



Englobo Vegetation Management Plan

Doyalson Wyee RSL Club/Proposed Subdivision

Doyalson Wyee RSL Club t/a Doyalson Lifestyle Group

49-65 Wentworth Avenue and
80-110 Pacific Highway
Doyalson NSW 2262

Prepared by:

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Basis of Report

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Acronyms, Abbreviations and Definitions

AABR	Australian Association of Bush Regenerators
Assessment Area	In accordance with the BAM (DPIE, 2020a), the Assessment Area includes the Subject Land and the area of land within the 1500m buffer zone surrounding the Subject Land (or 500m buffer zone for linear proposals) that is determined as per Subsection 3.1.2.
APZ (s)	Asset Protection Zone (s)
BAM	NSW Biodiversity Assessment Method (DPIE, 2020a)
BAM-C	Biodiversity Assessment Method Calculator
BCAR	Biodiversity Certification Assessment Report
BC Act	Biodiversity Conservation Act 2016 (NSW)
BDAR	Biodiversity Development Assessment Report
Biodiversity Corridor (s)	Three Biodiversity Corridors set out by the VPA, including Corridor F which occurs within the Subject Land for the EVMP
BOS	Biodiversity Offsets Scheme
Bush Regeneration	Defined by the AABR as the practice of restoring bushland by focussing on reinstating and reinforcing the systems' ongoing natural regeneration processes.
Council	Central Coast Council
CEEC (s)	Critically Endangered Ecological Community (s)
Construction Footprint	As required by the BAM (DPIE, 2020a), this is defined as the proportion of the Development Footprint, including temporary and ancillary construction facilities. These areas are not yet delineated by the Englobo Subdivision but will be defined and must be accounted for in future planning.
Corridor (s)	Landscape and Biodiversity Corridors set out by the VPA
DA (s)	Development Application (s) prepared pursuant to the EP&A Act
DBH	Diameter at Breast Height
Development Footprint	In accordance with the BAM (DPIE, 2020a), this refers to the area of land directly impacted by the proposed development, including access roads and zones designated for storing construction materials
Easement Dealing	Pipeline Easement Dealing AE445647 (2009)
EC (s)	Ecological Community listed under the EPBC Act
EEC (s)	Endangered Ecological Community (s)
ELMP	Englobo Landscape Management Plan (an in-principle LMP to be updated at each stage of the future development)
Endangered Ecological Community	An ecological community specified in Schedule 2 of the BC Act
Englobo Subdivision	The Proposed Englobo Subdivision DA/1295/2023, being subdivision of the Subject Land (thirteen lots) into 14 lots, including stormwater and sewer, road upgrades at the Pacific Highway entrance and slip lane and Community Title subdivision.
EP&A Act	Environmental Planning and Assessment Act 1979 (NSW)



EPBC Act	Environment Protection and Biodiversity Conservation Act 1999 (Commonwealth)
EVMP	Englobo Vegetation Management Plan (an in-principle VMP to be updated at each stage of the future development)
EWMP	Englobo Wildlife Management Plan (an in-principle WMP to be updated at each stage of the future development)
HBT (s)	Hollow-bearing tree (s)
HCCRPP	Hunter and Central Coast Regional Planning Panel
Hollow-bearing tree	In accordance with the BAM (DPIE, 2020a), this refers to a living or dead tree that has at least one hollow. A tree is considered to contain a hollow if: (a) the entrance can be seen; (b) the entrance width is at least 5cm; (c) the hollow appears to have depth (i.e. solid wood cannot be seen beyond the entrance); and (d) the hollow is at least 1m above the ground. Trees must be examined from all angles.
HTW (s)	High Threat Weed (s)
IBRA	Interim Biogeographic Regionalisation for Australia
IPA (s)	Inner Protection Areas
Landscape Corridor (s)	Four Landscape Corridors set out by the VPA, including three (Landscape Corridors D, E, G) that occur within the Subject Land for the EVMP
LLS Act	Local Land Services Act 2013 (NSW)
LMP (s)	Landscape Management Plan (s)
MNES	Matters of National Environmental Significance
NPW Act	National Parks and Wildlife Act 1974 (NSW)
NSW	New South Wales
Operational Footprint	As required by the NSW BAM (DPIE, 2020a) this is defined as the proportion of the Development Footprint that will remain operational following construction. These areas are not yet defined by the Englobo Subdivision but will be defined and must be applied for future plans.
PCT (s)	Plant Community Type (s)
Proponent	Doyalson Wyee RSL Club Ltd
Regeneration	Where native vegetation can regenerate itself from an intact root zone and seed bank to a natural state, with associated management (e.g. weed control)
Rehabilitation	The vegetation rehabilitation is defined as the return of native vegetation within disturbed areas
Resilience	The ability of an ecosystem to regenerate naturally and to withstand, or recover from, disturbances such as weed invasion, clearing, or fire
Restoration	To restore pre-existing indigenous ecosystems and ecological processes, maintaining and developing the capacity of a natural system to self-perpetuate
RFI (s)	Request for Information (s)
SAIL	Serious and Irreversible Impact
SEARs	Secretary's Environmental Assessment Requirements



SRZ	Structural Root Zone
Subject Land	In accordance with the BAM (DPIE, 2020a), this refers to land subject to a development, activity, clearing, biodiversity certification or a biodiversity stewardship proposal. The Subject Land for the Proposed Englobo Subdivision is 49-65 Wentworth Avenue and 80-110 Pacific Highway, Doyalson NSW 2262 (formally described as Lot 1 DP 215875, Lot 2 DP 215875, Lot 3 DP 215875, Lot 4 DP 215875, Lot 5 DP 215875, Lot 6 DP 215875, Lot 7 DP 215875, Lot 8 DP 215875, Lot 9 DP 215875, Lot 1 DP 503655, Lot 11 DP 240685, Lot 49 DP 707586 and Lot 7 DP 240685).
TBDC	Threatened Biodiversity Data Collection
TEC (s)	Threatened Ecological Community (s)
Threatened Species	A species specified in Schedule 1 of the BC Act
Total Site	The Total Site is the total of all properties subject to the Planning Proposal and VPA, along with a recently acquired property at 118 Pacific Highway. It includes the addresses 49-65 Wentworth Avenue and 80, 90, 100, 110, 118, 120 Pacific Highway, Doyalson NSW 2262, formally described as Lot 1 DP 215875, Lot 2 DP 215875, Lot 3 DP 215875, Lot 4 DP 215875, Lot 5 DP 215875, Lot 6 DP 215875, Lot 7 DP 215875, Lot 8 DP 215875, Lot 9 DP 215875, Lot 1 DP 503655, Lot 11 DP 240685, Lot 49 DP 707586, Lot 7 DP 240685, Lot 62 DP 755266 and Lot 7340 DP1166918.
TPZ	Tree Protection Zone
VEC (s)	Vulnerable Ecological Community (s)
Vegetation SEPP	State Environmental Planning Policy (Vegetation in Non-Rural Areas) 2017 (NSW)
VMP (s)	Vegetation Management Plan (s)
VPA 2022	Voluntary Planning Agreement (Document Identification AS580574)
Weed infestation	An area considered to have a dominating weed population, or where rehabilitation would be significantly impacted by weed species
WMP (s)	Wildlife Management Plan (s)



1.0 Introduction

1.1 Planning Proposal Background

The Total Site covers approximately 49.51 hectares and includes 49-65 Wentworth Avenue and 80-110, 118 and 120 Pacific Highway, Doyalson NSW 2262. The proposed Landscape and Biodiversity Corridors including those identified in the VPA 2022 (the “Corridors”), encompass approximately 11.99 hectares. Consequently, the remaining 37.52 hectares represent the Development Footprint.

As an outcome of a previous five-year planning proposal process for Planning Proposal (PP-2021-4334) (the “Planning Proposal”), a Voluntary Planning Agreement (VPA) - AS580574 (Central Coast Council, 2022a) (hereafter “VPA 2022”) - was established between Central Coast Council (the “Council”) and Doyalson Wyee RSL Club Ltd (the “Proponent”). The purpose of VPA 2022 is to facilitate the progressive development of the Proponent’s property located at 49-65 Wentworth Avenue and 80-110 and 120 Pacific Highway, Doyalson NSW 2262. The VPA 2022 site area excludes 118 Pacific Highway, legally described as Lot 7340 DP1166918, which was acquired in 2023 and now forms part of the Total Site.

The majority part of the Total Site that is subject to Planning Proposal and VPA 2022 is legally described as the following 14 lots: Lots 1-9 DP 215875, Lot 1 DP 503655, Lot 11 DP 240685, Lot 49 DP 707586, Lot 7 DP 240685, and Lot 62 DP 755266. It comprises approximately 44.82 hectares. VPA 2022 proposed Landscape and Biodiversity Corridors (the “VPA 2022 Corridors”) comprise 9.87 hectares and therefore 34.95 hectares represent the Development Footprint.

Over the five-year Planning Proposal period (2018-2022), the VPA 2022 land was subject to biodiversity studies and design reviews to determine potential development footprints, while aiming to avoid and minimise impacts on native vegetation and threatened species habitat. These assessments are detailed in the Biodiversity Development Assessment Report (ELA, 2018) which was submitted with the Planning Proposal. The Planning Proposal identified land suitable for development and ultimately led to an amendment of the *Central Coast Local Environmental Plan 2022*, resulting in the rezoning of the land.

Approved in December 2022, the Planning Proposal re-zoned the majority of the Total Site to support an integrated precinct comprising retail, recreation, community, and residential uses, centred around the Doyalson Wyee RSL Club. VPA 2022 is registered on the current land titles under dealing number AS580574, ensuring the protection of the VPA 2022 Corridors in perpetuity.

As part of the process, which balanced the principle of “avoid and minimises” with bushfire control obligations, the biodiversity corridors were rezoned to Conservation C2 and C3. Offset strategies, including biodiversity credit co-purchase, were incorporated to mitigate vegetation removal within the development footprint.

The east-west landscape corridors were developed in consultation with Council (Dr Chris McLean) to ensure functional wildlife movement pathways. Particular attention was given to maintaining connectivity for key species such as Squirrel Glider and Glossy Black-Cockatoo, facilitating movement between vegetated areas from the western side of the Pacific Highway to Colongra Lake.

For a full summary of the five-year process culminating in VPA 2022, refer to the letter from Eco Logical Australia Pty Ltd (2025a), dated 17 September 2025 ref: 24HUS8504.



1.1.1 VPA 2022 Landscape Corridor Delineations

Section 3, Schedule 2 of VPA 2022 outlines the following requirements for the preparation of Landscape Management Plans (LMPs):

- 1 *The Proponent must prepare one or more Landscape Plans for the following Landscape Corridors generally in accordance with the plan in Annexure B, the following descriptions, and the requirements set out in clauses 3.2 to 3.6:*
 - a) *An irregular shaped landscaped corridor (Corridor C) spanning east-west along the southern border of Lot 62 DP755266 (with minimum width of 16.3m) and connects with Biodiversity corridor B to the north;*
 - b) *a 20m wide linear landscaped corridor (Corridor D) along the alignment of the Gas Pipeline;*
 - c) *an irregular shaped east-west landscaped corridor (Corridor E) with a minimum width of 16m, retention of existing tree canopy, including the tress within the Central Park area; and*
 - d) *a triangular shaped landscaped corridor (Corridor G) with a maximum width of 51m located on the northern portion of Lot 7 DP 240685 adjacent to Corridor F.*
- 2 *A Landscape Plan must depict the locations of the road crossings as shown in indicative locations in the plan in Annexure B where relevant to the subject matter of the plan.*
- 3 *The Landscape Plan for Corridor E must identify a minimum of 31 hollow bearing trees (including their tree protection zones) and the requisite measures for retaining the hollow bearing trees. The parties acknowledge that Council may also impose a condition on any development consent relating to the land on which Corridor E is located to restrict the removal of hollow bearing trees.*
- 4 *Landscape Corridors C, D, E and G are to be managed in accordance with the requirements of 'Managed Land' in Planning for Bushfire Protection 2019.*
- 5 *Landscape Corridors C, D E and G are to comply with requirements for an Inner Protection Area as described in Planning for Bushfire Protection 2019. An Inner Protection Area will require retention and establishment of native canopy trees only in order to avoid a bushfire hazard.*
- 6 *The Landscape Plan for Corridor D shall provide for shallow soil planting. Due to the presence of the Jemena pipeline, deep soil planting cannot be implemented.*

1.1.2 VPA 2022 Biodiversity Corridor Delineations

Section 4, Schedule 2 of VPA 2022 outlines the following requirements for the preparation of Vegetation Management Plans (VMPs).

- 7 *The Proponent must prepare one or more VMPs for each of the Biodiversity Corridors, each of which:*
 - a) *provides for the re-establishment of native vegetation and incorporates the following matters:*
 - i. *description of the proposed vegetation community;*
 - ii. *description of the proposed works;*
 - iii. *identification of VMP management zones;*



- iv. *description of works, management and maintenance activities to be carried out in the zones, including targets for density of native vegetation and weed cover;*
 - v. *details of implementation, monitoring and reporting requirements; and*
 - vi. *an estimate of the costs of carrying out the works and actions required to be carried out or performed in each stage.*
- b) *is generally in accordance with the matters set out in pages 36 to 39 of 'Central Coast Council Flora and Fauna Guidelines 2019'; and*
- c) *provides for an implementation period of no less than 10 years.*

Section 5, Schedule 2 of VPA 2022 outlines the following requirements for the implementation of VMPs:

- 1 *The Proponent must establish Biodiversity Corridors generally in accordance with the plan in Annexure B, the following description, and the requirements of clause 5.6:*
 - a) *a biodiversity corridor (Corridor A) of minimum 40m width along the northern boundary;*
 - b) *a biodiversity corridor (Corridor B) with a maximum width of 57m spanning north-south connecting Corridors A and C;*
 - c) *a north-south biodiversity corridor (Corridor F) along the eastern boundary, ranging between a minimum width of 41m at the southern portion of Lot 11 DP 240685 and a maximum width of 49m at the northern portion of Lot 7 DP 240685. The minimum widths applicable to each lot (from south to north of each lot) are:*
 - i. *41m to 43m for Lot 11 DP 240685 (Corridor F – South);*
 - ii. *43m to 46m for Lot 49 DP 707586 (Corridor F – Central); and*
 - iii. *46m to 49m for Lot 7 DP 240685 (Corridor F – North).*
 - d) *The second order stream associated with Corridor B must comply with the requirements of the Water Management Act 2000.*
- 2 *A separate VMP may be prepared and submitted in respect of Corridor F – South, Corridor F – Central and Corridor – North as described in clause 5.1(c) of Schedule 2.*
- 3 *If the Proponent intends to undertake Development in a staged manner on land immediately adjoining a Biodiversity Corridor, the parties are to negotiate in relation to the timing requirements for preparing a VMP.*
- 4 *Despite clause 5.1, the parties acknowledge that the Proponent will continue to investigate alternative locations to which it may relocate one or more of the Biodiversity Corridors outside of the Land.*
- 5 *If the Proponent identifies suitable alternative location(s) for one or more Biodiversity Corridor, the Proponent may request, and Council must, negotiate in good faith to accept the establishment of the corridors at the alternative locations on adjoining nearby land.*
- 6 *A Biodiversity Corridor must retain existing native vegetation and rehabilitate all vegetation strata (groundcover, mid and canopy) where absent.*



1.1.3 Biodiversity and Landscape Corridors

The VPA 2022 defined seven Corridors, comprising three Biodiversity Corridors and four Landscape Corridors. These Corridors collectively cover 9.87 hectares, representing 19.97 % of the Total Site.

Table 1 provides a summary of the Corridors. The five-year negotiation with Council regarding the Planning Proposal aimed to balance the creation of net developable area within the Total Site with the following environmental considerations:

- Protecting existing high-value vegetation in Biodiversity Corridor F;
- Re-establishing native vegetation in the newly created Biodiversity Corridors A and B;
- Maintaining remnant vegetation in Corridor G; and
- Establishing east-west Landscape Corridors C, D and E to support wildlife habitat connectivity with adjacent Biodiversity Corridors.

Table 1: Corridor Summary (ADW Johnson, 2025a, p.2)

Corridor Reference	Corridor Type	Corridor Current Lot and DP	Corridor Proposed Lot	Corridor Land Area (ha)	Corridor % of Total Site
A	Biodiversity	Lot 62 DP 755266	Lot 62 DP 755266	1.43	3.2%
B	Biodiversity	Lot 62 DP 755266	Lot 62 DP 755266	1.15	2.56%
C	Landscape	Lot 62 DP 755266	Lot 62 DP 755266	1.56	3.47%
D	Landscape	Lot 7 DP 240685	Lot 1, Lot 6, Lot 7, Lot 15	1.01	2.25%
E	Landscape	Lot 11 DP 240685, Lot 49 DP 707586	Lot 1, Lot 4, Lot 5	1.55	3.45%
F	Biodiversity	Lot 11 DP 240685	Lot 12	2.66	5.93%
G	Landscape	Lot 7 D.P. 240685	Lot 6	0.52	1.15%
Total Corridors				9.88	22.01%



1.2 Englobo Subdivision Background

1.2.1 Response to Council Request for Information

This EVMP integrates responses and clarifications:

- Through Council Requests for Information (RFIs) since 2023
- The Peer Review prepared by de Witt (2023)
- Further RFIs through the Deferral Action required by the Hunter and Central Coast Regional Planning Panel (HCCRPP 2025)

1.2.2 EVMP as Guidance for Englobo Subdivision DA

This EVMP has been developed since 2023) as a guiding plan to inform Proposed Englobo Subdivision DA/1295/2023 (the “Englobo Subdivision”). Pre-DA comments (Central Coast Council, 2022b, p.20) refer to the VMP with reference to VPA 2022 as follows:

“The requirements for Vegetation Management Plans and Landscape Management Plans for corridors are outlined in detail in the Voluntary Planning Agreement.”

While the Proponent has agreed to prepare this VMP in response to Council’s request, it is noted that the VPA 2022 does not obligate the Proponent to do so. The VMP has been prepared at Council’s request, despite the provisions of Schedule 2, Item 3, Column 2 (page 22) of the VPA 2022, which only require VMPs to be submitted at the time of lodgement for any development application – excluding those that seek to authorise Englobo subdivision and services for Englobo lots, site consolidation, site preparation works and/or subdivision.

Future development applications for the 14 Englobo super lots will be submitted to Council, at which stage site-specific VMPs will be developed in accordance with the context of this initial VMP and as required by VPA 2022. Accordingly, the Applicant does not intend to implement the vegetation management outlined in this report as part of the current Englobo Subdivision development application.

1.2.3 Subject Land and Proposed Englobo Subdivision

The Subject Land is 34 hectares and is shown in Figure 1. The Proposed Englobo Subdivision DA/1295/2023 involves the subdivision of the Subject Land (thirteen lots) into 14 lots, including stormwater and sewer, road upgrades and slip lane at the Pacific Highway entrance.

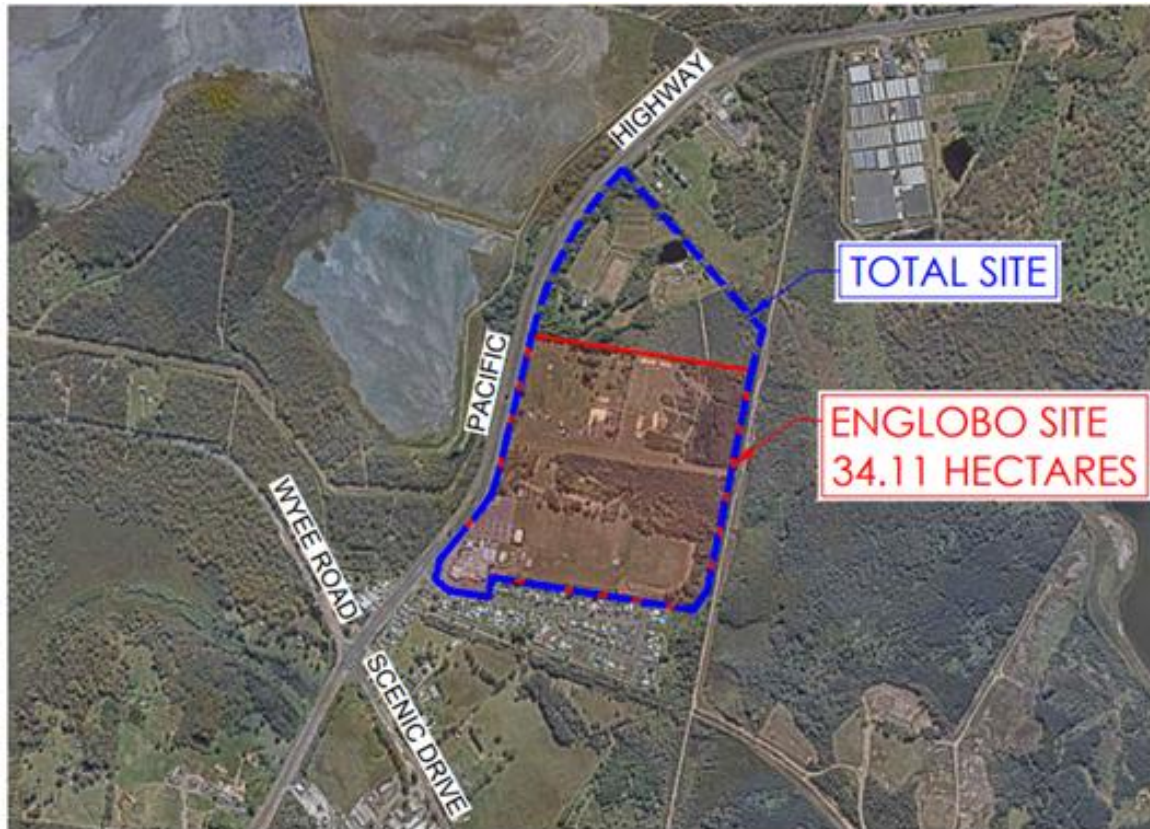
The Development Footprint is 30 hectares and is shown in Figure 2. The Development Footprint encompasses all areas of future subdivision works and includes three Landscape Corridors (D, E and G) within which partial vegetation clearing is proposed, and which will be guided by the Englobo Landscape Management Plan (ELMP) (SLR, 2025b).

A separate Englobo Wildlife Management Plan (EWMP) (SLR, 2025d) has been prepared to guide wildlife protection measures during clearing and demolition works within the Development Footprint. The Development Footprint excludes the area of the future Biodiversity Corridor F contemplated in VPA 2022 for which no subdivision works are proposed, and which will be guided by this Englobo Vegetation Management Plan (EVMP).

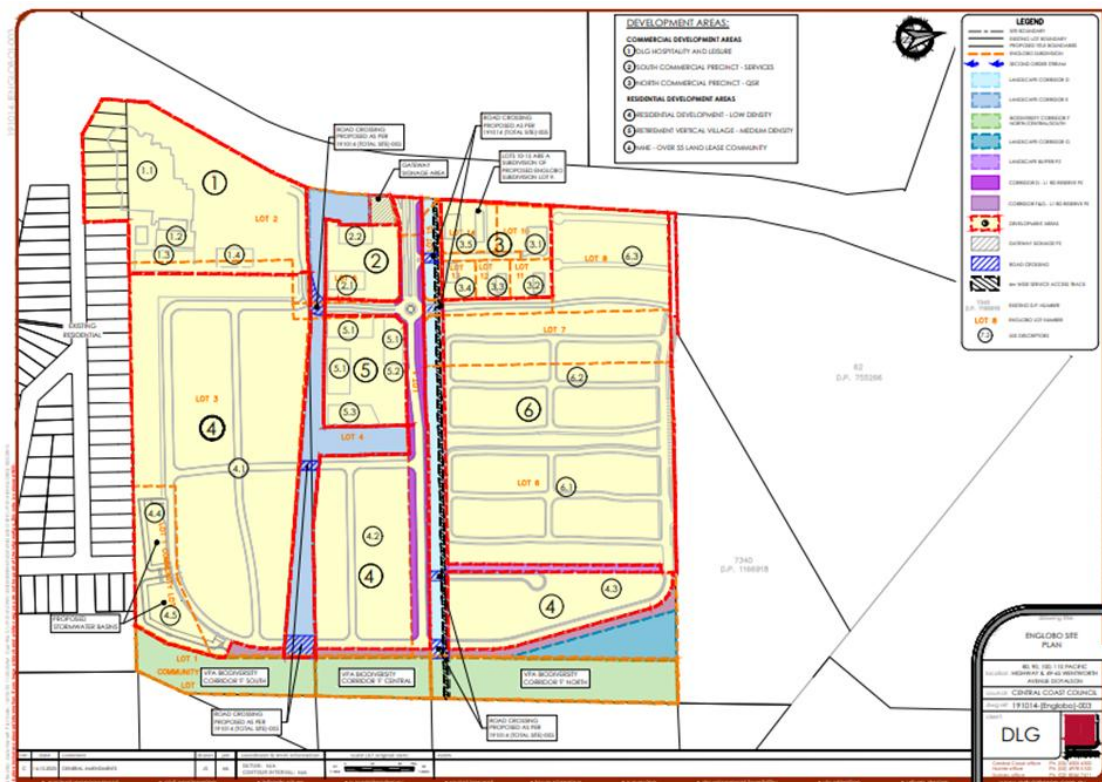
The following extracts are provided from the Englobo Site Plans (Version 1, 23 October 2025 - Englobo Plan Set) prepared by ADW Johnson (2025b).



Plan Extract 1: Total Site and Englobo Site (ADW Johnson, 2025b, p.1)



Plan Extract 2: Proposed Englobo Subdivision (ADW Johnson, 2025b, p.5)



1.2.4 Context of the Englobo Subdivision

Key elements of the Englobo Subdivision include:

- Biodiversity Corridor F
- Landscape Corridors D, E, and G
- Four designated, Ancillary Planting Zones:
 - Corridor D – Lot 1 Road Reserve Planting Zone
 - Gateway Signage Planting Zone
 - Landscape Buffer Planting Zone
 - Corridors F&G – Lot 1 Road Reserve Ancillary Planting Zone
- 14 Englobo super lot development areas supported by road, utility, and subdivision infrastructure within a Community Title format.

The current vegetation condition of the VPA 2022 Corridors is summarised in Table 2 below.

Table 2: VPA 2022 Corridors and Vegetation Condition (ADW Johnson, 2025a)

Corridor Number	Corridor Type	Corridor Current Lot and DP	Corridor Proposed Lot	Corridor Land Area (ha)	Corridor % of Total Site	Current Condition
D - service access track	Landscape	Lot 7 DP 240685	Lot 6, Lot 7, Lot 15	0.20	0.59	Open cleared land
D	Landscape	Lot 7 DP 240685	Lot 6, Lot 7	0.81	2.37	Open cleared land with scattered trees
E	Landscape	Lot 49 DP 707586, Lot 11 DP 240685	Lot 1, Lot 4, Lot 5	1.55	4.53	Predominantly vegetated with some earth work areas. HBTs feature.
F (south)	Biodiversity	Lot 11 DP 240685	Lot 1	0.85	2.5	Significantly vegetated with EEC areas to north
F (central)	Biodiversity	Lot 49 DP 707586	Lot 1	0.55	1.62	Significantly vegetated
F (north) - services access track	Biodiversity	Lot 49 DP 707586	Lot 1	0.02	0.05	Open Cleared land
F (north)	Biodiversity	Lot 7 DP 240685	Lot 1	1.23	3.61	Significantly vegetated
G	Landscape	Lot 7 DP 240685	Lot 6	0.52	1.52	Mixed vegetation. Significant proportion of exotic species
Total Approved Proposed Corridors				5.73	16.79	Sum of all approved proposed corridors

Table 3 below summarises the areas for each component of the Subject Land and the associated percentage of each area compared to the entirety of the Englobo Subdivision.



Table 3: Area Footprints

Proposed Area	Area Footprint (ha)	% of Subject Land
Landscape Corridor D	1.01	3.0%
Landscape Corridor E	1.55	4.5%
Landscape Corridor G	0.52	1.5%
Biodiversity Corridor F	2.66	7.8%
Corridor D – Lot 1 Road Reserve Planting Zone	0.47	1.4%
Corridors F and G – Lot 1 Road Reserve Planting Zone	0.46	1.3%
Gateway Signage Planting Zone	0.08	0.2%
Landscape Buffer Planting Zone	0.18	0.5%
Development Areas (roads, utility, subdivision infrastructure)	27.20	79.7%
Total Subject Land Area	34.13	99.90%

Following approval of the Englobo Subdivision, the Proponent will submit staged development applications to facilitate uses across the 14 super lots.

1.3 Objectives and Strategy

1.3.1 Overview

The specific objectives of the EVMP are as follows:

- Understand existing natural values and potential future values of the Biodiversity Corridor
- Protect and enhance existing natural values across Biodiversity Corridor
- Limit potential impacts associated with construction and operation of proposed Development Footprint on the Biodiversity Corridor
- Improve north-south wildlife movement and habitat connectivity for local native fauna
- Implement guidance in vegetation management actions to ensure greatest possible biodiversity outcomes within the Biodiversity Corridor
- Facilitate a ten-year implementation period, with potential for in-perpetuity management
- Meet the requirements of VPA 2022 in Section 1.1.2
- Meet the requirements of Council guidelines for VMPs in Section 1.3.2

1.3.2 VMP Requirements

Council guidelines (Central Coast Council, 2019) require the following information is included within a VMP:

- *The purpose and objectives of the VMP, in other words, what does it hope to achieve once implemented and the duration of the VMP. In most cases Council will expect at least a five-year implementation period with the VMP being written to allow for in-perpetuity management.*



- *The current ecological state of the VMP area, including identification of the vegetation community present, existing and potential future threats to the long-term viability of the VMP area.*
- *The types of weeds that are present on the site, including their distribution and proposed removal techniques.*
- *Legislative considerations such as if a licence under the Biodiversity Conservation Act 2016 (NSW) is required for seed collection from threatened plants.*
- *If any rubbish removal needs to occur and how this will be completed.*
- *If the area needs to be maintained as a bushfire asset protection zone or as a drainage corridor.*
- *If hollow-bearing trees are proposed for removal in the development area, details of replacement with artificial hollows/ nesting boxes must be included in the VMP.*
- *The location of any proposed revegetation activities, including the species proposed to be used and the planting density. Where possible all plants must be of local providence, from seed collected locally.*
- *Identification of monitoring and evaluation methods and annual performance targets.*

1.4 Personnel

According to Council's guidelines (Central Coast Council, 2019) the VMP should be prepared by an Environmental Consultant or Bush Regenerator with theoretical and practical experience in bushland restoration and management, including weed control. All staff involved in the preparation of this report are suitably qualified. The roles and qualifications of all staff responsible for preparation of this report are listed in Table 4.

Table 4: Staff Roles and Qualifications

Staff Name & Title	Qualifications and Training	Role
Jeremy Pepper Technical Director	Bachelor of Science (Hons Class 1) University of NSW 1996 Cert II Bushland Regeneration, TAFE NSW Cert III Horticulture (Arboriculture), TAFE NSW BAM accredited assessor (#BAAS17104)	Report technical review
Fiona Iolini Associate Ecologist	Bachelor of Environmental Science and Management, University of Newcastle 2007 Cert III Conservation and Land Management, TAFE NSW 2015 BAM accredited assessor (#BAAS19042)	Project management, report drafting, field survey
Jarrid Beeton Project Ecologist	Bachelor of Environmental Science and Management, University of Newcastle 2018 Dip. Conservation and Land Management, TAFE NSW 2014 BAM accredited assessor (#BAAS23018)	Report drafting



2.0 Natural Values of the Subject Land

2.1 Topography and Soils

The Subject Land slopes to the east, with elevations 26 meters at the southwest corner and 10 meters along the eastern boundary. There is an unnamed watercourse mapped in the northwest of the Subject Land and a dam in the centre. No waterbodies occur within the Biodiversity Corridor.

The Soil Landscapes of Central and Eastern NSW (DPE, 2023) map the Subject Land as 'Doyalson' with a band of 'Wyong' corresponding to the watercourse in the northwest corner.

Soils likely to be encountered within the more elevated portions of the Subject Land are moderately deep yellow earths and podzolic soils with underlying sandstone and conglomerate geologies. These soils are likely to be better suited to native plants that thrive in well-drained, low-nutrient soils.

In lower-lying parts of the Subject Land soils are likely to grade into yellow and red podzolic soils and soloths with siltstone and claystone. These soils may better support more nutrient-demanding plants.

2.2 Native Vegetation

The Subject Land contains three plant community types (PCTs):

- PCT 1717 – *Broad-leaved Paperbark Swamp Mahogany – Swamp Oak – Saw Sedge swamp forest of the Central Coast and Lower North Coast*
- PCT 1638 – *Smooth-barked Apple – Red Bloodwood – Scribbly Gum grass – Shrub woodland on lowlands of the Central Coast*
- PCT 1636 – *Scribbly Gum – Red Bloodwood, Angophora inopina heathy woodland on lowlands of the Central Coast*

These PCTs are mapped in Figure 3.

The Biodiversity Corridor contains:

- Predominately PCT 1717 throughout
- Smaller areas of PCT 1638 in the northern and central sections
- A small area of PCT 1636 in the central section

The remaining areas within the Biodiversity Corridor consist of small areas of cleared land and exotic vegetation, representing a sliver of the exotic pine plantation.

2.3 Threatened Ecological Communities

The PCT 1717 – *Broad-leaved Paperbark Swamp Mahogany – Swamp Oak – Saw Sedge swamp forest of the Central Coast and Lower North Coast* is associated with the threatened ecological community *Swamp Sclerophyll Forest on Coastal Floodplains of the New South Wales North Coast, Sydney Basin and South East Corner Bioregions* (an endangered ecological community) as listed as under the NSW *Biodiversity Conservation Act 2016* (BC Act). This community occupies a large portion of the Biodiversity Corridor (see Figure 3).



2.4 Threatened Flora Species

No threatened species of flora were identified within the Subject Land during the biodiversity assessment (SLR, 2025a, Section 5.3). Threatened species with potential to occur were subject to targeted surveys involving parallel transects performed in 2018 and 2023. Threatened species of flora that were assessed in accordance with the BAM are included in Table 5.

Table 5 Threatened Flora Assessed by the Biodiversity Assessment (SLR, 2025a)

Common Name	Scientific Name	Listing Status	
		BC Act	EPBC Act
Bynoe's Wattle	<i>Acacia bynoeana</i>	Endangered	Vulnerable
Charmhaven Apple	<i>Angophora inopina</i>	Vulnerable	Vulnerable
Trailing Woodruff	<i>Asperula asthenes</i>	Vulnerable	Vulnerable
Thick-leaf Star-hair	<i>Astrotricha crassifolia</i>	Vulnerable	Vulnerable
Netted Bottle Brush	<i>Callistemon linearifolius</i>	Vulnerable	-
n/a	<i>Corunastylis</i> sp. Charmhaven (NSW896673)	Critically Endangered	Critically Endangered
Leafless Tongue Orchid	<i>Cryptostylis hunteriana</i>	Vulnerable	Vulnerable
Rough Doubletail	<i>Diuris praecox</i>	Vulnerable	Vulnerable
Camfield's Stringybark	<i>Eucalyptus camfieldii</i>	Vulnerable	Vulnerable
n/a	<i>Eucalyptus parramattensis</i> subsp. <i>decadens</i>	Vulnerable	Vulnerable
<i>Eucalyptus parramattensis</i> C. Hall. subsp. <i>parramattensis</i> in Wyong and Lake Macquarie Local Government Areas	<i>Eucalyptus parramattensis</i> subsp. <i>parramattensis</i>	Endangered Population	-
Variable Midge Orchid	<i>Genoplesium insigne</i>	Critically Endangered	Critically Endangered
Small-flower Grevillea	<i>Grevillea parviflora</i> subsp. <i>parviflora</i>	Vulnerable	Vulnerable
n/a	<i>Maundia triglochinoides</i>	Vulnerable	-
Biconvex Paperbark	<i>Melaleuca biconvexa</i>	Vulnerable	Vulnerable
Grove's Paperbark	<i>Melaleuca groveana</i>	Vulnerable	-
Tall Knotweed	<i>Persicaria elatior</i>	Vulnerable	Vulnerable
Tranquillity Mintbush	<i>Prostanthera askania</i>	Endangered	Endangered
Eastern Australian Underground Orchid	<i>Rhizanthella slateri</i>	Vulnerable	Endangered
Heath Wrinklewort	<i>Rutidosis heterogama</i>	Vulnerable	Vulnerable
n/a	<i>Tetradlea glandulosa</i>	Vulnerable	-
Black-eyed Susan	<i>Tetradlea juncea</i>	Vulnerable	Vulnerable



2.5 Fauna Species and Habitat Values

The Subject Land supports a diverse array of fauna and habitat values, offering abundant resources for ground-dwelling and arboreal mammals, microchiropteran bats, and diurnal birds through features such as habitat trees, stags, dense ground cover, and rich floral diversity. Notable recorded species include echidnas, bandicoots, possums, gliders, wallabies, and bats such as the Lesser Long-eared Bat (*Nyctophilus geoffroyi*) and Little Forest Bat (*Vespadelus vulturnus*).

Aquatic habitat is available via a large dam, supporting mammals, birds, reptiles, frogs, and waterbirds, with vegetation including *Eleocharis sphacelata*, *Typha orientalis* and *Ottelia ovalifolia*. Feral species recorded within the Subject Land include the Red Fox, European Rabbit, Black Rat, and Brown Hare.

Aside from native vegetation, hollow-bearing trees form the main fauna habitat features within the Landscape Corridors. Hollow-bearing trees within the Landscape Corridors are mapped in Figure 3.

2.6 Threatened Fauna Species

The Subject Land also provides foraging habitat for the Glossy Black-Cockatoo (*Calyptorhynchus lathami*), the only observed threatened fauna species (SLR, 2025a). Key threatened species of fauna that were assessed in accordance with the BAM are included in Table 6.

Table 6 Threatened Fauna Assessed by the Biodiversity Assessment (SLR 2025a)

Common Name	Scientific Name	Listing Status	
		BC Act	EPBC Act
Regent Honeyeater	<i>Anthochaera phrygia</i>	Critically Endangered	Critically Endangered
Bush Stone-curlew	<i>Burhinus grallarius</i>	Endangered	-
Gang-gang Cockatoo	<i>Callocephalon fimbriatum</i>	Endangered	Endangered
South-eastern Glossy Black-Cockatoo	<i>Calyptorhynchus lathami lathami</i>	Vulnerable	Vulnerable
Eastern Pygmy-possum	<i>Cercartetus nanus</i>	Vulnerable	-
Large-eared Pied Bat	<i>Chalinolobus dwyeri</i>	Endangered	Endangered
Wallum Froglet	<i>Crinia tinnula</i>	Vulnerable	-
White-bellied Sea-Eagle	<i>Haliaeetus leucogaster</i>	Vulnerable	-
Giant Burrowing Frog	<i>Heleioporus australiacus</i>	Vulnerable	Vulnerable
Little Eagle	<i>Hieraaetus morphnoides</i>	Vulnerable	-
Pale-headed Snake	<i>Hoplocephalus bitorquatus</i>	Vulnerable	-
Swift Parrot	<i>Lathamus discolor</i>	Endangered	Critically Endangered
Green and Golden Bell Frog	<i>Litoria aurea</i>	Endangered	Vulnerable
Green-thighed Frog	<i>Litoria brevipalmata</i>	Vulnerable	-
Square-tailed Kite	<i>Lophoictinia isura</i>	Vulnerable	-



Common Name	Scientific Name	Listing Status	
		BC Act	EPBC Act
Little Bent-winged Bat	<i>Miniopterus australis</i>	Vulnerable	-
Large Bent-winged Bat	<i>Miniopterus orianae oceanensis</i>	Vulnerable	-
Southern Myotis	<i>Myotis macropus</i>	Vulnerable	-
Barking Owl	<i>Ninox connivens</i>	Vulnerable	-
Powerful Owl	<i>Ninox strenua</i>	Vulnerable	-
Eastern Osprey	<i>Pandion cristatus</i>	Vulnerable	-
Giant Dragonfly	<i>Petalura gigantea</i>	Endangered	-
Southern Greater Glider	<i>Petauroides volans</i>	Endangered	Endangered
Squirrel Glider	<i>Petaurus norfolcensis</i>	Vulnerable	-
Brush-tailed Rock-wallaby	<i>Petrogale penicillata</i>	Endangered	V
Brush-tailed Phascogale	<i>Phascogale tapoatafa</i>	Vulnerable	-
Koala	<i>Phascolarctos cinereus</i>	Endangered	Endangered
Common Planigale	<i>Planigale maculata</i>	Vulnerable	-
Long-nosed Potoroo	<i>Potorous tridactylus</i>	Vulnerable	Vulnerable
Grey-headed Flying-fox	<i>Pteropus poliocephalus</i>	Vulnerable	Vulnerable
Masked Owl	<i>Tyto novaehollandiae</i>	Vulnerable	-
Mahony's Toadlet	<i>Uperoleia mahonyi</i>	Endangered	Endangered



3.0 Management Activities and Guidelines

3.1 Management Considerations

Key considerations associated with the proposed development include the potential for incidental vegetation clearing, which may inadvertently damage existing vegetation and habitats. To minimise these impacts during construction, protective measures such as fencing, signage, and contractor training should be implemented.

Vegetation removal can disturb the soil profile, creating exposed areas that are vulnerable to erosion. This can lead to tunnelling and rilling, with surface water transporting sediment into adjacent vegetated zones. Sedimentation may smother native plants and inhibit their growth. Erosion control measures - including sediment fencing, minimisation of soil disturbance, and prompt soil stabilisation - must be in place prior to any clearing activities.

Weed infestations are present across the Subject Land, particularly around the central dam and at the pine plantation in the northeast corner. Key weed species include Lantana (*Lantana camara*), Pampas Grass (*Cortaderia selloana*), Whiskey Grass (*Andropogon virginicus*) and Radiata Pine (*Pinus radiata*). Effective removal and ongoing control of these species will be essential to prevent further spread and to protect native ecosystems.

The Biodiversity Corridor is largely covered with native vegetation, but some disturbed areas - such as trails and patches of exotic grass with limited native growth - require restoration to enhance habitat quality, wildlife connectivity, and reduce erosion. Restoration efforts will include revegetation in areas lacking native flora or where soil has been disturbed during construction and bush regeneration techniques to promote native seedling growth.

As part of the proposed development, native vegetation will be cleared, providing a source of intact native soil and its associated seed bank, as well as plant materials for use in restoration areas. Plants may be directly transplanted, or seeds and cuttings collected for propagation. Topsoil and subsoil should be carefully stockpiled and reused for revegetating larger bare areas within the Biodiversity Corridor.

3.2 Vegetation Protection and Fencing

The Arborist Report (Abacus Tree Services, 2025) includes recommendations for tree protection, across the different phases as follows:

- Phase 1 - Civil Construction Setup: Install temporary fencing as per Tree Retention Plans, supervised tree removal before works begin, and enforce “No Go” zones to protect retained trees during construction.
- Phase 2 - Post-Construction: Install permanent fencing, conduct arborist-supervised pruning, and label significant retained trees as wildlife habitat.
- Phase 3 - Title Restrictions: Apply legal restrictions to prevent vegetation removal, ground level changes, or works (except fencing) within protected areas shown in the Tree Retention Plans.

The following measures are to be implemented prior to and during vegetation clearing within the Development Footprint:

- Areas of vegetation outside the Development Footprint, including the Biodiversity Corridor are to be clearly demarcated with high visibility tape to prevent accidental clearing during the construction phase.
- An ecologist is to be present on site during all clearing operations



Further clearing management guidelines are detailed in the Englobo Wildlife Management Plan (SLR, 2025b), which includes protocols and methods for vegetation clearing such as pre-clearance surveys, vegetation clearing protocols, hollow-bearing tree removal protocol and strategy for dam de-watering.

3.3 Erosion Control

To minimise erosion during both the construction and operational phases of clearing, a range of measures should be implemented. Sediment fences and sterile straw bales should be installed downslope of exposed soil and stockpiles to intercept runoff and capture sediment. These controls must be regularly inspected and maintained to ensure they remain effective throughout the project.

Vegetation clearing should be carried out in stages to avoid exposing large areas of soil at once. This approach helps reduce erosion risk and allows for better management of sediment movement. During clearing activities, soil disturbance should be minimised wherever possible. Retaining existing vegetation, particularly trees, will help stabilise the soil and reduce erosion caused by wind and water.

Disturbed areas should be rapidly stabilised through seeding and revegetation to limit the time soil remains exposed. Using appropriate native or sterile cover species suited to the site conditions will enhance erosion control and promote recovery. Regular inspections should be conducted to identify any signs of erosion, such as rills or gullies. Any erosion features observed must be remediated within one month to prevent sediment transfer and further soil degradation.

3.4 Weed Management

3.4.1 Weed Species and Control

All priority weeds 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 is reasonably practicable.

The biosecurity duty and control methods of weed species that have been identified within the Subject Land are presented in Table 7. These methods are in accordance with the legal requirements of the NSW *Biosecurity Act 2015*.

Table 7: Weed Species, Location, Biosecurity Duty and Control Methods

Species	Location on Subject Land	Biosecurity Duty Comments	Control Methods
Priority Weeds – Central Coast			
<i>Cortaderia selloana</i> (Pampas Grass)	Most abundant within the southern areas of the Biodiversity Corridor	Land managers should mitigate the risk of new weeds being introduced to their land. Land managers should mitigate spread from their land. The plant should not be bought,	Pampas Grass removal via grubbing is most effective for small plants, especially in urban and bushland settings. Large plants require seed head removal and slashing before root extraction. Moist soil conditions aid removal, and all plant material must be properly disposed of to prevent regrowth. Additionally, timing of control should consider wildlife habitats, as Pampas Grass serves as



Species	Location on Subject Land	Biosecurity Duty Comments	Control Methods
		sold, grown, carried or released into the environment. Notify local control authority if found.	a summer egg-laying site for species like the diamond python.
<i>Lantana camara</i> (Lantana)	Throughout the Biodiversity Corridor with denser infestation within the southern and northern areas	Mandatory Measure - Must not be imported into the State or sold	Integrated weed management for Lantana may involve using a combination of control methods such as manual removal (e.g. hand-pulling or cutting), mechanical control (e.g. bulldozing or slashing) or herbicide application (especially when the plant is actively growing). Because Lantana is highly resilient, ongoing follow-up is essential to prevent regrowth.
<i>Ludwigia peruviana</i> Peruvian Primrose	Most abundant within the southern areas of the Biodiversity Corridor	Land managers should mitigate the risk of the plant being introduced to their land. Land managers should mitigate spread of the plant from their land. A person should not buy, sell, move, carry or release the plant into the environment. Notify local control authority if found.	Effective control of Peruvian Primrose involves a combination of hand-pulling young plants, slashing or burning, and chemical treatment using glyphosate or a suitable herbicide via spray or cut-and-paint methods. Care must be taken near waterways to avoid chemical runoff. Annual follow-up weeding is essential to manage regrowth before seed set.
Other Environmental Weeds			
<i>Andropogon virginicus</i> (Whiskey Grass)	Located on the edges of existing native vegetation patches throughout open areas of the Biodiversity Corridor	n/a	Hand-pull seedlings and small plants where possible. For more persistent growth, carefully spot spray with herbicides like Glyphosate or Metsulfuron. Follow-up treatments may be needed after 4-6 weeks, and then once in spring and once in summer until eradication is achieved. Mowing before seed set can also help control spread.
<i>Ageratina adenophora</i> (Crofton Weed)	Dense infestations throughout the southern and central areas of the Biodiversity Corridor	n/a	To manage Crofton weed effectively, hand-pull plants in sensitive or small areas and use herbicide for dense patches. Regular monitoring is essential, as the weed can re-



Species	Location on Subject Land	Biosecurity Duty Comments	Control Methods
			establish quickly. Follow-up treatments may be needed 2-4 weeks after the initial application, then every 6-8 weeks during spring and summer until eradication is achieved.
<i>Cinnamomum camphora</i> Camphor Laurel	Isolated individuals scattered throughout the Biodiversity Corridor	n/a	To manage Camphor Laurel effectively, hand-pulling seedlings; best after rain when the soil is soft. For small trees, cutting followed by immediate application of glyphosate prevents regrowth. Larger trees can be treated using frill or drill injection with glyphosate to minimize disturbance.
<i>Pinus radiata</i> (Radiata Pine)	Dense patches of mature trees located within the southern tip of Landscape Corridor G with juvenile plants within the surrounding areas	n/a	To manage Radiata Pine effectively, hand-pull seedlings; best after rain when the soil is soft. For small trees, cutting followed by immediate application of glyphosate prevents regrowth. Larger trees can be treated using frill or drill injection with glyphosate to minimize disturbance. In dense patches, clear-felling is suitable, but care must be taken to avoid harming native vegetation.

3.4.2 Weed Control Strategy

A qualified bush regeneration contractor is essential for effective weed management. The minimum qualifications for the site supervisor should include a Tafe Certificate III in Conservation and Land Management (or equivalent), along with at least 500 hours of demonstrated experience. Other personnel should be enrolled in a Tafe Certificate II in Conservation and Land Management and have a minimum of 100 hours of relevant experience. This ensures that all staff involved possess the necessary skills and ecological understanding to manage weeds appropriately.

To prevent the introduction and spread of invasive species, all vehicles, plant, and equipment must be thoroughly inspected and confirmed to be free of weed propagules before entering the Subject Land. This biosecurity measure is critical, especially in areas where native vegetation is being retained and protected.

Weed control should begin at least four weeks prior to the commencement of construction. This phase will involve the targeted application of herbicides and the slashing or removal of key invasive species, including Pampas Grass (*Cortaderia selloana*), Lantana (*Lantana camara*), Peruvian Primrose (*Ludwigia peruviana*), Whiskey Grass (*Andropogon virginicus*), Camphor Laurel (*Cinnamomum camphora*) and Radiata Pine (*Pinus radiata*) in accordance with measures identified in Section 3.4.1.

During construction, monthly inspections of stockpiles should be conducted to detect any weed presence. If weeds are found, appropriate herbicide application may be necessary to prevent contamination of topsoil, which could lead to further infestations when redistributed. Any herbicide application must be undertaken carefully to prevent inadvertent application to waterways, as well as retained native vegetation and plantings.



Post-construction weed control must be ongoing and diligently implemented to prevent major infestations. The strategy should aim to reduce weed cover to a maximum of 5% over a 10-year period. Monitoring protocols, such as photo points and site walkovers, should be established to track progress and inform adaptive management.

Where feasible, manual removal of weeds is preferred over herbicide use, particularly in sensitive areas. Techniques such as cut and paint, felling, frilling, and spot spraying with glyphosate may be employed for larger plants or severe infestations. Herbicide use should be carefully managed to avoid off-target damage, and application methods should be clearly defined.

3.5 Vegetation Restoration

3.5.1 Overview

Vegetation restoration works within the Biodiversity Corridor are to include the following:

- Restoration areas are to be planted with tube-stock of native species commensurate with the species within the adjacent native vegetation. Species are also to be planted at similar numbers and density to the surrounding native vegetation to establish vegetation with a similar structure and composition.
- Vegetation restoration in areas of bare soils adjacent to the Development Footprint may be required if these areas are inadvertently disturbed during construction works.
- Quality topsoil of no weed should be transported from native vegetation communities within the Development Footprint to be placed within areas of bare soils within the Biodiversity Corridor. Topsoil origin PCT will align with target restoration PCT.
- Replanting of bushland areas may be required if inadvertently cleared during construction works.
- Restoration areas are to be maintained for a minimum of 10 years until restoration targets are achieved (i.e. 80 per cent survival rate of each species planted and a maximum 5 percent weed cover).

3.5.2 Salvage of Topsoil and Plants for Vegetation Restoration

Prior to site clearing or development, conduct a targeted salvage operation to recover native plant materials and topsoil for reuse in designated revegetation areas. This process aims to preserve ecological integrity and support successful vegetation restoration.

Key actions include:

- Carefully extract whole plants, cuttings, and viable seed sources using appropriate techniques to minimise damage.
- Transport salvaged materials to a nursery or directly to the revegetation site, ensuring minimal stress and desiccation.
- Strip and stockpile the top 10-15cm of soil, preserving native seed banks, organic matter, and beneficial microbial communities.
- Avoid using soils from weed-infested locations.
- Store salvaged soil in low, shaded, stable mounds covered with hessian or mulch to prevent erosion and degradation.
- Reuse topsoil within 6-12 months to maintain biological viability.



- Reuse salvaged plants and soils in areas with similar environmental conditions to their origin to maximise establishment success and ecological compatibility.
- Monitor revegetated areas post-planting to assess survival rates and adapt management practices as needed.

3.5.3 Planting

A list of plant species suitable for planting across the revegetation areas of Management Zones 4, 5, 6 and 7 within the Biodiversity Corridor is presented in Table 8. Profiles of each of the three target PCTs are shown in Appendix A.

It is important that any that plant stock used in revegetation must be supplied from local provenance specific seed/material collected from within the Tuggerah Lakes catchment area. Non-provenance material or non-endemic species is prohibited. Certification of the seed/plant sources utilised in the revegetation is required to be provided to Central Coast Council for its records.

Table 8: Species and Planting Densities for General Vegetation Restoration

Management Zone	Vegetation Stratum	Scientific Name	Planting Density
MZ4 – PCT 1717	Canopy	<i>Melaleuca quinquenervia</i> (Broad-leaved Paperbark) <i>Casuarina glauca</i> (Swamp Oak)	1 per 4m ²
	Shrubs	<i>Glochidion ferdinandi</i> (Cheese Tree) <i>Melaleuca linariifolia</i> (Flax-leaved Paperbark)	1 per 2m ²
	Ground-layer	<i>Gahnia clarkei</i> (Saw Sedge) <i>Dianella caerulea</i> (Blue Flax-lily) <i>Lomandra longifolia</i> (Spiny-headed Mat-rush) <i>Imperata cylindrica</i> (Blady Grass) <i>Entolasia marginata</i> (Bordered Panic)	4 per 1m ²
MZ5 – PCT 1638	Canopy	<i>Angophora costata</i> (Smooth-barked Apple) <i>Corymbia gummifera</i> (Red Bloodwood) <i>Allocasuarina littoralis</i> (Forest She-oak)	1 per 4m ²
	Shrubs	<i>Hakea dactyloides</i> (Finger Hakea) <i>Banksia oblongifolia</i> (Fern-leaved Banksia) <i>Lambertia formosa</i> (Mountain Devil) <i>Persoonia levis</i> (Broad-leaved Geebung) <i>Petrophile pulchella</i> (Conesticks) <i>Acacia myrtifolia</i> (Red-stemmed Wattle) <i>Pimelea linifolia</i> (Slender Rice Flower)	1 per 2m ²
	Ground-layer	<i>Themeda triandra</i> (Kangaroo Grass) <i>Entolasia stricta</i> (Wiry Panic) <i>Lepyrodis scariosa</i> <i>Machaerina rubiginosa</i> <i>Dianella caerulea</i> (Blue Flax-lily)	4 per 1m ²
MZ6 – PCT 1636	Canopy	<i>Corymbia gummifera</i> (Red Bloodwood) <i>Eucalyptus racemosa</i> (Scribbly Gum)	1 per 4m ²



Management Zone	Vegetation Stratum	Scientific Name	Planting Density
	Shrubs	<i>Acacia longifolia</i> subsp. <i>longifolia</i> (Sydney Golden Wattle) <i>Banksia oblongifolia</i> (Fern-leaved Banksia) <i>Leptospermum trinervium</i> (Flaky-barked Tea-tree) <i>Lambertia formosa</i> (Mountain Devil) <i>Xanthorrhoea latifolia</i> <i>Hakea dactyloides</i> (Finger Hakea)	1 per 2m ²
	Ground-layer	<i>Epacris pulchella</i> (Wallum Heath) <i>Ptilothrix deusta</i> <i>Petrophile pulchella</i> (Conesticks) <i>Themeda triandra</i> (Kangaroo Grass) <i>Lepyrodia scariosa</i> <i>Aristida warburgii</i>	4 per 1m ²
MZ7 – Pipeline easement	Canopy	Not suitable	
	Shrubs	<i>Acacia longifolia</i> subsp. <i>longifolia</i> (Sydney Golden Wattle) <i>Banksia oblongifolia</i> (Fern-leaved Banksia) <i>Lambertia formosa</i> (Mountain Devil)	1 per 2m ²
	Groundcover	<i>Epacris pulchella</i> (Wallum Heath) <i>Dianella caerulea</i> (Blue Flax-lily) <i>Lomandra longifolia</i> (Spiny-headed Mat-rush) <i>Imperata cylindrica</i> (Blady Grass) <i>Entolasia marginata</i> (Bordered Panic) <i>Themeda triandra</i> (Kangaroo Grass) <i>Lepyrodia scariosa</i> <i>Aristida warburgii</i>	4 per 1m ²

3.6 Habitat Enhancement

3.6.1 Mulch and Habitat Features for Habitat Enhancement

In addition to vegetation restoration, salvaged structural elements and mulch should be used to enhance habitat complexity and support local fauna.

Key Actions include:

- Collect and store hollow logs, large branches, rocks, and other structural elements that provide shelter and microhabitats for fauna.
- Transport and place these features in revegetation areas to replicate natural habitat complexity and support wildlife.
- Mulch remaining native tree materials and stockpile separately.
- Reapply mulch to a depth of no greater than 5 cm to prevent anaerobic soil conditions, which can be detrimental to the seedbank and beneficial soil microbes.
- Scatter retained timber within the restoration areas of the Biodiversity Corridor at a density similar to that observed in the surrounding undisturbed vegetation.



3.6.2 Nest Boxes

Nest boxes are to be installed within the Biodiversity Corridor in accordance with the WMP (SLR, 2025b).

3.7 Area Specific Guidelines

Management zones have been identified and are shown in Figure 4. The areas of each zone are listed in Table 9. A description of each management zone is provided in the following sections.

Table 9: Mapped Area of Each Management Zone

Management Zone	Management Zone Description	Approximate Area (ha)
MZ1	Area of existing PCT 1717	1.52
MZ2	Area of existing PCT 1638	0.3
MZ3	Area of existing PCT 1636	0.67
MZ4	Areas to be restored to PCT 1717	0.07
MZ5	Areas to be restored to PCT 1638	0.06
MZ6	Areas to be restored to PCT 1636	0.06
MZ7	Pipeline easement to be restored with native shrub and ground covers, except for planting exclusion zone within 3m of pipe footprint	0.10

3.7.1 Zones Retaining Existing Vegetation (PCTs 1717, 1638, 1636)

Zones 1-3 retain existing vegetation and prohibit clearing. Each zone corresponds to a specific Plant Community Type (PCT):

- Zone 1: PCT 1717
- Zone 2: PCT 1638
- Zone 3: PCT 1636

Applicable Management Guidelines include:

- Vegetation protection
- Weed management
- Erosion control
- Revegetation (only if disturbed during construction or weed control)

3.7.2 Zones Requiring Revegetation (PCTs 1717, 1638, 1636)

Zones 4-6 cover cleared areas requiring revegetation to specific PCTs:

- Zone 4: PCT 1717
- Zone 5: PCT 1638
- Zone 6: PCT 1636

Applicable Management Guidelines include:

- Retained topsoil translocation



- Habitat management (retained log translocation)
- Mulching
- Vegetation restoration – revegetation
- Erosion control
- Weed management

3.7.3 Pipeline Easement Revegetation

Zone 7 covers the Jemena pipeline easement, with specific planting restrictions to protect infrastructure, being:

- 0-3m above pipe: No planting; managed grass only
- 1.5-3m from outer edge: Annual/perennial plants <1m height
- 3-5m from outer edge: Shrubs <1m height, <4m width
- 5-20m from outer edge: Shrubs/small trees <8m height, <6m width

In line with Clause 5.6 of the VPA, all vegetation strata (groundcover, mid, canopy) must be rehabilitated. Despite limitations, the planting strategy aims to support ecological connectivity across the corridor.

Applicable Management Guidelines include:

- Habitat management (retained log translocation)
- Mulching
- Vegetation restoration – revegetation (shrubs and groundcover only)
- Erosion control
- Weed management

3.7.4 Management Summary

A summary of the applicability of each of the management guidelines in relation to each of the area specific Management Zones within the Biodiversity Corridor is presented in Table 10.

Table 10: Management Guideline Summary

Management Activity	MZ1	MZ2	MZ3	MZ4	MZ5	MZ6	MZ7
Vegetation Protection	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Erosion Control	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Weed management	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Received Salvaged Plants, Habitat, Topsoil, Mulch				Yes	Yes	Yes	
Planting				Yes	Yes	Yes	Yes*
*Shrub and groundcover species only							



4.0 Monitoring and Compliance

Monitoring of the Management Zones within the Biodiversity Corridor is to be undertaken every six months following construction as part of environmental compliance for a 10-year period until the specified habitat condition thresholds have been achieved. The methods of the monitoring program are set out below.

4.1 Monitoring Methods

Monitoring methods to be implemented to monitor the integrity of the vegetation within the Biodiversity Corridor include the following:

- Plot/transect assessments using the Biodiversity Assessment Method (BAM) (DPIE, 2020a) to assess the cover/abundance of native and exotic flora across all management zones (refer to Appendix B).
- Photographic monitoring points. Minimum of one per management zone patch.

To monitor the progress of the habitat rehabilitation efforts, a total of seven plot/transect monitoring locations are to be established and permanently marked with metal star pickets. Monitoring plots are to be randomly selected during the baseline monitoring program.

4.1.1 Plot/transect Assessments

BAM plot/transect assessments are sampled using the BAM (DPIE, 2020a) to assess the cover/abundance of native and exotic flora across all Management Zones. The full methodology for BAM plot/transect assessments is provided in Appendix B. These monitoring locations are to be permanently marked with metal star pickets at both ends of the 50-metre transect.

4.1.2 Photo Monitoring Points

At least one photo monitoring location must be established within each of the seven management zones. Photographs are to be taken during each monitoring event and to be included in the monitoring report to track the progress of the vegetation management efforts. Methodology of the photo points shall follow the *Guide to photo monitoring of ecological restoration projects* (OEH, 2018b) and is shown in Appendix C. Photo monitoring points are to be established at random during baseline monitoring program.

4.1.3 Monitoring Reports

Monitoring reports are to be prepared by the Project Ecologist and submitted to Council detailing the progress of the vegetation condition every 6 months for the first 3 years, followed by once a year until year 10, or the VMP maintenance period is confirmed by Council as complete. Any recommended additional actions are to be detailed in the report. A final report certifying completion of the VMP is to occur at the end of the 10-year period or once the specific objectives of the plan have been met. Any recommended additional actions must be completed to the satisfaction of Council prior to lodgement of the final report.



4.2 Performance Standards

Performance standards for vegetation management include the following:

- Relevant management guidelines are to be implemented for a minimum of 10 years
- Planting of tube-stock in restoration areas is to occur until an 80 % survival rate of each species planted is achieved
- Weed management should be continued until a maximum of 5 % weed cover is achieved

Performance standards for determining the effectiveness of implementing each of the management guidelines are to be based on the results of the baseline monitoring program during year 1 of the VMP schedule. The values of each of the vegetation attributes should be examined over time using the monitoring methods outlined in Section 4.1.

4.3 Risk and Contingency

The Biodiversity Corridor adjoins a large area of native vegetation to the north and east. Residential development occurs to the south with the proposed development to the west. Due to the position of the Biodiversity Corridor within the landscape, various risks exist, which may affect the success of implementation of each of the management guidelines.

Risks include the following:

- Bushfire could adversely affect the site by reducing flora diversity in the vegetation to be retained in the bushland conservation zone and destroy tube-stock plantings
- Adverse weather could prevent establishment of tube-stock
- Native or feral herbivores such as kangaroos and rabbits could damage tube-stock plantings and prevent successful establishment
- Flooding could wash away stockpiles of soil or mulch and inadvertently reduce the survival rate of tube-stock plantings

If any of the above events occur, any damaged tube-stock is to be replaced within six months. Any areas of bare ground should be respread with mulch from onsite stockpiles or mulch that has been certified to be free of weed propagules.

4.4 Preliminary Costings

Preliminary costs associated with implementation of the management guidelines are based on the following:

- Provision of a Project Ecologist at \$150/hr
- Planting of tube stock at \$4.00 per tube including labour
- Primary weeding control activities (year 1) estimated at \$4,000 per hectare

A preliminary cost estimate of VMP works required in each zone for phase one of implementation of the VMP is provided Table 11. Note that these costs may vary each year during the 10-year maintenance period depending on site conditions such as the level of weed infestation and the survival of tube stock plantings. Cost estimates have not been provided for works performed by the Principal Contractor (i.e. topsoil management and erosion control) or duration/ time for a Bush Regenerator to undertake planting of tube-stock. Weed control is based on a hectare rate for a team of four bush regenerators.



Table 11: Preliminary Cost Estimate

Tasks/ Management Guidelines	Units	Unit Price (\$)	Duration	Cost Estimate
Vegetation Management				
Mulching (team 4 bush regenerators)	3 Days	\$2000		\$6,000
Planting Tube-stock (6 plants/m2)	17,400	\$4.00	-	\$69,000
Follow up planting (provisional)	TBC	\$4.00		TBC
Weed Control (year 1)	\$/ha	\$4,000/ha		\$12,000
Weed Control (year 2)	\$/ha	\$3000/ha		\$9,000
Weed Control (year 3 –10)*	\$/ha	\$1000/ha		\$3,000/year
Total Estimate				\$129,000
Monitoring and Reporting (per year)				
Monitoring (single assessment)	-	\$150/hr (Project Ecologist)	8 hrs	\$1,200
Reporting (single assessment)	-	\$150/hr (Project Ecologist)	40 hrs	\$6,000
Total Estimate over 10 years				\$72,000
Grand Total				\$201,000
# Costs are round to the nearest \$100, where applicable. * Weed control requirements to be confirmed in ongoing monitoring reports				



5.0 Project Schedule

The project schedule is outlined in Table 12 including the timing and duration for each management task.

Table 12: Timing and Duration of Management Tasks

Management Tasks	Timing	Duration	Responsibility
Vegetation protection	Prior to and during construction	Entire length of construction works	Principle Contractor Project Ecologist
Topsoil management	During construction	Within one week of construction works and then until the VMP maintenance has ceased Translocation of topsoil to be spread on revegetation restoration areas in year 1 prior to mulching	Principle Contractor
Erosion control	During and following construction, then as needed based on the results of monitoring inspections	Within one week of construction works and then until the VMP maintenance has ceased	Principle Contractor
Weed management	Prior to construction in the Construction Zone and following construction as needed based on results of monitoring inspections.	Entire length of 10-year implementation period	Bush Regenerator
Mulching	Year 1 during construction of proposal and after removal of vegetation from the Development Footprint	Mulching to be completed after topsoil placement an prior to restoration	Principle Contractor and Bush Regenerator
Vegetation restoration	Year 1 during construction of proposal and after mulching	To be completed in Autumn/Winter during year 1 Follow up plantings to replace deceased plants during year two if required	Bush Regenerator
Vegetation rehabilitation	Following construction as needed based on results of monitoring inspections	Restoration areas are to be maintained for a minimum of 10 years until such time as a minimum 80 per cent survival rate of each species planted and a maximum 5 percent weed cover is achieved	Bush Regenerator
Monitoring and Reporting	Within 6 months of completion of construction	Every 6 months for first 3 years, followed by once a year until year 10 or the VMP maintenance period is confirmed by Council as complete	Project Ecologist



6.0 References

Abacus Tree Services. 2023. Arborist report: Client: Doyalson RSL, Address: 80 Pacific Highway, Doyalson, NSW, 2262. Newcastle, NSW: Abacus Tree Services.

Abacus Tree Services. 2025. Arborist report: Client: Doyalson Wyee RSL Club Ltd t/a Doyalson Lifestyle Group (DLG), Address: 80, 90, 100, 110 Pacific Highway, & 49-65 Wentworth Avenue, Doyalson N.S.W 2262. Newcastle, NSW: Abacus Tree Services.

ADW Johnson 2025a. DLG Total Site Plans, 80, 90, 100, 110, 118, 120 Pacific Highway & 49-65 Wentworth Avenue, Doyalson. Plan set dated 24 October 2025. File name: CONTROL_1_191014-(Total Site) [E].

ADW Johnson 2025b. DLG Englobo DA Site Plans, 80, 90, 100, 110 Pacific Highway, Doyalson & 49-65 Wentworth Avenue, Doyalson. Plan set dated 24 October 2025. File name: CONTROL_1_191014-(Englobo) [E].

ADW Johnson. 2025c. VPA Corridor E Tree Retention Package, Pacific Highway, Doyalson, VPA Dealing AS580574 (VPA 2022). Plan set dated 24 October 2025. File name: CONTROL_1_191014(Tree Retention E) [E].

ADW Johnson. 2025d. VPA Corridor F & G Tree Retention Package, Pacific Highway, Doyalson, VPA Dealing AS580574 (VPA 2022). Plan set dated 24 October 2025. File name: CONTROL_1_191014(Tree Retention F&G) [E].

ADW Johnson. 2025e. Landscape Plan, Landscape Corridor D in accordance with AS580574 (VPA 2022) & Ancillary Planting Zones, 80, 90, 100, 110 Pacific Highway, & 49-65 Wentworth Avenue, Doyalson N.S.W 2262, (Englobo Subdivision DA/1295/2023). Plan set dated 24 October 2025. File name: CONTROL_1_191014-LA-LDM-Corridor D Landscape Concept Masterplan - REV J.

ADW Johnson. 2025f. Landscape Plan, Landscape Corridor E in accordance with AS580574 (VPA 2022), 80, 90, 100, 110 Pacific Highway, & 49-65 Wentworth Avenue, Doyalson N.S.W 2262, (Englobo Subdivision DA/1295/2023). Plan set dated 24 October 2025. File name: CONTROL_1_191014-LA-LDM - VPA Corridor E Landscape Concept Masterplan - Rev E.

ADW Johnson. 2025g. Landscape Plan, Landscape Corridors F & G in accordance with AS580574 (VPA 2022) & Ancillary Planting Zone, 80, 90, 100, 110 Pacific Highway, & 49-65 Wentworth Avenue, Doyalson N.S.W 2262, (Englobo Subdivision DA/1295/2023). Plan set dated: 24 October 2025. File name: CONTROL_1_191014-LA-LDM - VPA Corridor F & G Landscape Concept Masterplan - REV E.

Allens. 2025. Development Application No. DA 1295/2023 – Community Title Subdivision Site: 49–65 Wentworth Avenue, Doyalson. Letter to HCCRPP, dated 17 June 2025.

Bureau of Meteorology (BOM). 2023. Climate Data Online. Commonwealth of Australia. Available at: <http://www.bom.gov.au/climate/data/>.

Central Coast Council. 2019. Central Coast Council Flora and Fauna Guidelines. Wyong, NSW. Available at: https://cdn.centralcoast.nsw.gov.au/sites/default/files/Central_Coast_Council_Flora_and_Fauna_Guidelines_July_2019.pdf

Central Coast Council. 2022a. Voluntary Planning Agreement, Under section 7.4 of the Environmental Planning and Assessment Act, 1979, Central Coast Council & Doyalson Wyee RSL Club Limited. Final Version. Central Coast Council, Wyong, NSW.

Central Coast Council. 2022b. Record of Pre-Development Advice. Meeting minutes dated 10 November 2022. Wyong, NSW.



Commonwealth Department of Climate Change, Energy, the Environment and Water (Commonwealth DCCEE). 2023a. EPBC Act Protected Matters Search Tool. Canberra, ACT. Available at: <http://www.environment.gov.au/epbc/pmst>

Commonwealth Department of Climate Change, Energy, the Environment and Water (Commonwealth DCCEE). 2023b. Species Profile and Threats Database. Canberra, ACT. Available at: <http://www.environment.gov.au/cgi-bin/sprat/public/sprat.pl>

de Souza-Daw, R. (2003). Bat Roost Box Kit. Latrobe Valley Field Naturalists Club Inc., West Gippsland Catchment Management Authority & Latrobe City. Available at: https://bats.org.au/wp-content/uploads/2019/05/bat_roost_box_v4i.pdf.

De Witt. 2023. Biodiversity Development Assessment Report Peer Review, Doyalson Wyee RSL Club 80–120 Pacific Highway, Doyalson NSW 2262. Dated 18 October 2023. Charlestown, NSW.

Department of Environment and Conservation (DEC). 2004. Threatened Species Survey and Assessment: Guidelines for developments and activities (working draft). Hurstville, NSW.

Department of Environment and Climate Change (DECC). 2002. Descriptions for NSW (Mitchell) Landscapes Version 2. Based on the descriptions by Dr. Peter Mitchell. Available at: <https://www.environment.nsw.gov.au/resources/conservation/landscapesdescriptions.pdf>

Department of the Environment (DoE). 2013. Matters of National Environmental Significance, Significant Impact Guidelines 1.1, Environment Protection and Biodiversity Conservation Act 1999. Canberra, ACT.

Department of Planning and Environment (DPE). 2018. NSW Koala Prioritisation Project – Areas of Regional Koala Significance (ARKS). Sydney, NSW. Available at: <https://datasets.seed.nsw.gov.au/dataset/areas-of-regional-koala-significance-arks>

Department of Planning and Environment (DPE). 2019. Koala Likelihood Map v2.0 – Aug 2019. Sydney, NSW. Available at: <https://datasets.seed.nsw.gov.au/dataset/koala-likelihood-map-v2-0-august-2019>

Department of Planning and Environment (DPE). 2022a. NSW State Vegetation Type Map. Sydney, NSW. Available at: <https://datasets.seed.nsw.gov.au/dataset/nsw-state-vegetation-type-map>

Department of Planning and Environment (DPE). 2022b. Koala (*Phascolarctos cinereus*) Biodiversity Assessment Method Survey Guide. Parramatta, NSW. Available at: <https://www.environment.nsw.gov.au/research-and-publications/publications-search>

Department of Planning and Environment (DPE). 2022c. Threatened Reptiles Biodiversity Assessment Method Survey Guide. Parramatta, NSW. Available at: <https://www.environment.nsw.gov.au/research-and-publications/publications-search>

Department of Planning and Environment (DPE). 2022d. Biodiversity Assessment Method 2020 Operational Manual – Stage 1. Sydney, NSW. Available at: <https://www.environment.nsw.gov.au/research-and-publications/publications-search>

Department of Planning and Environment (DPE). 2023a. Soil Landscapes of Central and Eastern NSW – v2.2. Office of Environment and Heritage (NSW), Sydney, NSW. Available at: <https://www.environment.nsw.gov.au/topics/land-and-soil/information/espade>

Department of Planning and Environment (DPE). 2023b. BioNet Atlas of NSW Wildlife. Sydney, NSW. Available at: https://www.environment.nsw.gov.au/atlaspublicapp/UI_Modules/ATLAS_/AtlasSearch.aspx



Department of Planning and Environment (DPE). 2023c. BioNet Vegetation Classification. Sydney, NSW. Available at:

<https://www.environment.nsw.gov.au/research/Visclassification.htm>

Department of Planning and Environment (DPE). 2023d. SEED Portal. Sydney, NSW.

Available at: <https://www.seed.nsw.gov.au/>

Department of Planning and Environment (DPE). 2023e. Biodiversity Assessment Method Operational Manual Stage 2. Sydney, NSW. Available at:

<https://www.environment.nsw.gov.au/research-and-publications/publications-search>

Department of Planning, Industry and Environment (DPIE). 2010a. Estuary Drainage Catchments. Sydney, NSW. Available at: <https://datasets.seed.nsw.gov.au/dataset/estuary-drainage-catchmentseafb7>

Department of Planning, Industry and Environment (DPIE). 2010b. NSW Wetlands. Sydney, NSW. Available at: <https://datasets.seed.nsw.gov.au/dataset/nsw-wetlands047c7>

Department of Planning, Industry and Environment (DPIE). 2019a. Guidance to assist a decision-maker to determine a serious and irreversible impact. Sydney, NSW. Available at: <https://www.environment.nsw.gov.au/research-and-publications/publications-search>

Department of Planning, Industry and Environment (DPIE). 2020c. Biodiversity Assessment Method 2020. Sydney, NSW. Available at: <https://www.environment.nsw.gov.au/research-and-publications/publications-search>

Department of Planning, Industry and Environment (DPIE). 2020a. Surveying Threatened Plants and Their Habitats. Sydney, NSW. Available at:

<https://www.environment.nsw.gov.au/research-and-publications/publications-search>

Department of Planning, Industry and Environment (DPIE). 2020b. NSW Survey Guide for Threatened Frogs. Sydney, NSW. Available at:

<https://www.environment.nsw.gov.au/research-and-publications/publications-search>

Department of Planning, Industry and Environment (DPIE). 2020d. Biodiversity Assessment Method 2020 Operational Manual - Stage 3. Sydney, NSW. Available at:

<https://www.environment.nsw.gov.au/research-and-publications/publications-search>

Department of Planning, Industry and Environment (DPIE). 2020e. Biodiversity Assessment Method Operational Manual - Stage 1. Parramatta, NSW.

Department of Planning, Industry and Environment (DPIE). 2021. Koala SEPP 2021 – Factsheet – Development Applications. Sydney, NSW. Available at:

<https://www.planning.nsw.gov.au/-/media/Files/DPE/Factsheets-and-faqs/Policy-and-legislation/Fact-Sheet-Development-Applications-State-Environment-Planning-Policy-Koala-Habitat-Protection-2021.pdf?la=en>

Eco Logical Australia Pty Ltd (ELA). 2018. 80-120 Pacific Highway, Doyalson, Biodiversity Assessment. Prepared for Doyalson Wyee RSL Club. Australia.

Eco Logical Australia Pty Ltd (ELA). 2023. Bushfire Protection Assessment, Subdivision, 80–100 Pacific Highway, Doyalson. Version 2, 4 April 2023. Prepared for Doylo Lifestyle Group. Australia.

Eco Logical Australia Pty Ltd (ELA). 2025.

Eco Logical Australia Pty Ltd (ELA). 2025. RE: Bushfire Landscape Advice – 90–120 Pacific Highway, Doyalson Landscape Corridor C, D, E and G. Letter to ADW Johnson, dated 24 June 2025. Australia.



EMM Consulting Pty Ltd. 2023. Doyalson Fuel Precinct Arborist Report, report prepared for Doylo Lifestyle Group, July, EMM Consulting Pty Ltd, Newcastle, NSW.

ESRI. 2023. ArcGIS Stream Order. Available at:
<https://www.arcgis.com/home/webmap/viewer.html?url=https%3A%2F%2Fspatial.industry.nsw.gov.au%2Farcgis%2Frest%2Fservices%2FPUBLIC%2FstreamOrder%2FmapServer&source=sd>

Franks, A. & Franks, S., 2006. Nest Boxes for Wildlife: A Practical Guide. Melbourne: Bloomings Books.

Freegard, C. & Richter, V. 2009, Standard Operating Procedure SC22-26: Nest Boxes for Monitoring Arboreal Mammals, Department of Biodiversity, Conservation and Attractions, Western Australia. Available at: <https://www.dbca.wa.gov.au/media/1056/download> [Accessed 20 Aug. 2025].

GHD. 2018. Doyalson Wyee RSL Structure Plan Preliminary Site Investigation – Final Report. Report for Urbis Pty Ltd, May 2018.

Gibbons, P. & Lindenmayer, D.B., 2002. Tree hollows and wildlife conservation in Australia. Collingwood, Vic.: CSIRO Publishing.

Goldingay, R.L. & Stevens, J.R., 2009. Use of artificial roosts by insectivorous bats in Australia: A review. Wildlife Research, 36(3), pp.194–210.

Hunter & Central Coast Regional Planning Panel (HCCRPP). 2025b. Record of Deferral – PPSHCC-297 – Central Coast – DA/1295/2023 at U3, 49–65 Wentworth Avenue, Doyalson 2262 – Community Title Subdivision (as described in Schedule 1). Dated 4 March 2025.

Identic Pty Ltd. 2016. Scientific Name *Corymbia citriodora*. Available at:
https://keyserver.lucidcentral.org/weeds/data/media/Html/corymbia_citriodora.htm

JBS&G Australia Pty Ltd. 2023. Interim Environmental Management Plan – 49–65 Wentworth Avenue and 80, 90, 100 and 110 Pacific Highway, Doyalson, NSW. 1 November 2019. Ref: 57611/125365 Rev 0.

Jones Nicholson 2023a, Water Cycle Management Plan, Richmond + Ross Doyalson Wyee RSL Club, Pacific Highway, Doyalson, NSW 2262, Jones Nicholson, Sydney, NSW.

Jones Nicholson. 2023b. Doyalson Wyee RSL Club – Stormwater Masterplan Concept, 80-120 Pacific Highway & 49-65 Wentworth Ave, Doyalson, NSW 2262, Jones Nicholson, Sydney, NSW.

Keith, D. 2004. Ocean Shores to Desert Dunes: The Native Vegetation of New South Wales. Department of Environment and Conservation (NSW), Sydney, NSW.

Nearmap. 2023. Nearmap. Barangaroo, NSW. Available at: <https://www.nearmap.com/au/en>

National Parks and Wildlife Service (NPWS). 2003. The Bioregions of New South Wales – Their Biodiversity, Conservation and History. Hurstville, NSW. Available at:
<https://www.environment.nsw.gov.au/topics/animals-and-plants/biodiversity/bioregions/about>

Office of Environment and Heritage (OEH). 2018a. Species Credit Threatened Bats and Their Habitats – NSW Survey Guide for the Biodiversity Assessment Method. Sydney, NSW. Available at: <https://www.environment.nsw.gov.au/research-and-publications/publications-search>

Office of Environment and Heritage (OEH). 2018b. Guide to Photo Monitoring of Ecological Restoration Projects Funded by the NSW Environmental Trust. Sydney, NSW.



Royal Botanic Gardens and Domain Trust (RBGDT). 2023. PlantNET (The NSW Plant Information Network System). Sydney, NSW. Available at: <http://plantnet.rbgsyd.nsw.gov.au>

Rose Atkins Rimmer. 2025a. Doyalson R.S.L. Development Water Servicing Masterplan. Version 07, 26 March 2025. Minchinbury, NSW.

Rose Atkins Rimmer. 2025b. Doyalson R.S.L. Development Waste Water Servicing Masterplan. Version 08, 26 March 2025, Minchinbury, NSW

Rural Fire Service. 2019. Planning for Bush Fire Protection 2019. State of New South Wales. Available at: https://www.rfs.nsw.gov.au/__data/assets/pdf_file/0005/174272/Planning-for-Bush-Fire-Protection-2019.pdf [Accessed 28 Oct. 2025].

SLR Consulting Australia Pty Ltd (SLR). 2023. Statement of Environmental Effects – Proposed Subdivision and Associated Works, 80–120 Pacific Highway, Doyalson, NSW 2262. 8 June 2023. Revision 2.0. New Lambton, NSW.

SLR Consulting Australia Pty Ltd (SLR). 2025a. Biodiversity Development Assessment Report, Proposed Englobo Subdivision DA/1295/2023, Doyalson Wyee RSL Club Ltd t/a Doyalson Lifestyle Group.

SLR Consulting Australia Pty Ltd (SLR). 2025b. Englobo Landscape Management Plan, Proposed Englobo Subdivision DA/1295/2023, Doyalson Wyee RSL Club Ltd t/a Doyalson Lifestyle Group.

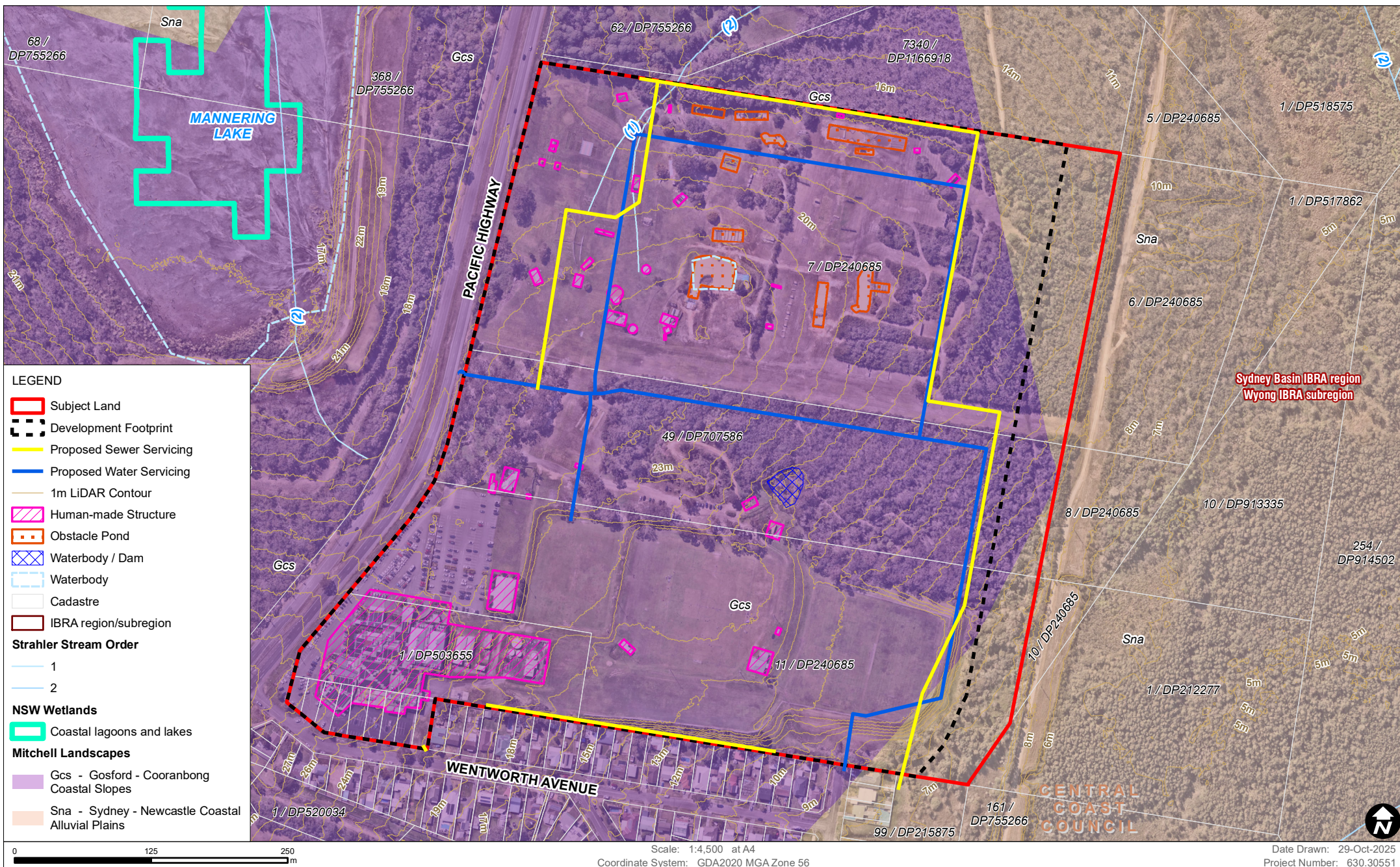
SLR Consulting Australia Pty Ltd (SLR). 2025c. Englobo Vegetation Management Plan, Proposed Englobo Subdivision DA/1295/2023, Doyalson Wyee RSL Club Ltd t/a Doyalson Lifestyle Group.

SLR Consulting Australia Pty Ltd (SLR). 2025b. Englobo Wildlife Management Plan, Proposed Englobo Subdivision DA/1295/2023, Doyalson Wyee RSL Club Ltd t/a Doyalson Lifestyle Group.

Specht, R.L. 1970. Vegetation. In: Leeper, G.W. (ed.) Australian Environment, 4th Ed. Melbourne University Press, Melbourne, VIC, pp. 44-67.

Threatened Species Scientific Committee (TSC). 2023. Final Determinations. Hurstville, NSW. Available at: <https://www.environment.nsw.gov.au/topics/animals-and-plants/threatened-species/nsw-threatened-species-scientific-committee/determinations/final-determinations>





Data Source: NSW SS, March 2023, Aerial imagery supplied by Nearmap, September 2025
 Elevation data DFSI Spatial Services 2014/2015
 Mitchell Landscapes © State Government of NSW and Department of Planning, Industry and Environment 2016, IBRA Regions Australian Government Department of Agriculture, Water and the Environment.
 NSW wetlands (Office of Environment and Heritage NSW)

SITE MAP

FIGURE 1



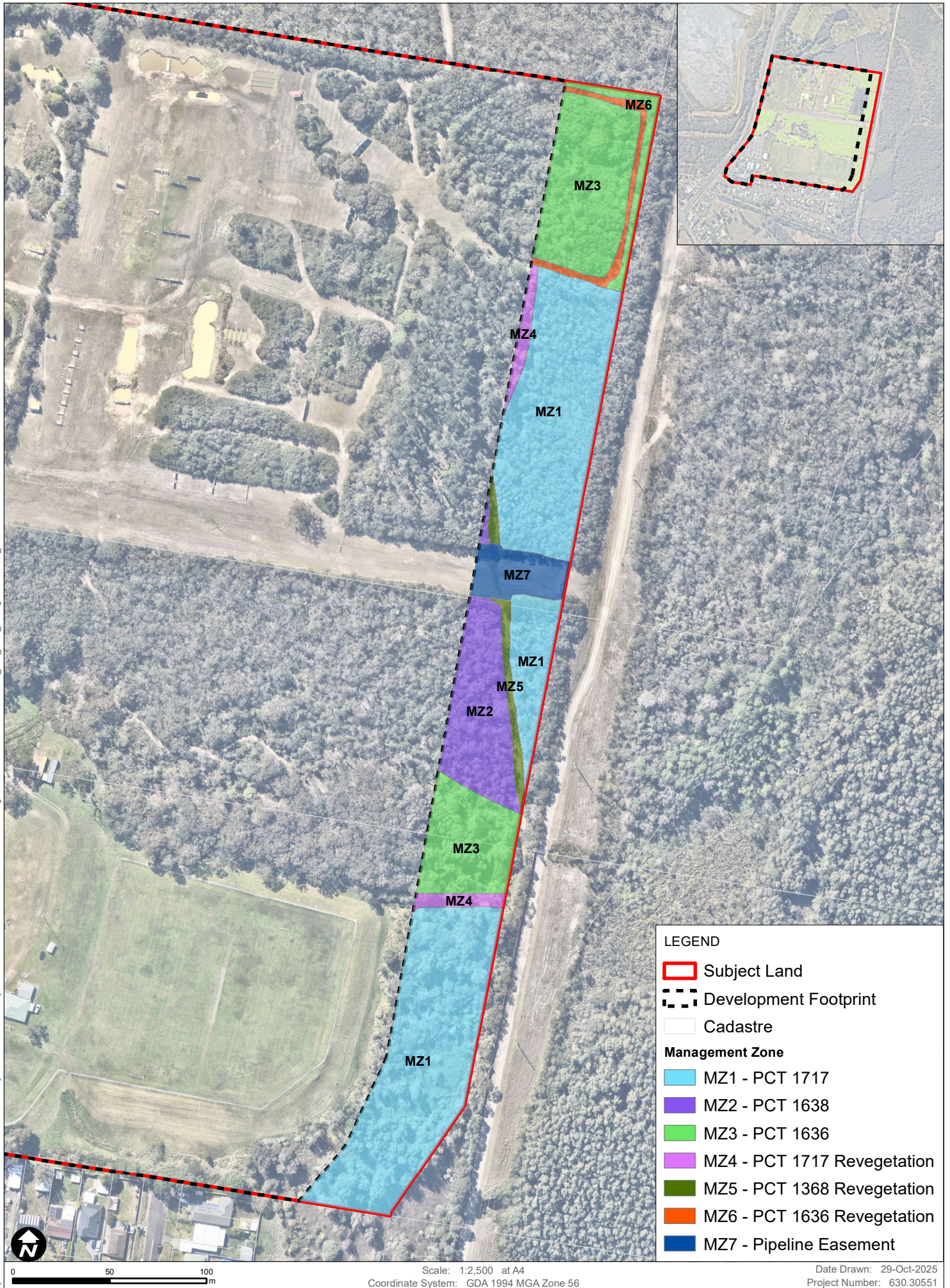
Data Source: NSW SS, March 2023
 Aerial imagery supplied by Nearmap, September 2025

* Note: the Corridors are derived from Annexure B of the Voluntary Planning Agreement between Central Coast Council and Doyalson Wyee RSL Club Limited dated May 22.

VEGETATION AND HOLLOW-BEARING TREES

FIGURE 3

\\au.slr\local\corporate\Projects\SLR\630-NTL\630.30551.000000 Doyleson RSL Biodiversity Assessment\06 SLR Data\01 CAD\GIS\GIS\Management Plans\ManagementZones_004.mxd

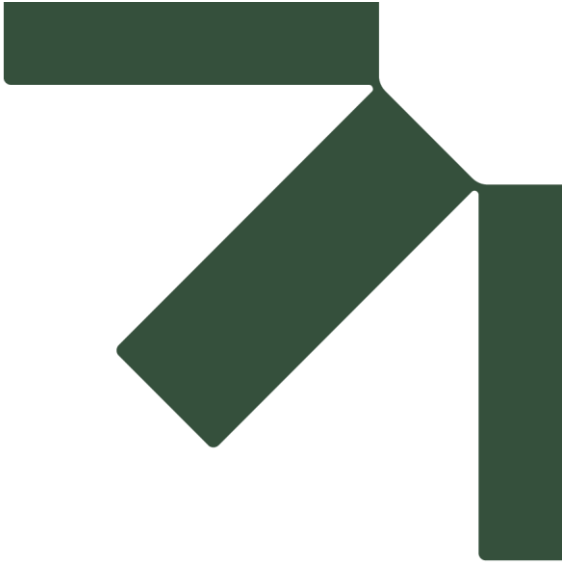


Data Source: NSW SS, March 2023
Aerial imagery supplied by Nearmap, September 2025



MANAGEMENT ZONES

FIGURE 4



Appendix A PCT Profiles

Englobo Vegetation Management Plan

Doyalson Wyee RSL Club/Proposed Subdivision

Doyalson Wyee RSL Club t/a Doyalson Lifestyle Group

SLR Project No.: 630.30551.00000

7 November 2025

BioNet Vegetation Classification - Community Profile Report

Plant Community Type ID (PCT ID):

1636

PCT Name: Scribbly Gum - Red Bloodwood - Angophora inopina heathy woodland on lowlands of the Central Coast

Classification Confidence Level: 2-High

Vegetation Description: Eucalypt dominated Woodlands with a shrubby mid-stratum and a graminoid ground cover. This community occurs on coastal lowlands from northern Tuggerah Lake to the northern end of Lake Macquarie. The substrate is sandstone with moist sandy soils| elevation is usually under 100m.

Variation and Natural Disturbance:

Vegetation Formation: Dry Sclerophyll Forests (Shrubby sub-formation);

Vegetation Class: Sydney Coastal Dry Sclerophyll Forests;

IBRA Bioregion(s): Sydney Basin;

IBRA Sub-region(s): Hunter; Pittwater; Wyong;

LGA: CESSNOCK; GOSFORD; LAKE MACQUARIE; NEWCASTLE; WYONG;

Lithology: Sandstone , Conglomerate

Landform Pattern: Not Assessed

Landform Element: Not Assessed

Emergent species: None

Upper Stratum Species: Eucalyptus haemastoma; Corymbia gummifera;

Mid Stratum Species: Banksia oblongifolia; Leptospermum trinervium; Lambertia formosa; Xanthorrhoea latifolia; Hakea dactyloides;

Ground Stratum Species: Epacris pulchella; Ptilothrix deusta; Petrophile pulchella; Lomandra obliqua; Themeda australis; Lepyrodia scariosa; Aristida warburgii;

Diagnostic Species:

(Species Name:Group Score, Group Frequency,Non Group Score, Non Group Frequency; Fidelity Class)

Eucalyptus haemastoma: 3, 91%, 2, 3%; positive

Corymbia gummifera: 2, 88%, 2, 14%; positive

Banksia oblongifolia: 3, 92%, 2, 7%; positive

Leptospermum trinervium: 2, 92%, 2, 14%; positive

Lambertia formosa: 2, 88%, 2, 6%; positive

Xanthorrhoea latifolia: 3, 80%, 2, 4%; positive

Hakea dactyloides: 2, 73%, 1, 6%; positive

Epacris pulchella: 2, 96%, 2, 7%; positive

Ptilothrix deusta: 3, 67%, 3, 7%; positive

Petrophile pulchella: 2, 64%, 2, 4%; positive

Lomandra obliqua: 2, 63%, 2, 10%; positive

Themeda australis: 3, 63%, 2, 33%; positive

Lepyrodia scariosa: 3, 49%, 3, 6%; positive

Aristida warburgii: 2, 40%, 2, 2%; positive

Fire Regime:

TEC Assessed: Has associated TEC

TEC List: Listed BC Act,CE: Kincumber Scribbly Gum Forest in the Sydney Basin Bioregion (Part);

Associated TEC Comments:

PCT Percent Cleared: 58.00

PCT Definition Status: Decommissioned

BioNet Vegetation Classification - Community Profile Report

Plant Community Type ID (PCT ID):

1638

PCT Name: Smooth-barked Apple - Red Bloodwood - Scribbly Gum grass - shrub woodland on lowlands of the Central Coast

Classification Confidence Level: 2-High

Vegetation Description: Woodlands; the canopy is characterised by Angophora and Eucalypts| the mid-stratum is typically comprised of low shrubs and the ground stratum is generally grassy.| This community is found the area bounded by Norah Head and Catherine Hill Bay in the east and extends to about the Pacific Highway in the west. Substrates are sandstones and elevations are typically below 100m.

Variation and Natural Disturbance:

Vegetation Formation: Dry Sclerophyll Forests (Shrubby sub-formation);

Vegetation Class: Sydney Coastal Dry Sclerophyll Forests;

IBRA Bioregion(s): Sydney Basin;

IBRA Sub-region(s): Hunter; Pittwater; Wyong;

LGA: CESSNOCK; GOSFORD; LAKE MACQUARIE; NEWCASTLE; WYONG;

Lithology: Sandstone

Landform Pattern: Not Assessed

Landform Element: Not Assessed

Emergent species: None

Upper Stratum Species: Angophora costata; Corymbia gummifera;

Mid Stratum Species: Allocasuarina littoralis; Leptospermum trinervium; Acacia myrtifolia; Persoonia levis; Lambertia formosa; Pimelea linifolia;

Ground Stratum Species: Themeda australis; Ptilothrix deusta; Lepyrodia scariosa; Entolasia stricta; Lomandra obliqua;

Diagnostic Species:

(Species Name:Group Score, Group Frequency,Non Group Score, Non Group Frequency; Fidelity Class)

Angophora costata: 2, 79%, 2, 21%; uninformative

Corymbia gummifera: 1, 74%, 2, 14%; uninformative

Allocasuarina littoralis: 2, 53%, 2, 12%; positive

Leptospermum trinervium: 2, 68%, 2, 14%; uninformative

Acacia myrtifolia: 1, 79%, 2, 5%; uninformative

Persoonia levis: 1, 76%, 1, 12%; uninformative

Lambertia formosa: 2, 63%, 2, 7%; uninformative

Pimelea linifolia: 1, 63%, 1, 15%; uninformative

Themeda australis: 0, 0%, 0, 0%; unknown

Ptilothrix deusta: 0, 0%, 0, 0%; unknown

Lepyrodia scariosa: 0, 0%, 0, 0%; unknown

Entolasia stricta: 0, 0%, 0, 0%; unknown

Lomandra obliqua: 0, 0%, 0, 0%; unknown

Fire Regime:

TEC Assessed: No associated TEC

TEC List: Not Assessed

Associated TEC Comments:

PCT Percent Cleared: 50.00

PCT Definition Status: Decommissioned

BioNet Vegetation Classification - Community Profile Report

Plant Community Type ID (PCT ID):

1717

PCT Name: Broad-leaved Paperbark - Swamp Mahogany - Swamp Oak - Saw Sedge swamp forest of the Central Coast and Lower North Coast

Classification Confidence Level: 2-High

Vegetation Description: Myrtaceous Swamp Open Forests with a mid-stratum of small trees. The ground stratum is dense and dominated by wet-loving grasses and graminoid species. This community is common on coastal floodplains and poorly drained lowlands from the Broadwater to Failford; it mainly occurs on unconsolidated sediments at elevations below 50m. More isolated examples occur as far south as Macmasters Beach.

Variation and Natural Disturbance:

Vegetation Formation: Forested Wetlands;

Vegetation Class: Coastal Swamp Forests;

IBRA Bioregion(s): NSW North Coast; Sydney Basin;

IBRA Sub-region(s): Hunter; Karuah Manning; Macleay Hastings; Pittwater; Upper Hunter; Wyong; Yengo;

LGA: GOSFORD; GREAT LAKES; GREATER TAREE; LAKE MACQUARIE; MAITLAND; NEWCASTLE; PORT MACQUARIE-HASTINGS; PORT STEPHENS; WYONG;

Lithology: Not Assessed

Landform Pattern: Not Assessed

Landform Element: Not Assessed

Emergent species: None

Upper Stratum Species: Casuarina glauca; Melaleuca quinquenervia; Eucalyptus robusta; Livistona australis;

Mid Stratum Species: Melaleuca linariifolia; Glochidion ferdinandi;

Ground Stratum Species: Entolasia marginata; Gahnia clarkei; Imperata cylindrica; Lomandra longifolia; Dianella caerulea;

Diagnostic Species:

(Species Name:Group Score, Group Frequency,Non Group Score, Non Group Frequency; Fidelity Class)

Casuarina glauca: 3, 90%, 3, 4%; positive

Melaleuca quinquenervia: 3, 83%, 2, 5%; positive

Eucalyptus robusta: 2, 52%, 2, 7%; positive

Livistona australis: 2, 64%, 2, 8%; uninformative

Melaleuca linariifolia: 2, 60%, 2, 6%; positive

Glochidion ferdinandi: 2, 60%, 2, 14%; uninformative

Entolasia marginata: 2, 74%, 2, 15%; positive

Gahnia clarkei: 3, 71%, 2, 10%; positive

Imperata cylindrica: 2, 67%, 2, 33%; positive

Lomandra longifolia: 2, 40%, 2, 59%; positive

Dianella caerulea: 1, 71%, 2, 54%; uninformative

Fire Regime:

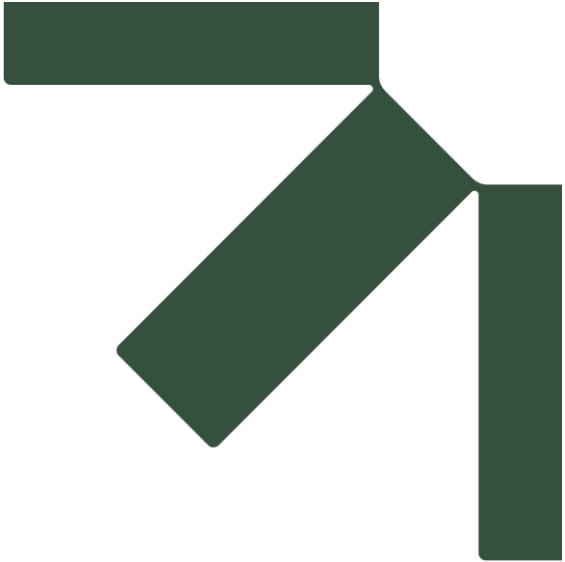
TEC Assessed: Has associated TEC

TEC List: Listed BC Act,E: Swamp Sclerophyll Forest on Coastal Floodplains of the New South Wales North Coast, Sydney Basin and South East Corner Bioregions (Part);

Associated TEC Comments:

PCT Percent Cleared: 68.00

PCT Definition Status: Decommissioned



Appendix B BAM Plot Methods

Englobo Vegetation Management Plan

Doyalson Wyee RSL Club/Proposed Subdivision

Doyalson Wyee RSL Club t/a Doyalson Lifestyle Group

SLR Project No.: 630.30551.00000

7 November 2025

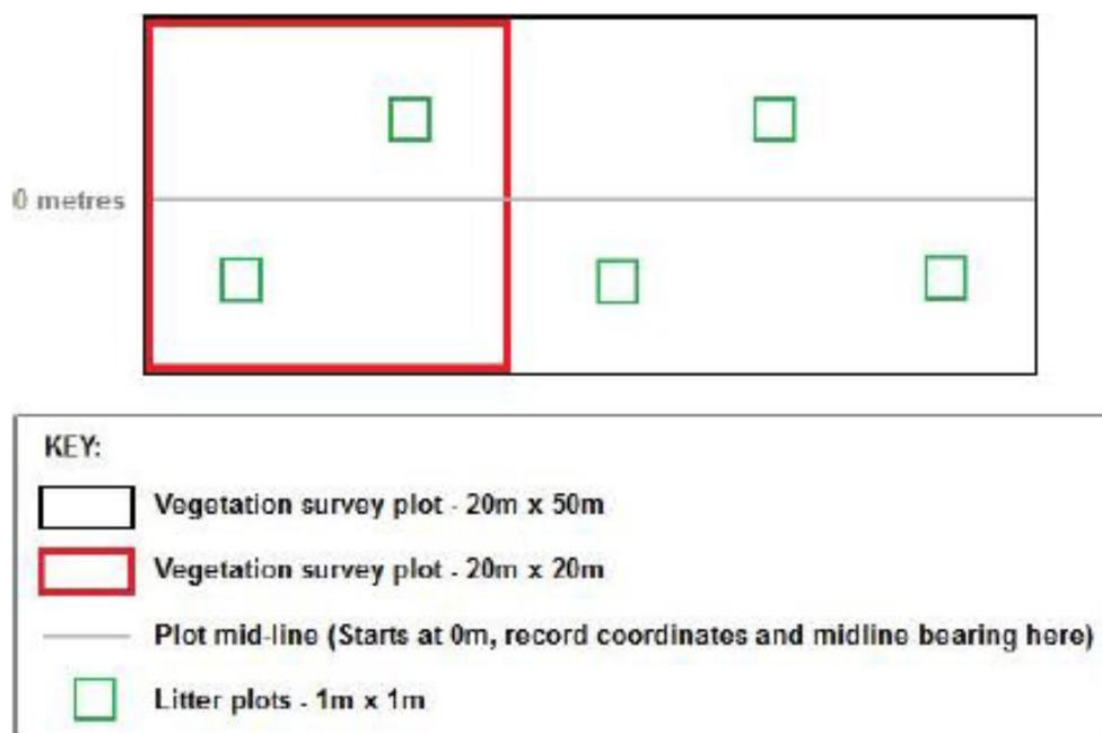
B.1 Vegetation Composition and Structure (BAM Vegetation Assessment)

Vegetation composition and structure data are to be collected using a series of BAM plots at established monitoring stations across the Biodiversity Corridor. The specific methods for BAM plot data collection are described below.

B.1.1 BAM Plot Layout

All vegetation monitoring plots were surveyed following the methodology detailed in Section 4.3.4 of the Biodiversity Assessment Method (BAM; OEH 2020). This involved a 20 x 20 m floristic plot to assess species diversity and ground cover, a 20 x 50 m structural attribute plot to collect tree stem size, large woody debris (LWD) and hollow-bearing tree data and five 1 m x 1 m plots to assess ground cover percentage (bare ground, cryptogram, leaf litter and rock), see Figure B1.

Figure B1 BAM Plot Layout



B.1.2 BAM Data

The following sections detail the various metrics assessed using the BAM. Table C1 below provides a guide to how each performance criteria are assessed using this methodology and the sections below provide a short description of the various metrics and the specific methodology used to measure each in the BAM. Metrics which are not assessed though the BAM have been excluded from this table. These metrics are assessed through the soil chemistry, microbiology and/or by general observations.



Table B1 Assessment of Respective Performance Criteria Using the BAM

Ecological Rehabilitation Objective	Modified Rehabilitation Completion Criteria	BAM metric
Vegetation composition recognisable as target vegetation community	Native plant species are characteristic of the target vegetation community(s)	Comparison of native species lists between control and rehabilitation plot data
Vegetation structure recognisable as, or is trending towards target vegetation community	Cover and abundance of native plant growth forms are characteristic of target vegetation community type(s)	Native plant species richness and cover scores for all six growth forms as below
Ecosystem function demonstrates rehabilitation is self-sustainable	Litter cover is within 10 th -90 th percentile variation range of reference sites/data	Comparison of litter cover scores (%) between control and rehabilitation
	Second generation individuals of trees are within the 10 th -90 th percentile variation range of reference sites	Comparison of tree regeneration scores between control and rehabilitation plot data
	Foliage cover of 'high threat exotic' (HTE) weeds is within 10 th -90 th percentile variation range of reference sites	Comparison of HTE cover scores between control and rehabilitation plot data

Native Plant Species Richness

Native plant species richness refers to the total number of native species recorded within each 20 m X 20 m plot. Native plant species are vascular species local to the area and, if planted, come from a local seed source. Each plot was systematically walked and the number of native plant species for all vascular plants was counted. A list of native plants was compiled for each plot and each species was given a cover (% plant coverage within each 400 m² plot) and abundance (number of plants within each 400 m² plot) score.

Native Tree Cover

Native tree cover is the tallest woody stratum present and under the BAM is determined with reference to 'growth form¹'). Tree cover is estimated as the percentage of foliage cover, which is equivalent to the amount of shadow that would be cast on the ground if there were a light source directly overhead. It is calculated by estimating the percentage foliage cover of each species in the tree growth form group. These numbers are summed to get the overall estimated overstorey cover.

Native Grass and Grass-like Cover

This growth form includes all true grasses (family Poaceae) as well as groundcover species which are not forbs, ferns or other, and are identified by Growth Form. The percentage foliage cover of the grass and grass-like growth form is estimated as for the tree growth form group detailed above.

¹ The Native Species by Growth Form spreadsheet (maintained by the NSW Department of Planning and Environment (DPE))



Native Shrub Cover

This growth form includes all woody native species which are not assigned to the tree growth form group. The percentage foliage cover of the shrub growth form is estimated as for the growth form groups detailed above.

Native Forb Cover

This growth form includes all native ground stratum species which are not grasses, grass-like, ferns or other. The percentage foliage cover of the forb growth form is estimated as for the growth form groups detailed above.

Native Fern Cover

This growth form includes all native ground stratum species which are not grasses, grass-like, forbs or other. The percentage foliage cover of the fern growth form is estimated as for the growth form groups detailed above.

Native Other Cover

This growth form includes all native ground stratum species which are not grasses, grass-like, forbs or ferns. The percentage foliage cover of the forb growth form is estimated as for the growth form groups detailed above.

Exotic Plant Cover

Exotic plants are vascular plants not native to Australia. Exotic plant cover is measured as total percent foliage cover of all exotics in all strata. Cover for exotic species is calculated as for the native growth form groups detailed above. Under the BAM, exotic species are classified as “High-threat Weed”, or “Non-High-threat Weed”. High-threat Weeds are as identified in the NSW DPE High-threat Weeds List spreadsheet. This list is distinct from the NSW priority weeds list (as per the NSW *Biosecurity Act 2015* (Bio Act)).

All field data is collected in standard BAM field sheets.

Ecosystem Function

Litter Cover (BAM)

The litter cover is determined by calculating the mean percentage of the ground covered by litter in five 1 x 1 m plots (as well as bare ground, cryptogram and rock). These plots are evenly spaced and positioned parallel to the BAM central 50 m midline. Litter includes leaves, seeds, twigs, branchlets and branches (< 10cm in diameter). Litter from native and exotic species (combined) are recorded for this attribute. All plant material that is detached from a plant and forms part of a litter layer on the ground surface is included.

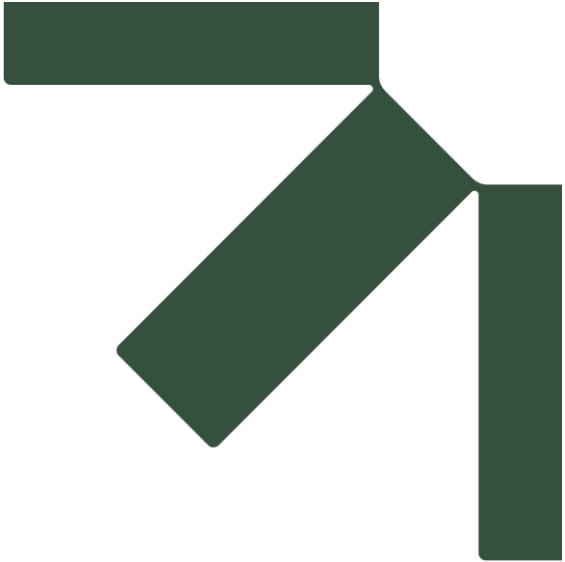
Total Length of Fallen Logs (BAM)

This is the total length of logs and fallen timber of at least 10 cm diameter and at least 0.5 m length within the 50 m x 20 m plot. The diameter is estimated with a measuring tape (or callipers if available) held horizontally immediately above the log and the length is estimated to the nearest metre by measuring with a tape, or pacing, along the part of the log that is at least 10 cm in diameter. Only those parts of logs/timber lying within the plot are measured.

Tree Regeneration (BAM)

Regeneration is measured as the presence or absence of tree growth form species with a Diameter at Breast Height (DBH) (140 cm above ground level) of less than 50mm within the 50 m x 20 m plot.





Appendix C Photo Monitoring Guide

Englobo Vegetation Management Plan

Doyalson Wyee RSL Club/Proposed Subdivision

Doyalson Wyee RSL Club t/a Doyalson Lifestyle Group

SLR Project No.: 630.30551.00000

7 November 2025

Guide to photo monitoring of ecological restoration projects funded by the NSW Environmental Trust



Before



After

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Image source – Tweed Landcare Inc. (2017)

Filling Biodiversity Gaps Connecting Tweed Coast to Border Ranges Stage 2 (2015/RR/0071)
Brannian / Sharman Property before and after weed control in a steep gully
Photographs taken by Bushland Restoration Services

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Guide to monitoring of ecological restoration projects

This guide has been developed to assist you to establish and maintain photo monitoring processes for Environmental Trust (Trust) funded projects. Since the Trust funds projects that include a wide variety of activities aiming to improve the environment, there is no 'one size fits all' approach to monitoring. However, the Trust does expect all grantees to establish and maintain photo monitoring for their ecological rehabilitation projects.

This guideline includes the following:

- Guidance on how to establish and maintain your photo monitoring points;
- A completed example of what your group / organisation is expected to submit to the Trust including comparable photographs progressively added during each Stage Progress Report until it is ready for the Final Report;
- A link to a downloadable blank version of the photo monitoring template.
- An explanation of the various fields contained in the blank photo monitoring template version; and
- A blank data sheet (master photo monitoring data recording sheet) used to collate and keep track of the data recorded for each photo monitoring point.

If your project involves monitoring of vegetation and fauna, guidelines on Rapid Assessment Monitoring and Transect Monitoring are also available from the Trust.

The Trust have staff available to help with designing an appropriate monitoring program for your project and can be contacted by telephoning (02) 8837 6093, or by email info@environmentaltrust.nsw.gov.au.

Why monitor?

- Monitoring your project is important for a few reasons:
- It allows you to assess the impact your project has in a measured, visual way, enabling your group or organisation to make adaptive management decisions, and recognise and celebrate your successes.
- It provides the Trust with a quantitative and qualitative appraisal of what your project is achieving, because monitoring information is relayed to the Trust in your progress reports.
- It helps to build a body of data which informs the wider NRM community of the effectiveness of approaches to restoration, whether through innovative or standard practices.

Ultimately monitoring will give you evidence of progressive change that then allows you to evaluate how well you have done, what effect your project has had and the quality of the outcomes you have generated. This then provides you with clear and meaningful information to include in your reporting to the Trust.

Photo monitoring

Photo monitoring is a quick and relatively easy way of measuring change in the natural environment. A series of photos are taken from a fixed location at regular intervals with the aim of visually showing improvement in vegetation condition. Photo monitoring will show broad-scale changes within the framed area but is unlikely to enable fine scale, quantitative assessments to be made.

NOTE: Photo monitoring is essential for all ecological restoration projects funded by the Environmental Trust.

How to establish and maintain photo-points

Step 1: Choose your location

Your photo-points will stay the same for the duration of your project, so you should select fixed locations from across your sites which clearly demonstrate the management issues being addressed through your project activities.

There is no minimum or maximum number of points required, however generally speaking, the more complicated your management issues are and the larger your site is, the more you should provide.

TIPS

Consider proximity to tracks or roads for future accessibility.

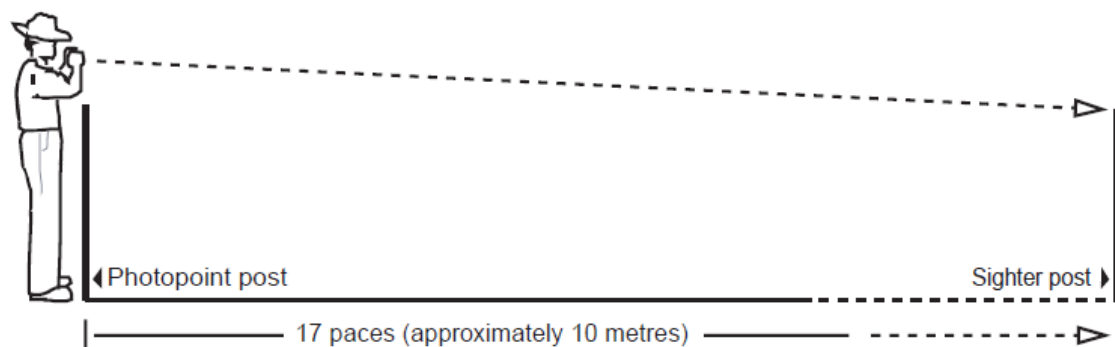
Consider potential vegetation regrowth that may obscure the clarity of future photos taken from the same location.

Consider integrating photo-points with your other monitoring methods (Rapid Assessment and/or transects / quadrats).

Step 2: Mark the location

Install a physical marker (e.g. star-picket, tomato stake, etc.) to mark the point from which a photo will be taken. Then add a sighter post at a set distance (see diagram below).

Attach flagging tape with information including a site reference number, date and aspect. Sites can change significantly following remediation work so this will help with finding the same location at a later stage. Capturing a GPS point using a handheld GPS or smart phone is also a handy method of retracing the approximate location of a photo-point and is highly recommended.

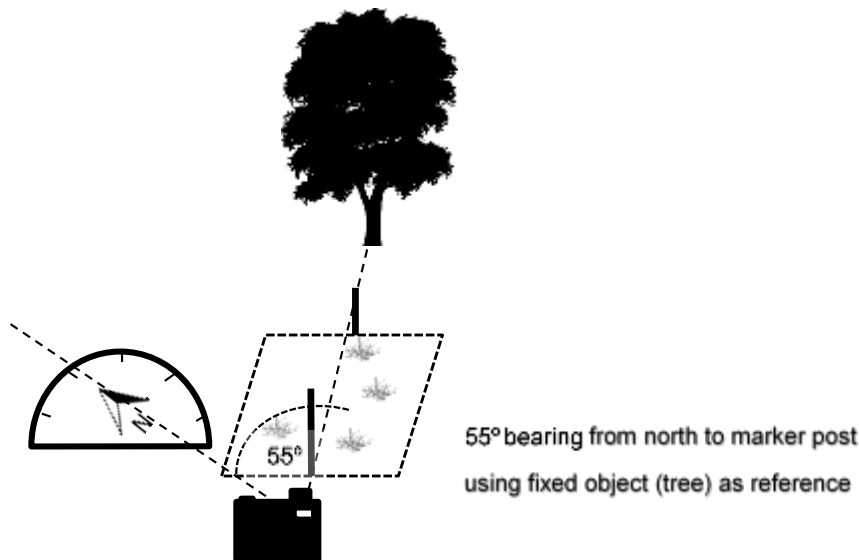


Source: Grodecki & Van Willing, 2010

Step 3: Take the photo

While standing at your marker post, use a compass or GPS to take bearing from due north to the centre of your photo frame (see diagram below). Take a few shots from the marker post (select the best/clearest shot later).

If taking multiple images as part of a panorama, record bearings from north for each image and take sequential photographs (from either left to right or right to left) allowing for each image to overlap so that no gaps exist in the panorama.



REMEMBER

There is no minimum or maximum number of required photo points you can or need to establish. The important thing is to capture images that are representative of your work site.

TIPS

- Try to include a fixed reference object such as a distinctive tree, fence-post etc. in the photo for future reference (note in the example provided the consistent location in the centre background of the large white-trunked tree)
- Consider taking a mix of photos which show your site at a broad scale (landscape) as well as incorporating some of your monitoring plots (transects and/or quadrats). Use the same digital camera and settings (e.g. zoom, light settings, etc.) each time you take photos.
- Take along copies of the original photos for reference when returning to the photo-points to help match the field of view contents.
- Light cloudy days are ideal when sunlight is weaker and shadows from vegetation are less pronounced.
- Avoid taking photos during mist, when dark clouds are passing over or when vegetation/landscape are in mountain

Step 4: Record field data

It is important to record notes when you take each photo which will later help to explain what is being shown in the photo.

Record all information relevant to your photos in photo monitoring template (refer to Appendix 1) immediately after each photograph is taken. This can be transferred into your master photo monitoring data recording table file prepared for each site (refer to Appendix

2). Accurate field notes are a back-up to e-files in case photo file names are labelled incorrectly or become mixed up.

Information for collection includes the photo point reference number, site and zone identification numbers, date and image number (from camera).

Step 5: Repeat

Photo monitoring is most effective when images are captured using a recurring timeframe. It is essential that monitoring stations are established pre-work (baseline) and then revisited 12 months later to show the changes resulting from the on-ground works.

Follow-up photos should then be taken annually at the same time of year as your baseline photo. You can choose to take additional photographs at the same station on a seasonal basis (i.e. summer; autumn; winter; spring) or on a six-monthly basis. Take care to repeat and follow the directions outlined in Steps 3 and 4, being mindful that the same field of view inclusive of the original bearing and reference points are maintained.

Appendix 1

Photo monitoring example using the Trust template

<u>ET Project ref #:</u>	<u>Photo Point #:</u>	<u>Site / Zone # / Name:</u>	<u>Bearing:</u>	<u>Latitude: (decimal degrees)</u>	<u>Longitude: (decimal degrees)</u>
2018/RR/0099	PP1	<u>Site 1 / Zone 5 / Smith</u>	90° (East)	-33.5041	150.4487
Baseline (before)	End of Stage 1	End of Stage 2	Final		
<u>Date:</u> 3/07/2014	<u>Date:</u> 30/07/2015	<u>Date:</u> 29/07/2016	<u>Date:</u> 1/08/2017		
<u>Description:</u> Baseline photo prior to Lantana splatter. Tracks have been cut to allow access.	<u>Description:</u> Twelve months after primary Lantana splatter. Early regeneration evident.	<u>Description:</u> Two years after primary treatment and follow-up poison. Colonising species increasing.	<u>Description:</u> Three years after primary and two follow-up treatments. Significant natural regeneration.		
					
<u>Comments:</u> 95% Lantana coverage. Some native canopy species observable (Red Ash, <i>Trema</i>)	<u>Comments:</u> Lantana coverage now <10%. Bleeding heart, Bracken and <i>Trema</i> initial regen response.	<u>Comments:</u> Lantana coverage now <5%. Giant Stinging Tree germination recorded.	<u>Comments:</u> Lantana no longer present. Adjusted photo location to capture scope of regeneration.		

Download blank template

A blank version of this document can be downloaded and edited from the following [link](#).

Explanation of template fields

Field	Description
1. ET Project ref #:	Your Environmental Trust grant reference number (e.g. 2018/RR/0099)
2. Photo Point #:	Each of your photo points are to be given an identification number (e.g. PP1)
3. Site / Zone # / Name:	This will also correspond with the photo point location in your project map. (E.g. Site 1 / Zone 5 / Smith)
4. Bearing	Compass bearing of direction of photo (e.g. 90°)
5. Latitude / Longitude:	Enter data as Decimal Degrees and limit to 4 decimal places. e.g. -33.1234 and 150.1234. (Please do not enter as degrees, minutes, seconds format.)
6. Baseline (before)	This photo should capture pre-work condition of your selected monitoring location. Your baseline photo should be taken during your projects site assessment and planning activities.
7. End of Stage 1	This photo is to be taken at the completion of your stage 1 activities and submitted with your stage 1 progress report.
8. End of stage 2	This photo is to be taken at the completion of your stage 2 activities and submitted with your stage 2 progress report.
9. Final	This photo should be taken at the end of your project and submitted with your final report.
10. Date	Enter the exact date the monitoring photo was taken.
11. Description	For each photograph, describe the scene. Include useful information such as targeted weed species and density, regeneration response, significant species, etc.
12. Comments	This is optional. Where relevant, provide additional higher level detail for each photo (e.g. unexpected weed responses, problems encountered, etc.)

Appendix 2

Example of record keeping using photo monitoring master data sheet

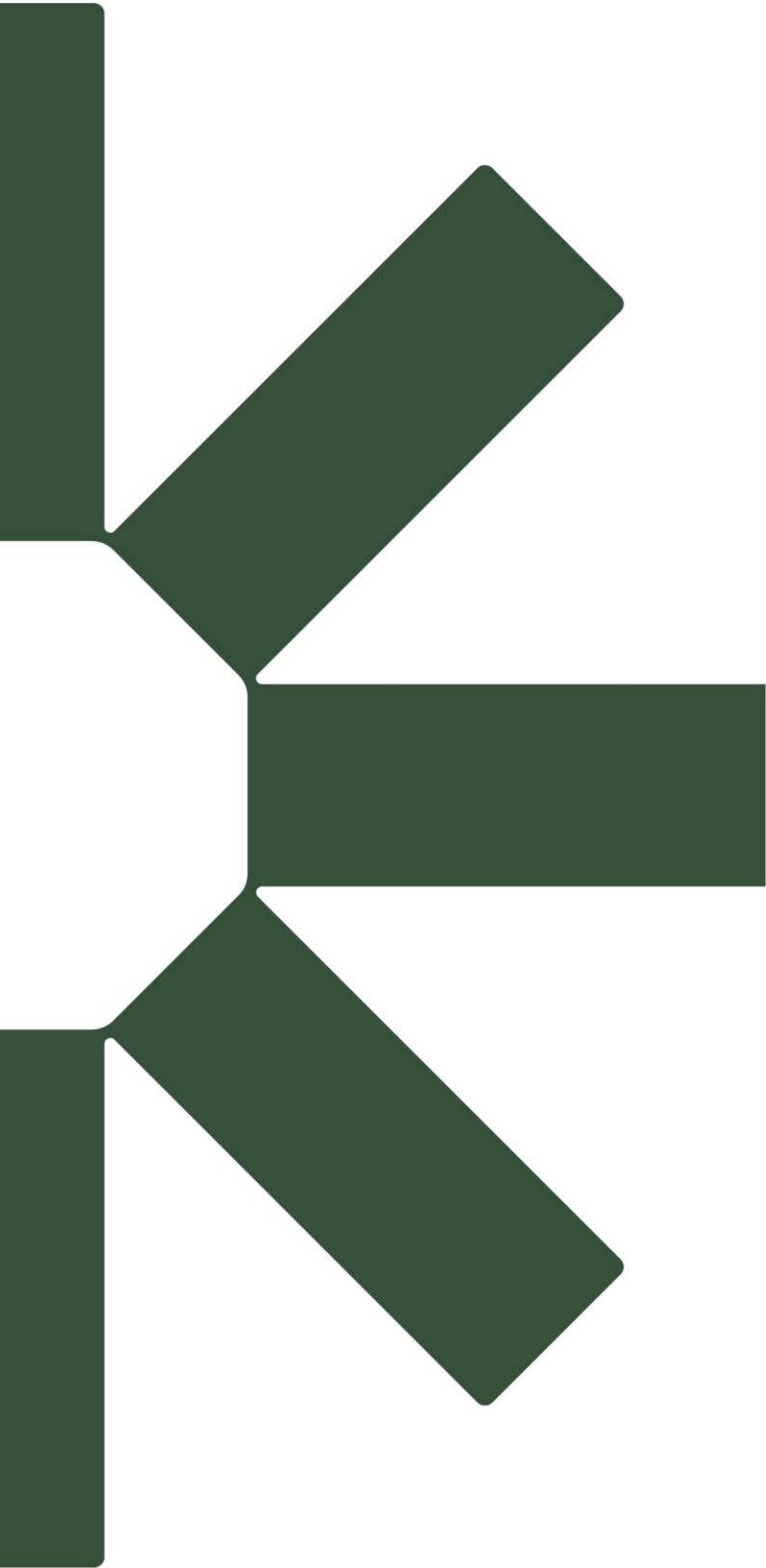
ET Project ref #:	2018/RR/0099		
Site / Zone # / name:	Latitude / Longitude:	Bearing:	Photo point #:
Site 1 / Zone 5 / Smith Site 1 / Zone 3 / Smith Site 1 / Zone 1 / Smith	-33.5041 / 150.4487 -33.5034 / 150.4481 -33.5050 / 150.4510	90 deg 275 deg 180 deg	PP1 PP2 PP3
Date	Photo Point #	Camera Image #	Description
3/07/2014	PP1	DSC2018P1	Baseline photo prior to Lantana splatter. Tracks have been cut to allow access.
3/07/2014	PP2	DSC2018P2	Baseline photo showing Paspalum infestation in gully.
3/07/2014	PP3	DSC2018P3	Baseline photo of Camphor Laurel at head of gully.
30/07/2015	PP1	DSC2019P1	Twelve months after primary Lantana splatter. Early regeneration evident.
30/07/2015	PP2	DSC2019P2	Twelve months after Paspalum overspray. Follow-up spray required.
30/07/2015	PP3	DSC2019P3	Twelve months after drill & fill of mature Camphor. Early regeneration evident.
Click or tap to enter a date.			
Click or tap to enter a date.			

Download blank master data template

A blank version of this document can be downloaded and edited from the following [link](#).

Explanation of master template fields

Field		Description
1.	ET Project ref #:	Your Environmental Trust grant reference number (e.g. 2018/RR/0099)
2.	Site / Zone # / Name:	This will also correspond with the photo point location in your project map. (E.g. Site 1 / Zone 5 / Smith)
3.	Latitude / Longitude:	Enter data as Decimal Degrees and limit to 4 decimal places. e.g. -33.1234 and 150.1234. (Please do not enter as degrees, minutes, seconds format.)
4.	Bearing	Compass bearing of direction of photo (e.g. 90°)
5.	Photo Point #:	Each of your photo points are to be given an identification number (e.g. PP1)
6.	Date	Enter the exact date the monitoring photo was taken.
7.	Camera Image #	The digital reference number assigned to the photo by your camera.
8.	Description	For each photograph, describe the scene. Include useful information such as targeted weed species and density, regeneration response, significant species, etc.



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