelaea longifolia</i>	Large Mock Olive
<i>Notelaea longifolia f. longifolia</i>	Large Mock Olive
<i>Notelaea venosa</i>	Veined Mock-Olive
<i>Olearia viscidula</i>	Wallaby Weed
<i>Opercularia aspera</i>	Coarse Stinkweed
<i>Opercularia diphylla</i>	Stinkweed
<i>Opercularia hispida</i>	Hairy Stinkweed
<i>Oplismenus aemulus</i>	Basket Grass
<i>Oplismenus imbecillis</i>	Creeping Beard Grass
<i>Oxalis exilis</i>	Least Yellow Sorrel
<i>Oxalis perennans</i>	Grassland Wood Sorrel
<i>Pandorea pandorana</i>	Wonga Wonga Vine
<i>Panicum obseptum</i>	White Water Panic
<i>Panicum simile</i>	Two-Colour Panic
<i>Parsonsia straminea</i>	Common Silkpod
<i>Paspalidium distans</i>	Knotty-Butt Paspalidium
<i>Patersonia glabrata</i>	Leafy Purple Flag
<i>Patersonia sericea</i>	Purple Flag
<i>Persoonia linearis</i>	Narrow-Leaved Geebung
<i>Pimelea linifolia</i>	Slender Rice Flower
<i>Pittosporum revolutum</i>	Wild Yellow Jasmine
<i>Pittosporum undulatum</i>	Sweet Pittosporum
<i>Platysace lanceolata</i>	Shrubby Platysace
<i>Poa cheelii</i>	Poa
<i>Poa labillardierei</i>	Tussock Grass
<i>Poa sieberiana</i>	Snow Grass
<i>Polymeria calycina</i>	Bindweed
<i>Poranthera microphylla</i>	Small Poranthera
<i>Pratia purpurascens</i>	Whiteroot
<i>Pseuderanthemum variabile</i>	Paster Flower

Botanical Name	Common Name
<i>Pteridium esculentum</i>	Common Bracken
<i>Pterostylis longifolia</i>	Tall Greenhood
<i>Pterostylis sp.</i>	Greenhood
<i>Ptilothrix deusta</i>	Ptilothrix
<i>Pultenaea linophylla</i>	Halo Bush-Pea
<i>Pultenaea retusa</i>	Notched Bush - Pea
<i>Rubus parvifolius</i>	Native Raspberry
<i>Rytidosperma tenuius</i>	Purplish Wallaby Grass
<i>Santalum obtusifolium</i>	Sandalwood
<i>Schelhammera undulata</i>	Lilac Lily
<i>Schoenus apogon</i>	Common Bog Rush
<i>Schoenus paludosus</i>	Bog Rush
<i>Selaginella uliginosa</i>	Swamp Selaginella
<i>Selliera radicans</i>	Swamp Weed
<i>Smilax glycyphylla</i>	Sweet Sarsaparilla
<i>Solanum stelligerum</i>	Devil's Needles
<i>Sporobolus virginicus</i>	Marine Couch
<i>Stenocarpus salignus</i>	Scrub Beefwood
<i>Stephania japonica</i>	Snake Vine
<i>Syncarpia glomulifera</i>	Turpentine Tree
<i>Tetraria capillaris</i>	Hair Sedge
<i>Themeda triandra</i>	Kangaroo Grass
<i>Thysanotus juncifolius</i>	Fringe Lily
<i>Tricoryne elatior</i>	Yellow Autumn-Lily
<i>Tylophora barbata</i>	Bearded Tylophora
<i>Vernonia cinerea</i>	Little Iron Weed
<i>Veronica plebeia</i>	Trailing Speedwell
<i>Viola banksii</i>	Native Violet
<i>Viola betonicifolia</i>	Showy Violet
<i>Viola hederacea</i>	Ivy-leaved Violet
<i>Xanthorrhoea concava</i>	Grass Tree
<i>Xanthorrhoea resinosum</i>	Grass Tree
<i>Xanthosia tridentata</i>	Rock Xanthosia
<i>Zieria smithii</i>	Sandfly Zieria

Appendix C Techniques descriptions and specifications

WEED CONTROL

Weed control involves a combination of mechanical, physical, and chemical techniques to remove weeds and prevent their regrowth. Weed control will be undertaken across the entire VMP area. A selection of the best suited weed control methods for the site depends on several factors including:

- The species or combination of species being targeted
- The range and density of weeds
- Site characteristics (topography, barriers)
- Resources available (products, time, labour, equipment)
- Weather conditions.

Details of specific control techniques, such as cut and paint, scrape and paint, herbicide spraying, and hand weeding can be found in Brodie (1999). General principles of bush regeneration and techniques to trigger natural regeneration are to be in accordance with the Bradley Method and others described in Buchanan (2000).

WEED CONTROL TECHNIQUES

Annual grasses

When isolated or in low concentrations, annual grasses can be hand removed or spot sprayed. Larger patches can be slashed/brush cut in late spring to early summer, after flowering, but prior to seed set. For many, slashing/brush cutting prior to late spring through to early summer will promote vigorous regrowth and is recommended to only occur with follow-up care. Some annual grasses grow and produce seed at any time of the year dependent on climatic conditions (i.e., high rainfall and warm temperatures). Post-control monitoring is to be undertaken and if re-growth occurs, the same treatment will be reapplied to prevent seed production. Where feasible, individual plants are to be hand removed, bagged and disposed of appropriately offsite.

Perennial grasses

Perennial grasses (e.g., African Love Grass) can be hand removed if occurring as isolated plants or in low density patches (with material bagged and disposed of appropriately offsite). Larger patches can be slashed in spring or summer prior to seed production (depending on the growth cycle of the species) and the regrowth spot-sprayed 2-3 weeks later when it is in active growth and approximately 10 cm in height. Post-control monitoring is to be undertaken and if new seed production occurs, the same treatment will be reapplied as required. It should be noted that slashing on its own does not reduce the presence of perennial grasses and must always be combined with other removal treatments to reduce densities and allow for native regeneration.

Woody weeds

Woody weeds (e.g., African Olive) can be controlled by the cut and paint or drill and fill method using a non-selective herbicide. The most appropriate approach will depend on the size of the individual plant and will be determined by the bush regeneration contractor. It is recommended that primary woody

weed controls avoid the use of techniques that lead to secondary flushes of weed growth. Where feasible, seedlings of woody weeds are to be hand-pulled or spot-sprayed with a non-selective herbicide.

Creepers and climbers

Creeper control varies depending on species identity. Where feasible seedlings are to be hand-pulled, while mature plants can be treated by the stem-scrape method or spot spraying (generally using a non-selective herbicide). The precise approaches used will be determined by the bush regeneration contractor depending on the species, cover extent and reproductive status. All removed vegetative material is to be bagged and taken from site to be appropriately disposed.

Herbaceous weeds

Where feasible, individual herbaceous weeds (e.g., Fireweed) are to be hand-pulled prior to flowering. Where large areas of herbaceous species occur, they are to be chemically sprayed using a non-selective herbicide. Where occurring in high densities, they can be first slashed (e.g., brush cutter) with subsequent regrowth being herbicide sprayed. For tuberous or rhizomatous species (e.g., Bridal Creeper - *Asparagus asparagoides*), herbicides are the most effective control method as targeted spot sprays (taking care to avoid non-target impacts). Physical removal of such species will likely only be effective if all tuberous or rhizomatous material has been excavated and destroyed. Regular monitoring of control methods is required to ensure seed production does not occur. Hand-pulled material has the potential to resprout and grow if deposited on-ground and will be bagged and removed from site for appropriate disposal.

Management of weed waste

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

Herbicide use

While herbicide application forms an important and useful component of integrated weed management approaches. It can often be the most appropriate method for control and eventual eradications of some weed species, but it is recommended that the use of herbicide always be carefully considered and undertaken (i.e., only for the purpose described on the product labels, as per the NSW *Pesticides Act 1999*). Herbicide use must also consider and assess any potential long-term impacts of a product and its application techniques.

Herbicides are recommended to be applied during the plants active growing period to facilitate chemical uptake, while the choice of product is to consider the type of weed, labelled information/directions and regulatory considerations. Where non-selective herbicides are required, glyphosate is the most commonly used chemical type. For glyphosate-based weed treatments near waterways, specially formulated products which minimise impacts to aquatic fauna will be required (e.g., Roundup Biactive®).

Selective herbicides targeting specific plant types (e.g., broad-leaf plants or grasses) are widely available and effective for treating those weed types and are always to be used as per the NSW Weed Control Handbook (DPI 2018). These herbicide types can also be toxic to aquatic life and must be used with care and as per product label directions.

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

REVEGETATION WORKS

Revegetation has the aim of re-establishing the original native PCT/s within the VMP area and reducing any erosion at the site - which can carry greatly increased peak flows due the increased run-off from the hard surfaces created by the associated residential development.

Tubestock (if required)

Planting of forestry tubes for trees and shrub species and Hiko or Viro cells for grasses and other groundcover species are the preferred methods. Planting is to be done using low impact installation approaches such as hand digging or hand augers. Planting holes are to be at least 1.5x the width and 2x the depth of the plants root ball. Fertiliser, water crystals or wetting agents can be added to planting holes as required and per the label specifications to increase plant growth, soil water holding capacity and to reduce watering schedules. Unless there is sufficient rainfall at the time of installation (approximately 10-20mm), early/immediate irrigation of revegetation is essential to ensure plants are properly hydrated and so that soil forms around the root ball to remove large air pockets. Timing of plantings is recommended to always take into consideration prevailing climatic and site conditions (e.g., preliminary site preparation works and erosion/sediment control implementation). A minimum rate of planting attrition of 10% is generally to be expected, even with proactive management, and allowed for in planting numbers.

Tree guards may be required on trees and shrubs to protect plants from weather extremes (frosts and heat), herbivore grazing and herbicide drift (during maintenance works). Bio-degradable tree guards are recommended.

Following installation, temporary irrigation is expected to be required to assist planted vegetation establishment and is expected to be provided for at least 8 weeks following planting. Irrigation rates and frequencies will be determined by prevailing site rainfall and temperature conditions.

Organic mulch is used for weed suppression, erosion control and soil moisture retention. It can be sourced from native vegetation clearance at the development area or commercially. Mulch products is to be comprised of suitably composted material (preferably wood waste), with a particle size of 15 mm to 40 mm, with minimal fines, and suitable air-filled porosity. Mulch is not contain weed material (seeds or buds) or be derived from diseased trees. Mulch is typically installed to a depth of 100 mm.

Jute matting is also used for weed suppression, erosion control and soil moisture retention and is to be comprised of 100% biodegradable jute fibres with a minimum weight of 680 g / m² (approximately 6 mm thickness). Jute is recommended to be pegged with at least 3 x 150 mm pins per m² and each roll overlapped by 100 mm.

Brush matting

Brush matting is an effective and low cost means of mitigating soil erosion and facilitating native regeneration. This technique involves laying woody material including logs, branches, leaves which also contains fruits or other seed structures prior to seed release. This material is typically taken from nearby or locally sourced tree and shrubs. Seed bearing material from native grasses (and forbs), can also be used.

In bushland settings brush matting is most often used in open areas of degradation or disturbance such as on tracks (human or animal), clearings, or scours. The placement of woody or herbaceous materials helps to restrict water flows, trap sediment, and create conditions which are conducive for natural

regeneration. The placement of brush matting is recommended to intercept and restrict surface water flows, thus when on slopes is to be placed across the path of flow.

See Florabank Guidelines (Module 14) for more information on this technique (Gibson-Roy et al. 2020).

BUSH REGENERATION CONTRACTORS

Vegetation management works during the establishment phase will be undertaken by suitably qualified and experienced bush regeneration contractors (i.e., members of Australian Association of Bush Regenerators (AABR) or fulfil the membership criteria). Additionally, regen team leaders are to have, as a minimum, a Certificate III in Conservation & Land Management or equivalent. Vegetation contractors are expected to carry out best practice bush regeneration techniques as described by Buchanan (2009). A flexible approach to site management is recommended since techniques may need to be changed or modified to suit changing conditions. This approach is consistent with adaptive management approaches and allows contractors to develop and build on site knowledge whilst implementing VMP actions. Effective monitoring, assessment and reporting will also assist in VMP planning and action over subsequent years.

HYGIENE PROTOCOLS

To avoid introducing soil pathogens / diseases in particular *Phytophthora cinnamomi* (Root Rot Disease) and Myrtle Rust (*Puccinia nsidii*) onto site a hygiene protocol is expected to be enacted as per the guidelines developed by the Commonwealth of Australia (2015) in their Arrive Clean, Leave Clean guidelines.

For bush regeneration activities all tools and boots are to be washed down and thoroughly cleaned of soil / mud using a solution of water and disinfectants prior to and after undertaking works onsite. Likewise, all machinery is to be thoroughly cleaned of all soil / mud / debris prior to and following working within the VMP area.

Myrtle rust (*Puccinia psidii*) is a fungal disease which infects plants in the Myrtaceae family (DPI 2015 - [Myrtle rust \(nsw.gov.au\)](http://www.nsw.gov.au)) (Figure C1). Myrtle rust was first detected in NSW in 2010 and has since spread to common Australian Myrtaceae species including Eucalyptus, Willow Myrtle, Turpentine, Bottlebrush, Paperbark, Tea Tree and Lilly Pilly in bushland reserves, home gardens, commercial operations, and amenity settings such as parks and street plantings. Bush regeneration contractors are expected to take proper precautions to limit the spread of myrtle rust where there is potential for its transmission to myrtle rust vulnerable species or plant communities at or beyond the VMP area. Preventative measures taken to reduce the risk of myrtle rust being introduced include being familiar with signs of myrtle rust, not moving plants known to be infected with myrtle rust, laundering work clothing, hats and gloves worn during activities in high risk areas before using them in other areas, disinfecting equipment and inspecting purchased tubestock to ensure they are free from myrtle rust (or keep separate from existing plants until disease freedom can be assured or until treated with an appropriate fungicide).



Figure C1. Myrtle rust on paperbark leaf (*Melaleuca quinquenervia*)

Appendix D Wildlife Friendly Fencing brochure (Wildlife Friendly Fencing 2023)

A tale of two fences

In the city

Louise lives in the city near a park and found a glider caught on a barbed wire security fence. She worked with the Council to find a solution. The Council replaced the barbed wire with plain wire and planted more trees near the fence to shorten the gliding distance.



In the country

Geoff, who lives on a rural property with cattle, found a flying-fox caught on his barbed wire fence. The bat had come to feed on a nearby native shrub.

Geoff decided to keep the shrub as it was an important feed tree for various animals. He covered the top two strands of barbed wire near the shrub with polypipe painted white.



What can you do?

- Encourage wildlife friendly fencing in your local area. Talk to neighbours, councils, fencing contractors and suppliers. Familiarise yourself with the information on our website.
- Monitor barbed wire fences in your local area. Report any entangled animals to your local wildlife rescue organisation, found at www.fauna.org.au. Enter it online, search for Entangled Wildlife Australia.

Do not approach a trapped animal as it is likely to stress, struggle and do more damage. Wait for an experienced rescuer who will untangle the animal with minimal further injury. Do not handle flying-foxes.



NATIONAL GRANTS PROGRAM



Tolga Bat Hospital

wildlife friendly fencing



wildlifefriendlyfencing.org

This project received grant funding from WIREs through their annual National Grants Program 2023.

Doing some fencing? Make it wildlife friendly!



wildlifefriendlyfencing

86% of recorded wildlife entanglements occur on the top strand of barbed wire fences



Fences close to water prevent wetland birds from landing and taking off safely.
www.ozcranes.net

Each year thousands of animals face a cruel death entangled on barbed wire fences.

Many nocturnal animals like bats, gliders and owls fail to see the fence or cannot clear the height in windy conditions. Over 75 wildlife species have been recorded as fence victims.

Kangaroos and emus can get hung up on plain wire and mesh fences. If the fence is too high the animals' legs can become caught in a twist of wire.

Low wires and tension droppers may prevent larger animals from squeezing through the fence

Wildlife need to move freely and safely across our landscape unless being purposely excluded for safety reasons.



These kangaroos failed to jump the high fence and were caught by their legs. Blocked by the dropper, they could not scramble through or under the fence.

Designing friendly fences

Stop and think

Do I really need a fence? How will a fence affect the local wildlife? Could a line of native trees do the job?

Avoid barbed wire

Avoid barbed wire as a top strand, especially on fences likely to be hotspots for entanglement of wildlife – on ridge lines, near feed trees, across wildlife corridors, over or near water bodies.

For hotspots:

- go barbless on the top strand to prevent most entanglement
- increase visibility of the fence to help wildlife see it.

Safe-twist barbless wire

Go barbless – work with the same tools and skillset as for barbed, but scratch-free. Barbed wire on the other 3 strands is less likely to entangle wildlife, but consider going barbless on other strands also.



Whites Wires began manufacturing barbless wire in Albury NSW in late 2022. Easier to use than plain wire.



Nettings pliers and clips make this a quick easy job. Best spacing about every 30cms.

Increase visibility

White electric fence tape (preferably 40mm wide), metal tags or split white polypipe are all very effective at improving the visibility of a wire fence. Electrified fences are also friendly unless fitted too close to barbed wire. Animals can be caught and unable to escape the electric shocks.

Friendly fencing in action



Go to our website for details of the range of available white sighter wires. This includes nylon coated, solid nylon and electric wires.



Wise placement of a fence can make a big difference. To avoid the risk of a tangle hotspot on the ridgeline this fence was placed below the ridge.



Split white polypipe cut lengthwise and into 30-40cm lengths increases visibility. Do not use on cattle fences unless secured well with cable ties or the like.



White electric fence tape and metal tags are ideal for security fences where the barbs need to remain. They move in the wind and the tags catch any light at night.

WFF is safe and effective for wildlife, people and livestock.

Appendix E AHIMS sites in the Action area and in proximity to the Action area (AA 2024a)



Figure 4.3 - Identified AHIMS sites in proximity to the study area

22054 - Culburra Road, Culburra Beach NSW - ACHA

Source: NSW LPI Aerial

Drawn by: ARH Date: 2024-06-03



Appendix F Environmental fact sheet



Native Biodiversity

DID YOU KNOW:

That threatened species and vegetation communities have been recorded on or may be near your community lot?

Threatened fauna species which could occur in the area:

Bats

- East-coast Freetail Bat (*Micronomous norfolkensis*)
- Eastern Falsistrelle (*Falsistrellus tasmaniensis*)

Birds

- Powerful Owl (*Ninox strenua*)
- Glossy Black Cockatoo (*Calyptorhynchus lathami*)
- Square-tailed Kite (*Lophoictinia isura*)



Protecting your community lot

Here is what you can do to help!

- ✓ Create an animal friendly garden by planting native plants and installing a frog pond or bird bath.
- ✓ Plant locally occurring native species which will provide food and habitat for birds, mammals and other animals.
- ✓ Control noxious and annual weeds within your property and prevent the spread into adjacent bushland.
- ✓ Keep cats and dogs indoors from one hour prior to sunset to one hour after sunrise.
- ✓ Get involved in protecting the native bushland.

DO NOT

- ⊗ dump garden waste within the bushland
- ⊗ create new tracks in the bushland
- ⊗ clear vegetation
- ⊗ collect firewood from the bushland
- ⊗ remove rocks, plants, animals or soil material from the bushland
- ⊗ feed wildlife, this can make native animals sick and encourage pests or aggressive species like Noisy Miners

Valuing Your Biodiversity Managing your Community Lot

Threatened flora species to keep a lookout for:

- Chorizema (Top)
- Illawarra Zieria ((Middle)
- Curved Rice-flower (Bottom)



Vegetation

Vegetation Communities

There are two vegetation communities within the community lot:

- PCT 1079: Red Bloodwood - Blackbutt - Spotted Gum shrub-by open forest on coastal foothills
- PCT 1231: Swamp Mahogany swamp sclerophyll forest on coastal lowlands
- PCT 659: Bangalay - Old-man Banksia open forest on coastal sands

The following species are common within the community lot and may be suitable for gardens or public areas:

TREES

Red Bloodwood (*Corymbia gummifera*),
 Blackbutt (*Eucalyptus pilularis*),
 Spotted Gum (*Corymbia maculata*)
 Coastal Swamp Oak (*Casuarina glauca*)
 Broad-leaved paperbark (*Melaleuca quinquenervia*)
 Hard-leaved Scribbly Gum (*Eucalyptus sclerophylla*)
 Bangalay (*E. botryoides*)
 Old-man Banksia (*Banksia serrata*),
 Coastal Banksia (*B. integrifolia* subsp. *Integrifolia*)

SHRUBS

Boobialla (*Myoporum* spp.)
 Prickly-leaved Tea Tree (*Melaleuca styphelioides*)
 Black She-Oak (*Allocasuarina littoralis*)
 Narrow-leaved Geebung (*Persoonia linearis*)
 Coffee Bush (*Breynia oblongifolia*)

GROUNDCOVERS

Kangaroo Grass (*Themeda australis*),
 Mat-rush (*L. spp.*)
 Sword-sedge (*Lepidosperma laterale*)
 Sea Rush (*Juncus kraussii*),
 Creeping Brookweed (*Samolus repens*)
 Blady Grass (*Imperata cylindrica* var. *major*),
 Blue Flax-lily (*Dianella caerulea*),
 Braken Fern (*Pteridium esculentum*),

Wildlife

Key habitat features:

Habitat features provide important roosting/breeding or foraging resources of native fauna including threatened species.

The following features been identified within the community lot:

- ⇒ Hollow-bearing trees
- ⇒ Nectar producing plants
- ⇒ Dense native vegetation
- ⇒ Fallen logs
- ⇒ Creek
- ⇒ Leaf litter
- ⇒ Rocky outcrops



More information

A **Community Management Statement** has been prepared that details the Community Association's responsibilities for the community lot in relation to:

- ⇒ Fencing
- ⇒ Signage
- ⇒ Vegetation management
- ⇒ Vegetation monitoring
- ⇒ Weed removal
- ⇒ Other relevant items as per the Vegetation Management Plan (ELA 2023)

For more information about your rights and responsibilities in relation to your community lot, please contact your Community Association's Executive Committee



Disclaimer: This educational package contains images taken on-site (e.g. vegetation community) or from representative images (e.g. flora and fauna).

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