

Ecological Survey and Assessment

Lot 1 DP 1032820 at Scenic Drive Bilambil Heights, 2486



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Table of Contents

1	Introduction	4
1.1.	Aims and Objectives	4
1.2.	Development Description	4
2	Site Description	5
2.1	Location.....	5
2.2	Property Details.....	5
2.3	Site History.....	5
2.4	Site Access	5
2.5	Geology and Soils	6
2.6	Hydrology.....	6
2.7	Topography, Aspect and Elevation	7
2.8	Landscape Connectivity	7
3	Site Survey.....	8
3.1	Vegetation Description	8
3.2	Weeds.....	13
3.2	Fauna Habitat.....	13
3.3	Determination of High Environmental Value	14
4	Assessment of Ecological Impacts.....	23
4.1	Vegetation Removal & Habitat Modification	23
5	Avoidance / Mitigation of Ecological Impacts	27
6	Relevant Environmental Legislation	30
6.1	Commonwealth Legislation.....	30
6.2	NSW State Legislation.....	30
6.3	Relevant Environmental Planning Instruments and Strategies	31
7	References.....	37
	Appendix 1: Native Plants recorded on the property	38
	Appendix 2: Exotic species recorded on the property.....	40
	Appendix 3: Numbered Flora species recorded on the property	42
	Appendix 4: Assessments of Significance	44
	Appendix 5: Planning Agreement.....	45

1 Introduction

Bushland Restoration Services was contracted by David Smouha of Bilambil Holdings to prepare an Ecological Assessment to satisfy an additional information request by the Biodiversity Conservation Division (BCD) of NSW Department of Planning, Industry and Environment (DPIE) in relation to a submitted Planning Proposal at Lot 1 DP 1032820, corner of Walmsleys Road and Scenic Drive, Bilambil Heights, 2486. The Planning Proposal seeks relocation of the existing northern component of R1 General Residential LEP zoning to consolidate potential development areas on the lot from two into one, with the same total proposed residential area.

The property is approximately 6.3ha in area and medium density development is proposed for the site. A bushfire asset protection zone is required to achieve the proposed dwellings, and this, along with the construction footprint, would involve removal of native vegetation.

1.1. Aims and Objectives

The aim of this report is to provide a review of ecological impacts associated with the proposed change in land use zoning and potential development of R1 land. The associated objectives are to:

- a) Undertake an ecological survey sufficient to map vegetation and species comprising High Environmental Value on the site.
- b) Determine the proposed development footprint and the nature and extent of any native vegetation removal required to facilitate the LEP zone changes.
- c) Identify any potential development impacts arising from the rezoning on threatened flora species and/or high environmental value vegetation over the subject site and immediate surrounds.
- d) Recommend measures to avoid, mitigate and offset any potential ecological impacts.
- e) Retain bushland habitat within existing wildlife corridors.
- f) Encourage restoration and revegetation of bushland to increase habitat connectivity.
- g) Mitigate indirect and ongoing impacts of development on wildlife corridors.

1.2. Development Description

The proposed LEP zoning reconfiguration on the lot is intended to facilitate a mix of medium density development and mixed-use development for general residential housing and shops/working spaces under an R1 General Residential zone. It is proposed to provide apartments and living space in unit blocks, which will require provision of suitable bushfire asset protection zones, formalisation of the internal road network and provision of some public parking areas. Strata subdivision is proposed for the units rather than Torrens Title subdivision for the land. A Master Plan layout is shown on **Figure 6**.

Part of Lot 1 is proposed for E3 Environmental Management zoning between the proposed R1 and E2 zones (**Figure 5**). This area surrounding the R1 will comprise the required bushfire asset protection zone (APZ), where native trees will be retained with separated or clumped canopies, but the understorey managed to prevent bushfire threat. The final APZ will be determined once a development layout is finalised, and BAL levels agreed. The provisional APZ as it would be applied to surround the proposed R1 zoning has been provided by Peter Thornton of is indicated on **Figure 3**.

The central component of the proposed R1 contains two large Moreton Bay Fig trees and associated regrowth and exotic vegetation. These are intended to be retained and protected within the Planning Agreement with weed control works undertaken.

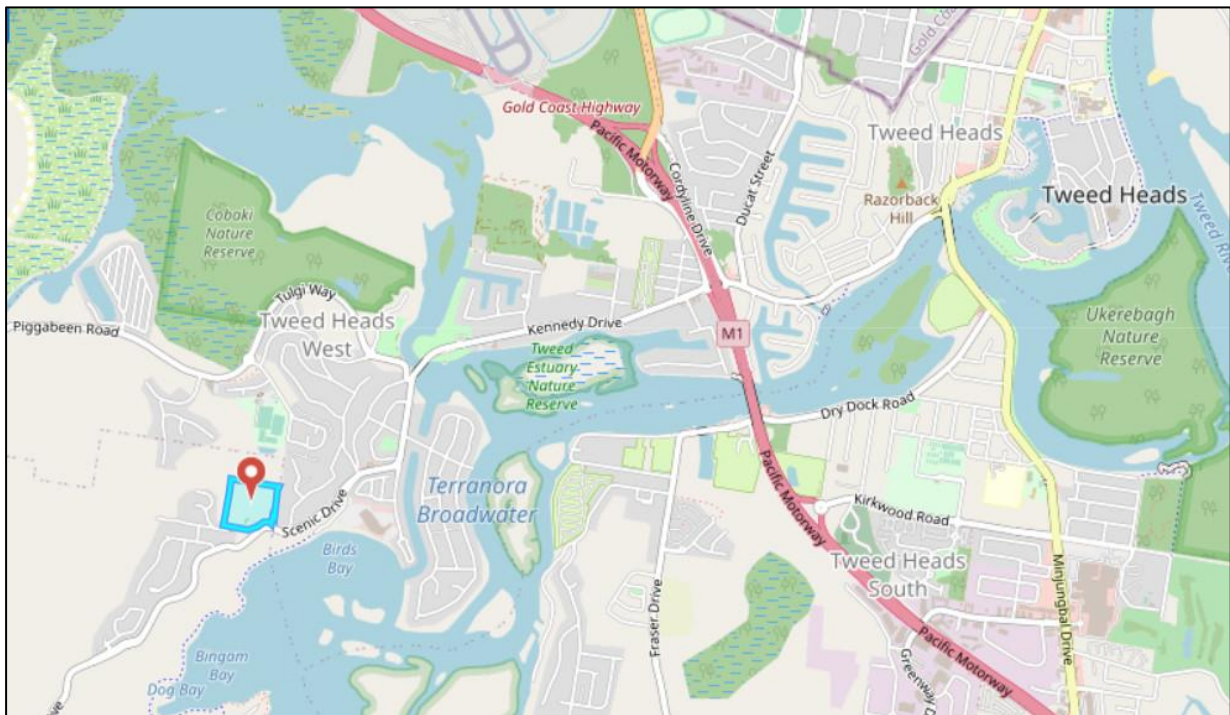
A separate lot is proposed for Environmental Protection zoning (E2) and is intended for conservation and ecological restoration. The part of this proposed lot presently vegetated will be worked by qualified and experienced bush

regenerators, while that part of the zone in the north which is presently grassed, will be replanted to Lowland Rainforest. This lot will be subject to a Planning Agreement to formalise this intent (**draft attached**) and require the on-ground works to be carried out.

2 Site Description

2.1 Location

The site (pinpointed and outlined in blue below) is located in Bilambil Heights in the north of Tweed Shire in northern NSW, west of Tweed Heads.



2.2 Property Details

Landowner's name:	Bilambil Holdings Pty Ltd
Land tenure:	Private
Address:	Scenic Drive, Bilambil Heights, known as 1 Walmsleys Road, Bilambil Heights
Description:	Lot 1 DP 1032820
Legal Area:	6.28 hectares
Zoning:–	R1 General Residential and Deferred Matter, reverting to 7(d) Scenic Escarpment
LGA:	Tweed Shire

2.3 Site History

The property has been previously used for a residential dwelling and cattle grazing.

2.4 Site Access

Access to the property is from Scenic Drive and Walmsley Road Bilambil Heights. The main access driveway from Scenic Drive will be required to be upgraded to a sealed internal road network.



Figure 1: Aerial photograph indicating property boundaries and ephemeral drainage lines.

2.5 Geology and Soils

The property is largely mapped as the 'Billinudgel' soil landscape (Morand 1996), derived from the Palaeozoic Neranleigh-Fernvale Group. Geology consists of thinly bedded fissile shales, siltstones and sandstones with occasional more massive greywackes, volcanic tuffs, agglomerates and sandstones. Soils are —deep, moderately well-drained Red Podzolic Soils on crests; moderately deep, moderately well-drained Yellow Earths and Yellow Podzolic Soils on slopes and in better-drained areas.

The south-west corner contains the 'Carool variant a' soil landscape, derived from Lamington Volcanics; being Tertiary basalt with members of rhyolite, trachyte, tuff, agglomerate and conglomerate. The soil landscape consists of rolling hills on Tertiary basalt caps which overlie hills of the Billinudgel soil landscape. 'Variant a' refers to smaller basalt caps with lower (50–100 m) relief and gentler (10–15%) slopes. Soils in this area are deep, well-drained Krasnozems on upper slopes and crests.

2.6 Hydrology

One first-order and one second-order drainage lines occur on the property (see Figure 1). The site is considered to be part of the catchment of the Tweed River estuary.

2.7 Topography, Aspect and Elevation

Topography of the area contains rolling low hills that abut the higher and steeper Burringbar soil landscape. Relief is 50–100 m and slopes range from 10–20%. The property slopes from 10m AHD along the northern boundary to 60m on the elevated ridgeline in the centre-south of the property. The site is generally undulating with easterly and westerly aspects from the ridge. The rezoning is proposed in the largely cleared ridge area of the site.



2.8 Landscape Connectivity

National Parks and Nature Reserves

The property lies approximately 1km south of Cobaki Nature reserve and 1-2km from Tweed Estuary Nature Reserve including Daveys Island, Big Island, Caddies Island and Wommin Island in the Terranora Broadwater. Continuous vegetation almost connects the western vegetation on the lot to Cobaki Nature Reserve.

Fauna Corridors

The property (blue outline shape below) is not mapped as part of any Regional or sub-regional Fauna Corridors, though it lies between connections to the north and south.



3 Site Survey

A detailed vegetation survey was undertaken of the vegetation within the proposed development footprint and adjacent vegetation on the east and west within the property at 1 Walmsley Road. The property was surveyed initially on 10th January 2019, again on 30th November 2020 and more recently in May 2021.

Initial site survey determined vegetation types and proposed restoration zones, while the 2020 survey mapped threatened species on the site and the habitat value of the small area mapped by Tweed Shire Council as Preferred Koala Habitat. The current year surveys determined PCT types and species within the proposed residential zoning and bushfire asset protection zone (APZ) footprints. Trees within the development footprint were tagged and numbered and a list of tree species compiled for all trees with diameter at breast height (dbh) >100mm, as well as all listed threatened species irrespective of size.

Historical evidence indicates that the majority of the site has been cleared for a range of agricultural activities. Regrowth native vegetation is concentrated on the east and west of the site as indicated by current aerial photography and survey. The central section of the site is cleared and mown, with established garden areas. Plantings adjacent to the residence include local and non-local natives, as well as local threatened species. There are orchard areas comprised of fruit trees including Lychees and a small plantation of Mango trees. Mature native trees, comprised of two large Moreton Bay Figs *Ficus macrophylla* and associated vegetation, are located centrally on the property. Individual or small clumps of trees occur on the slopes, and planted eucalypts occur in the south-west and along the driveway track from Scenic Drive. The substantial areas of regrowth vegetation on the east and west vary in abundance and diversity of weed and native species but are generally dominated by Camphor Laurel *Cinnamomum camphora*.

3.1 Vegetation Description

Species lists for native plants and weeds are listed in **Appendix 1 and 2**. GPS waypoints for individual flora species within the proposed rezoning footprint, and clumps of vegetation where individual locations could not be accurately separated, are listed in **Appendix 3**.

Vegetation Community 1 - Regrowth Dry Rainforest/Camphor Laurel

This community occurs on the western and eastern sides of the lot, separated by low cleared land at the northern end (**Figure 1**). It most closely aligns with Tweed Vegetation Code 1002 *Early Regrowth Rainforest* and with NSW Plant Community Type 887 *Hoop Pine – Yellow Tulipwood Dry rainforest of the NSW North Coast Bioregions*.

The tallest stratum is sparse to mid-dense and has gaps in some areas. The tallest stratum is mid-high to tall and consists primarily of Black Wattle *Acacia melanoxylon* and Camphor Laurel *Cinnamomum camphora* with mixed rainforest species such as Cheese Tree *Glochidion ferdinandi*, Brown Kurrajong *Commersonia bartramia* and Foambark *Jagera psuedorhus* throughout, with occasional scattered large trees including Hoop Pine *Araucaria cunninghamii*, Teak *Flindersia australis* and Fig species *Ficus macrophylla* and *Ficus watkinsiana*. Weed cover in the tallest stratum is common (20-50%) to dominant (>50%) and consists mainly of Camphor Laurel *Cinnamomum camphora*, with some Slash Pine *Pinus elliotii* present.

The mid stratum is dense and includes a mix of establishing rainforest trees and shrubs such as Hard Quandong *Elaeocarpus obovatus*, Guioa *Guioa semiglaucula*, Poison Peach *Trema tomentosa*, Cheese Tree *Glochidion ferdinandi*, Three-veined Laurel *Cryptocarya triplinervis* and Red Kamala *Mallotus philippinensis*. Weed cover in the mid stratum is dominant and includes species such as Duranta *Duranta repens*, Giant Devil's Fig *Solanum chrysotrichum*, Lantana *Lantana camara*, Tobacco Bush *Solanum mauritianum* and Small-leaved Privet *Ligustrum sinense*.

The ground stratum is generally dense beneath mature Camphor Laurel (where Camphor is sparse) and includes rainforest herbs, ferns and shrubs including Rough Maidenhair *Adiantum hispidulum*, Soft Fern *Christella dentata*, Blue Flax Lily *Dianella caerulea* and Forest Lomandra *Lomandra spicata*. Weed cover in the ground stratum is common or dominant and is comprised mainly of Singapore Daisy *Spagneticola trilobata*, Broad-leaved Paspalum *Paspalum mandiocanum* and Giant Panic Grass *Panicum antidotale*.



Open Grassland-

This community occurs over all the cleared sections of the property and was formerly grazed. It consists primarily of dense Blue Panic *Panicum antidotale*, though other weed species such as Lantana *Lantana camara*, Duranta *Duranta repens*, Setaria *Setaria sphacelata* and Giant Devil's Fig *Solanum chrysotrichum* are scattered throughout. Weed cover is dense at 96%.



Planted Eucalypt Forest-

This community occurs in the south-west corner of the allotment near Walmsleys Road.

The tallest stratum is sparse to mid dense and is comprised solely of planted *Eucalyptus* species, including Flooded Gum *Eucalyptus grandis*, Sydney Blue Gum *Eucalyptus saligna* and Forest Red Gum *Eucalyptus tereticornis*. Weed cover in the tallest stratum is variable due to establishment of the eucalypts and is mainly Camphor Laurel.

The mid stratum is open in the east where the groundcover is slashed beneath the trees. The remaining western portion is mid-dense and consists of a mixture of rainforest trees and shrub seedlings as saplings as per Community 1. In this area weed cover is common to dominant with a range of woody weeds and vines present.

The ground stratum is generally dense and is dominated by exotic grasses.



Adjacent Vegetation

Camphor Laurel forest – adjacent to TSC water tank

The canopy is comprised predominantly of exotic species such as Camphor Laurel, Mango *Magnifera sp*, Coral Tree *Erythrina sykesii*, Lemon Scented Gum *Corymbia citriodora*, Cocos Palm *Syagrus romanzoffianum* and Large-leaved Privet *Ligustrum lucidum*. The majority of this vegetation appears to be planted and includes a range of orchard trees including a Davidson Plum *Davidsonia jerseyana*. A mixture of native rainforest trees including Macaranga *Macaranga tanarius*, Sandpaper Fig *Ficus fraseri*, *Glochidion sumatranum*, Red Kamala *Mallotus philippinensis*, Brushbox *Lephostemon confertus*, Tuckeroo *Cupaniopsis anacardioides* and Red Cedar *Toona ciliata* also occur in the canopy of this area.

The mid-stratum is dense and is dominated by exotic species such as *Duranta repens*, Cat's Claw Creeper *Dolichandra unguis-cati*, Elephant Grass *Pennisetum purpureum*, Murraya *Murraya paniculata*, Coffee *Coffea arabica* and Ochna *Ochna serrulata*. Mixed rainforest species are also present throughout the area including the threatened species, Fine-leaved Tuckeroo *Lepiderema pulchella* and Stinking Cryptocarya *Cryptocarya foetida*.

The ground-stratum is generally dense, except beneath some of the larger Camphor Laurels where leaf litter is dense. The ground is mainly dominated by exotic grasses, Singapore Daisy and Cats Claw Creeper. Immediately on the northern side of the water tank is a small patch of mature planted Broad-leaved Paperbarks *Melaleuca quinquenervia*.

Camphor Laurel – Brushbox- Rainforest – south of Scenic Drive (PCT 755)

The mapped polygons on Figure 2 do not include any eucalypts and the canopy appears to be mainly comprised of species such as Brushbox *Lophostemon confertus*, Umbrella Cheese Tree *Glochidion sumatranum*, Camphor Laurel, Tuckeroo *Cupaniopsis anacardioides*, Sandpaper Fig *Ficus fraseri*, Macaranga and Swamp Oak *Casuarina glauca*. Exotic grasses and woody weeds such as *Duranta* were observed along the road edge.

Equivalent NSW BioNet PCT 755: Brush Box tall moist forest of the northern ranges of the NSW North Coast Bioregion.

Tallowwood – Grey Ironbark – south of Scenic Drive (PCT 827)

The canopy is dominated by mature eucalypts such as *Eucalyptus microcorys* and *E. siderophoia*. Mixed rainforest species are present throughout the mid and ground strata.

A comprehensive survey was not undertaken south of Scenic Drive.

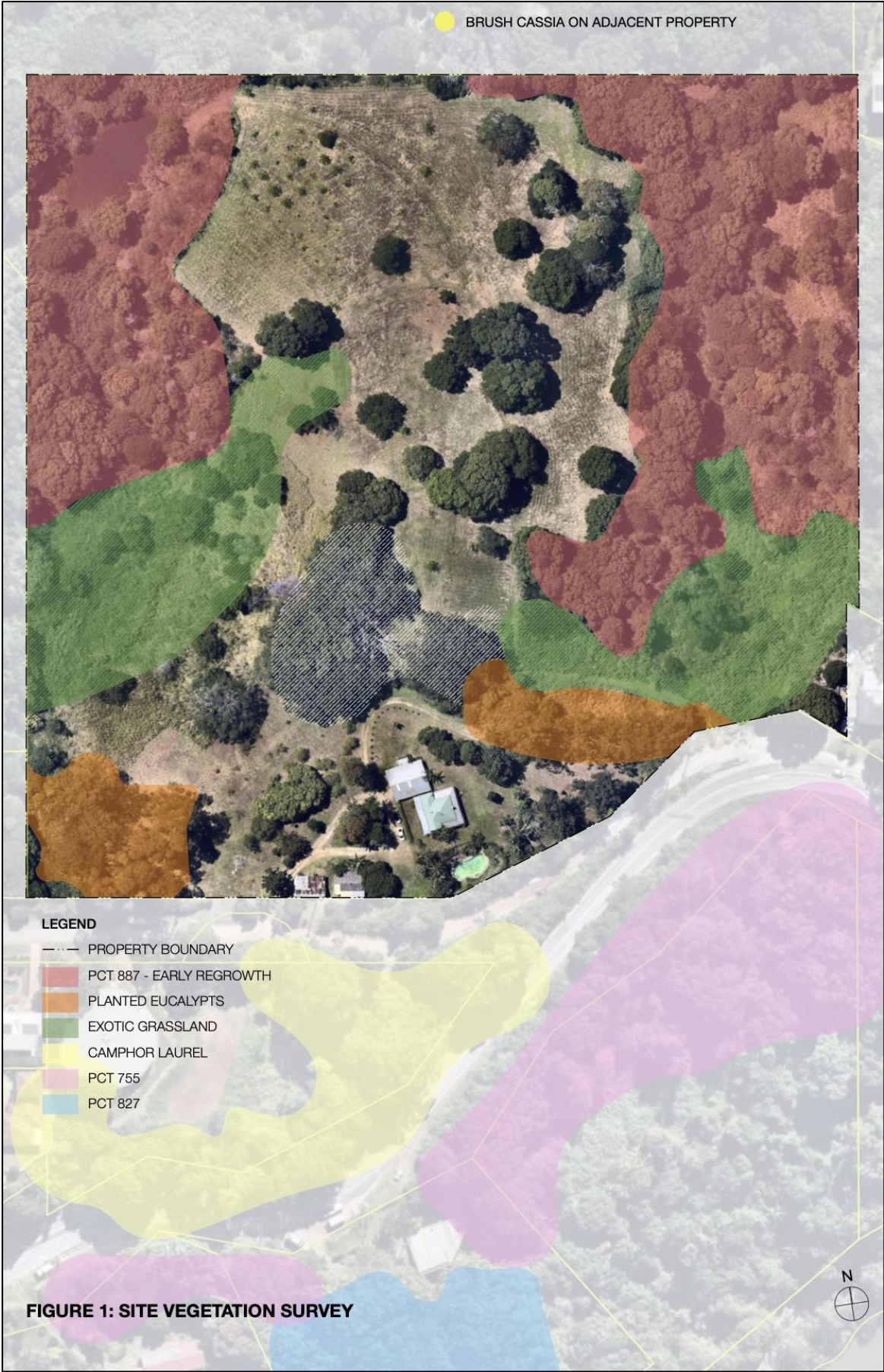


Figure 1: Vegetation communities on the project site and surrounds.

3.2 Weeds

Fifty-five (55) weed species were recorded on the property. Other weeds may occur that were not identified during survey for this plan. The dominant weeds are Camphor Laurel, exotic grasses, Lantana, and Giant Devils Fig. See **Appendix 3** for a full list of weeds recorded on the site. Table 1 lists these weeds and their Biosecurity Priority Categories.

Table 1: Biosecurity Priority Weeds

Scientific Name	Common Name
Biosecurity Priority – Asset Protection	
<i>Anredera cordifolia</i>	Madeira Vine
<i>Cinnamomum camphora</i>	Camphor Laurel
<i>Lantana camara</i>	Lantana
<i>Ligustrum lucidum</i>	Large-leaf Privet
<i>Passiflora subpeltata</i>	Corky Passionflower
Biosecurity Priority - Containment	
<i>Solanum chrysotrichum</i>	Giant Devils Fig

3.2 Fauna Habitat

Fauna habitat considerations are discussed in Table 2 below.

Table 2: Habitat elements and features observed during field assessments

Attributes	Comments
Rock features including cracks, sheets, shelters, outcrops	None present -exposed rock outcrops and surface rock absent. Dense leaf litter occurs over most of the forest floor and only small rocks are visible. These are likely to be of limited use to skinks and snakes.
Autumn - winter flowering eucalypts	Flooded Gum and Forest Red Gum are present in a small patch in the south-west corner (planted). These are known to flower in winter (as well as summer), providing limited winter supply of blossom resources to nectarivores such as flying-foxes, possums, gliders and birds.
Summer flowering eucalypts	Yes – Flooded Gum, Sydney Blue Gum and Lemon-scented Gum are known to flower during summer. A limited summer supply of nectar is available within the study area.
Acacia shrubs-trees	Yes –Acacia melanoxylon is reasonably common providing additional blossom resources for nectarivores.
Allocasuarina resources for Glossy Black Cockatoo	Absent
Koala feed trees	Preferred Koala feed trees present – eight Forest Red Gums and one Swamp Mahogany, all planted.
Open grassy patches	Yes – Cleared grazing land is dominated by pasture grasses providing some potential foraging habitat for ground-dwelling mammals and reptiles.
Cracks, crevices, and other roosting sites (man-made or otherwise)	Absent, apart from bark crevices.
Permanent water bodies	A constructed farm dam on a first-order drainage line occurs in the north-west corner could provide some habitat for amphibians. Suitable habitat for riparian/wetland birds is largely absent.
Drainage lines and / or soaks	Yes – one first-order and one second-order drainage line occur on the property.

Attributes	Comments
Understorey cover for ground dwelling mammals	Low slashed exotic grassland provides little cover for ground-dwelling mammals such as rodents and bandicoots, or shelter for frogs and reptiles. Dense weeds and shrubs occur in parts of the site under canopy and on edges.
Fallen fine and coarse vegetative litter	Yes – high degree of leaf litter present throughout the vegetated areas of the site.
Hollows in live and / dead trees	Absent, maximum tree age on site estimated at 30 years.
Flying-fox Camps	The nearest active camp is located in Terranora Broadwater, some 750m from the site. Flying-foxes are likely to use the site as part of their forage range.
Raptor nest	None found during survey, some potential for presence in the Eucalypt area, little in the regenerating rainforest on site.

3.3 Determination of High Environmental Value

Coastal Wetlands and Littoral Rainforest

The subject site is located within the coastal zone. It does not contain 'Coastal Wetland', 'Littoral Rainforest' or their buffers. The site is mapped as Coastal Environment Area. Clause 13 of State Environmental Planning Policy applies to the site. See Legislation in **Section 5**.

Endangered Ecological Communities (EEC's)

The site includes patches of regrowth rainforest that meet most of the benchmarks for the Plant Community Type 887 *Hoop Pine – Yellow Tulipwood dry rainforest of the NSW North Coast Bioregion*, despite significant weed infestation in all strata. This community is a candidate for the EEC *Lowland Rainforest in the NSW North Coast and Sydney Basin Bioregions*, listed under the Biodiversity Conservation Act 2016. The ID Guidelines for Lowland Rainforest on Floodplain and Lowland Rainforest EECs are assessed against the relevant criteria in Table 5.

Small patch size, lack of diversity and structural simplicity means this community would not meet the criteria for *Lowland Rainforest of Subtropical Australia* CEEC listed under the EPBC Act.

Table 3: Assessment against EEC criteria

Lowland Rainforest in the NSW North Coast and Sydney Basin Bioregions	
Criteria	Site assessment
Do the trees form three major strata: emergents, canopy and sub-canopy?	No - one emergent Hoop Pine present, isolated Fig trees, low canopy to no canopy in parts
Are a range of plant growth forms present, including palms, vines and vascular epiphytes?	Yes
Is the site within relevant IBRA region and sub-region?	Yes – SE Qld/ Burringbar Connondale Ranges
Does the community occur on relatively nutrient-rich soils, such as basic volcanic or fine-grained sedimentary substrates, or on substrates of intermediate fertility?	No – Basalt caps overlie metasediments in the southern end of the lot, outside the rainforest regrowth area. Soils in the mapped rainforest area are metasediments of generally low fertility.
Are trees taxonomically diverse at the genus and family levels?	No
Does the site contain characteristic listed species?	Yes- The site contains 22 out of 108 listed characteristic

	species, as well as 7 out of 59 potential threatened species.
Does the subject site represent the EEC?	Yes- regrowth Lowland Rainforest

Threatened Flora Species

Six threatened flora species were recorded on the property during survey.

Threatened flora species recorded in Bionet within 10km of the property are listed in Table 5 below.

Table 4: Threatened flora species recorded on the property

Scientific Name	Common Name	Status BC Act	Status EPBC Act	SAIL species – Principles*
<i>Cassia marksiana</i>	Brush Cassia	Vulnerable	Vulnerable	Yes – 1, 2
<i>Cryptocarya foetida</i>	Stinking Cryptocarya	Vulnerable	Vulnerable	No
<i>Davidsonia jerseyana</i>	Davidson's Plum	Endangered	Endangered	No
<i>Lepiderema pulchella</i>	Fine-leaved Tuckeroo	Vulnerable		Yes - 2
<i>Macadamia tetraphylla</i>	Rough-shelled Bush Nut	Vulnerable	Vulnerable	No
<i>Syzygium moorei</i>	Coolamon	Vulnerable	Vulnerable	Yes - 1

** Principles for determining serious and irreversible impacts*

These principles are set out in clause 6.7 of the Biodiversity Conservation Regulation 2017.

An impact is to be regarded as serious and irreversible if it is likely to contribute significantly to the risk of a threatened species or ecological community becoming extinct because:

- it will cause a further decline of a species or ecological community that is currently observed, estimated, inferred or reasonably suspected to be in a rapid rate of decline. Principle 1 applies to *Syzygium moorei* and *Cassia marksiana*.
- it will further reduce the population size of the species or ecological community that is currently observed, estimated, inferred or reasonably suspected to have a very small population size. Principle 2 applies to *Cassia marksiana* and *Lepiderema pulchella*.
- it is an impact on the habitat of the species or ecological community that is currently observed, estimated, inferred or reasonably suspected to have a very limited geographic distribution.
- the impacted species or ecological community is unlikely to respond to measures to improve its habitat and vegetation integrity and therefore its members are not replaceable.

Of the above listed Threatened flora species, only the planted *Syzygium moorei* will be lost. An Assessment of Significance has been undertaken for this species.



Figure 3: High Environmental Value includes the rainforest EEC and the SAI threatened species recorded on site. Other threatened species and trees with a dbh of 800mm or greater are also shown. See Appendix 3 for flora species as numbered.

Table 5: Bionet records of threatened flora species within 10km radius. Species in bold occur on-site.

Family	Scientific name	Common Name	BCAct	EPBC Act	Number
Apocynaceae	<i>Marsdenia longiloba</i>	Slender Marsdenia	E1	V	1
Apocynaceae	<i>Ochrosia moorei</i>	Southern Ochrosia	E1	E	1
Cunoniaceae	<i>Davidsonia johnsonii</i>	Smooth Davidson's Plum	E1	E	1
Ebenaceae	<i>Diospyros mabacea</i>	Red-fruited Ebony	E1	E	3
Ebenaceae	<i>Diospyros yandina</i>	Shiny-leaved Ebony	E1		5
Euphorbiaceae	<i>Acalypha eremorum</i>	Acalypha	E1		2
Fabaceae)	<i>Cassia marksiana</i>	Brush Cassia	E1		32
Fabaceae (Mimosoideae)	<i>Acacia bakeri</i>	Marblewood	V		34
Fabaceae (Mimosoideae)	<i>Archidendron hendersonii</i>	White Lace Flower	V		24
Lauraceae	<i>Cryptocarya foetida</i>	Stinking Cryptocarya	V	V	28
Lauraceae	<i>Endiandra hayesii</i>	Rusty Rose Walnut	V	V	8
Lauraceae	<i>Endiandra muelleri</i> <i>subsp. bracteata</i>	Green-leaved Rose Walnut	E1		8
Myrtaceae	<i>Gossia fragrantissima</i>	Sweet Myrtle	E1	E	28
Myrtaceae	<i>Rhodamnia rubescens</i>	Scrub Turpentine	E4A		3
Myrtaceae	<i>Rhodomyrtus psidioides</i>	Native Guava	E4A		4
Myrtaceae	<i>Syzygium hodgkinsoniae</i>	Red Lilly Pilly	V	V	6
Myrtaceae	<i>Syzygium moorei</i>	Durobby	V	V	31
Orchidaceae	<i>Geodorum densiflorum</i>	Pink Nodding Orchid	E1,P,2		4
Orchidaceae	<i>Peristeranthus hillii</i>	Brown Fairy-chain Orchid	V,P,2		5
Orchidaceae	<i>Phaius australis</i>	Southern Swamp Orchid	E1,P,2	E	6
Orobanchaceae	<i>Centranthera cochinchinensis</i>	Swamp Foxglove	E1		1
Polypodiaceae	<i>Drynaria rigidula</i>	Basket Fern	E1,3		2
Proteaceae	<i>Floydia praealta</i>	Ball Nut	V	V	1
Proteaceae	<i>Grevillea hilliana</i>	White Yiel Yiel	E1		32
Proteaceae	<i>Hicksbeachia pinnatifolia</i>	Red Boppel Nut	V	V	3
Proteaceae	<i>Macadamia integrifolia</i>	Macadamia Nut		V	1

Family	Scientific name	Common Name	BCAct	EPBC Act	Number
Proteaceae	<i>Macadamia tetraphylla</i>	Rough-shelled Bush Nut	V	V	88
Rubiaceae	<i>Randia moorei</i>	Spiny Gardenia	E1	E	44
Rutaceae	<i>Acronychia littoralis</i>	Scented Acronychia	E1	E	1
Rutaceae	<i>Bosistoa transversa</i>	Yellow Satinheart	V	V	17
Rutaceae	<i>Coatesia paniculata</i>	Axe-Breaker	E1		3
Sapindaceae	<i>Cupaniopsis serrata</i>	Smooth Tuckeroo	E1		1
Sapindaceae	<i>Diploglottis campbellii</i>	Small-leaved Tamarind	E1,2	E	27
Sapindaceae	<i>Lepiderema pulchella</i>	Fine-leaved Tuckeroo	V		84
Sapotaceae	<i>Niemeyera whitei</i>	Rusty Plum, Plum Boxwood	V		2

Threatened Fauna Species

No threatened fauna species are mapped within or adjacent the proposed disturbance footprint, or on the larger property. Threatened fauna species recorded in Bionet within 10km of the property are listed in **Table 6** below.

An assessment was made on whether each of these species was likely to occur within the subject site based on presence or absence of suitable habitat. The assessment applied the criteria listed at the bottom of Table 6.

Table 6: Bionet records of threatened fauna species within 10km radius

Scientific Name	Common Name	NSW status	Comm. status	No. Records in 10km	Likelihood of Occurrence
<i>Crinia tinnula</i>	Wallum Froglet	V,P		147	1
<i>Litoria brevipalmata</i>	Green-thighed Frog	V,P		1	1
<i>Litoria ongburensis</i>	Olongburra Frog	V,P	V	47	1
<i>Chelonia mydas</i>	Green Turtle	V,P	V	1	1
<i>Anseranas semipalmata</i>	Magpie Goose	V,P		7	1
<i>Ptilinopus magnificus</i>	Wompoo Fruit-Dove	V,P		4	2
<i>Ptilinopus regina</i>	Rose-crowned Fruit-Dove	V,P		14	3
<i>Hirundapus caudacutus</i>	White-throated Needletail	P	V,C,J,K	17	2
<i>Ephippiorhynchus asiaticus</i>	Black-necked Stork	E1,P		39	1
<i>Ixobrychus flavicollis</i>	Black Bittern	V,P		2	1
<i>Haliaeetus leucogaster</i>	White-bellied Sea-Eagle	V,P		95	3

Scientific Name	Common Name	NSW status	Comm. status	No. Records in 10km	Likelihood of Occurrence
<i>Hieraaetus morphnoides</i>	Little Eagle	V,P		2	2
<i>Lophoictinia isura</i>	Square-tailed Kite	V,P,3		1	3
<i>Pandion cristatus</i>	Eastern Osprey	V,P,3		284	1
<i>Falco subniger</i>	Black Falcon	V,P		1	2
<i>Amauornis moluccana</i>	Pale-vented Bush-hen	V,P		7	1
<i>Burhinus grallarius</i>	Bush Stone-curlew	E1,P		8	2
<i>Esacus magnirostris</i>	Beach Stone-curlew	E4A,P		2	1
<i>Haematopus fuliginosus</i>	Sooty Oystercatcher	V,P		6	1
<i>Haematopus longirostris</i>	Pied Oystercatcher	E1,P		113	1
<i>Charadrius leschenaultii</i>	Greater Sand-plover	V,P	V,C,J,K	8	1
<i>Irediparra gallinacea</i>	Comb-crested Jacana	V,P		26	1
<i>Calidris canutus</i>	Red Knot	P	E,C,J,K	1	1
<i>Calidris ferruginea</i>	Curlew Sandpiper	E1,P	CE,C,J,K	28	1
<i>Calidris tenuirostris</i>	Great Knot	V,P	CE,C,J,K	1	1
<i>Limosa limosa</i>	Black-tailed Godwit	V,P	C,J,K	1	1
<i>Numenius madagascariensis</i>	Eastern Curlew	P	CE,C,J,K	253	1
<i>Xenus cinereus</i>	Terek Sandpiper	V,P	C,J,K	27	1
<i>Sternula albifrons</i>	Little Tern	E1,P	C,J,K	6	1
<i>Calyptorhynchus lathamii</i>	Glossy Black-Cockatoo	V,P,2		1	1
<i>Glossopsitta pusilla</i>	Little Lorikeet	V,P		4	3
<i>Ninox connivens</i>	Barking Owl	V,P,3		2	1
<i>Ninox strenua</i>	Powerful Owl	V,P,3		1	1
<i>Tyto longimembris</i>	Eastern Grass Owl	V,P,3		3	1
<i>Tyto novaehollandiae</i>	Masked Owl	V,P,3		2	1
<i>Todiramphus chloris</i>	Collared Kingfisher	V,P		28	1

Scientific Name	Common Name	NSW status	Comm. status	No. Records in 10km	Likelihood of Occurrence
<i>Climacteris picumnus victoriae</i>	Brown Treecreeper (eastern subspecies)	V,P		1	2
<i>Lichenostomus fasciularis</i>	Mangrove Honeyeater	V,P		19	1
<i>Daphoenositta chrysoptera</i>	Varied Sittella	V,P		6	2
<i>Coracina lineata</i>	Barred Cuckoo-shrike	V,P		2	3
<i>Carterornis leucotis</i>	White-eared Monarch	V,P		7	3
<i>Dasyurus maculatus</i>	Spotted-tailed Quoll	V,P	E	3	2
<i>Planigale maculata</i>	Common Planigale	V,P		10	3
<i>Phascolarctos cinereus</i>	Koala	V,P	V	169	3
<i>Petaurus norfolcensis</i>	Squirrel Glider	V,P		3	1
<i>Potorous tridactylus</i>	Long-nosed Potoroo	V,P	V	3	1
<i>Potorous tridactylus</i>	Long-nosed Potoroo, Cobaki Lakes and Tweed Heads West population	E2,V,P	V	2	1
<i>Nyctimene robinsoni</i>	Eastern Tube-nosed Bat	V,P		1	2
<i>Pteropus poliocephalus</i>	Grey-headed Flying-fox	V,P	V	46	3
<i>Saccolaimus flaviventris</i>	Yellow-bellied Sheath-tail-bat	V,P		2	2
<i>Micronomus norfolkensis</i>	Eastern Coastal Free-tailed Bat	V,P		1	2
<i>Ozimops lumsdenae</i>	Northern Free-tailed Bat	V,P		13	2
<i>Chalinolobus nigrogriseus</i>	Hoary Wattled Bat	V,P		1	2
<i>Myotis macropus</i>	Southern Myotis	V,P		8	1
<i>Nyctophilus bifax</i>	Eastern Long-eared Bat	V,P		9	2
<i>Miniopterus australis</i>	Little Bent-winged Bat	V,P		62	3
<i>Miniopterus orianae oceanensis</i>	Large Bent-winged Bat	V,P		12	3
<i>Phyllodes imperialis southern subspecies</i>	Southern Pink Underwing Moth	E1	E	7	2
<i>Thersites mitchellae</i>	Mitchell's Rainforest Snail	E1	CE	2	1

*V = Vulnerable, E = Endangered, CE = Critically Endangered, CD = Conservation Dependant; where:

BC Act = Biodiversity Conservation Act 2016, EPBC Act = Environment Protection and Biodiversity Conservation Act 1999

****Likelihood of occurrence based on criteria below**

- Species having specific habitat requirements, with these habitats not known from the study area – 1 - unlikely to occur;
- Sub-optimal habitat present within study area – 2 - **low** likelihood of occurrence;
- Suitable habitat for species recorded within study area – 3 - **moderate** likelihood of occurrence;
- Optimal habitat for species recorded within study area – 4 - **high** likelihood of occurrence; and
- Species recorded during the field survey within study area – 5 - **known** to occur.

The likelihood of occurrence assessment determined there was not a high likelihood of occurrence for any of the threatened fauna species identified in the desktop searches. Some species were short-listed on account of there being known records of them within the locality in habitat similar to that provided by the study area and/or they would be expected to fly over or pass through the site on occasion. Threatened fauna species with potential to use on site include Grey-headed Flying-fox, various microbats, possum and glider species, Rose-crowned and Superb Fruit Doves. Detailed scat searches revealed no Koala scats in the survey area. Species with highest potential of occurrence are all mobile with large home ranges relative to the extent of the site. As a result, the impact is expected to be low for most fauna species utilising the study area. The proposed loss of native vegetation and habitat modification is small relative to the extent remaining on the property and in the locality. Restoration of the highest value vegetation on the site to a rainforest community will improve habitat values for fauna.

Key Habitats for threatened species

The site does not represent Key habitats for threatened species

- Breeding habitat of both species and ecosystem credit species with known breeding occurrence.
Breeding habitat for threatened shorebirds occurs to the east in Trutes Bay. Habitat on site is unsuitable for shorebirds.
- Core Koala habitat
Scat searches of all sclerophyll habitat with Eucalypt species revealed no Koala use within the development footprint or site. The Tweed Coast Koala Plan of Management refers to the area north of the Tweed River
- Important habitat for migratory or vagrant species mapped for the BOS
The site is not part of Important Area mapping on the SEED portal.
- Breeding foraging or congregation areas for migratory shorebirds
See dot point 1 above.
- Known habitat for populations of species credit species
The site does not represent known habitat for any species credit species.
- Old growth forest
There is no Old Growth forest present on site or mapped in the SEED portal. Rainforest is at a regrowth stage and the remainder of vegetation around the house site has been planted as Landscaping.

Nationally Important Wetlands

The closest Nationally Important Wetland is Moreton Bay, >100km to the north.

Riparian zone of third-order streams

The site contains one first-order and one second-order stream.

Native Vegetation in overcleared Mitchells Landscapes

The site is not regarded as occurring in an overcleared Mitchells Landscape.

Most of the site is mapped as *Lamington Volcanic Slopes* with an estimated cleared value of 57%.

North-west and south-east corners are *Mount Warning Exhumed Slopes* with a 60% cleared value.

Overcleared Vegetation Types

PCT 887 is listed as 30% cleared and is therefore not regarded as overcleared (>70%).

Old Growth

There is no Old Growth vegetation mapped on the property. Vegetation on the site is represented as regrowth.

4 Assessment of Ecological Impacts

4.1 Vegetation Removal & Habitat Modification

Potential ecological impact on the site results from the proposed rezoning of part of the site to R1 Low Density Residential and the potential for new development in this area. A likely development layout is illustrated in **Figure 3** below. Trees likely to require removal to achieve the development are listed in **Table 7** below.

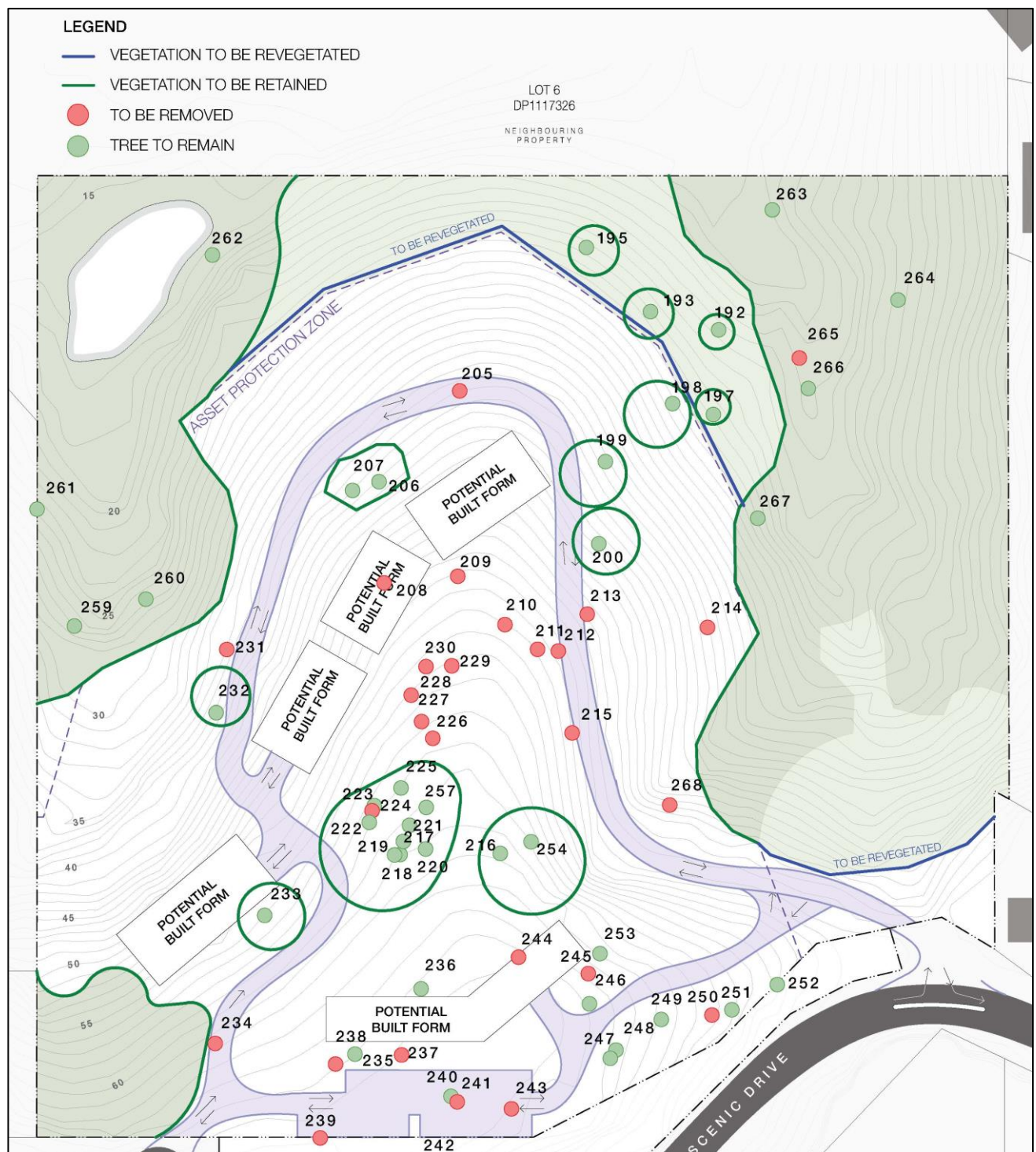


Figure 4: HEV vegetation (green shading) to be retained, flora species to be retained (green dots), and flora species to be removed (red dots) over the indicative development layout. Numbered species are listed in **Appendix 3**.

Table 7: Trees likely to require removal within the R1 zone

Tree Number	Scientific Name	Common Name	Diameter at breast height	Comments/ Provenance
205	1 <i>Pinus ellottii</i>	Slash Pine	600mm	Weed
208	3 <i>Acacia melanoxylon</i>	Sally Wattle	200mm	Common native
209	1 <i>Cupaniopsis anacardioides</i>	Tuckeroo	400mm	Common native
210	1 <i>Cupaniopsis anacardioides</i>	Tuckeroo	600mm	Common native
211	1 <i>Glochidion ferdinandi</i>	Cheese Tree	500mm	Common native
212	2 <i>Cinnamomum camphora</i> 1 <i>Elaeocarpus obovatus</i> 2 <i>Glochidion sumatranum</i> <i>Jagera pseudorhus</i> , <i>Cupaniopsis anacardioides</i> , <i>Pittosporum undulatum</i>	Camphor Laurel Hard Quandong Umbrella Cheese Tree Foambark Tuckeroo Sweet Pittosporum	800- 1000mm 300mm 300mm	Weed Common natives
213	1 <i>Glochidion sumatranum</i> 1 <i>Cinnamomum camphora</i> <i>Macaranga tanarius</i> , <i>Cupaniopsis anacardioides</i> , <i>Acacia melanoxylon</i>	Umbrella Cheese Tree Camphor Laurel Macaranga Tuckeroo Sally Wattle	500mm 300mm	Common natives and weed
214	1 <i>Cinnamomum camphora</i> multiple stems	Camphor Laurel	300mm	Weed
215	1 <i>Acacia melanoxylon</i>	Sally Wattle	200mm	Common native
223	1 <i>Jacaranda mimosifolia</i>	Jacaranda	1300mm	Exotic
226	1 <i>Mangifera indica</i>	Mango	1000mm	Exotic
227	1 <i>Mangifera indica</i> plus <i>Dolichandra unguis-cati</i>	Mango Cat's Claw Creeper	1200mm	Exotic Weed
228	1 <i>Mangifera indica</i>	Mango	1200m	Exotic
229	1 <i>Mangifera indica</i>	Mango	1300mm	Exotic
230	1 <i>Jagera pseudorhus</i>	Foambark	400mm	Common native
234	1 <i>Eucalyptus grandis</i>	Flooded Gum	520mm	Planted
237	3 <i>Grevillea robusta</i> 1 <i>Brachychiton acerifolius</i> <i>Elaeocarpus grandis</i> 3 <i>Archontophoenix cunninghamiana</i> <i>Toona ciliata</i> <i>Hymenospermum flavum</i> <i>Gmelia leichartii</i> <i>Syzygium luehmannii</i> <i>Cupaniopsis anacardioides</i> <i>Lagunaria patersonia</i>	Silky Oak Flame Tree Blue Quandong Bangalow Palm Red Cedar Native Frangipani White Beech Riberry Tuckeroo Norfolk Island Hibiscus	600mm 300mm 250mm 200mm 250mm 250mm 250mm	Common natives - all planted in garden beds near house Exotic
238	1 <i>Diploglottis australis</i>	Native Tamarind	500mm	Native
239	1 <i>Araucaria cunninghamii</i>	Hoop Pine	400mm	Planted near driveway
240	1 <i>Macadamia tetraphylla</i>	Rough-shelled Bush Nut	400mm	Planted near shed - heavily pruned

241	1 <i>Litchi chinensis</i>	Lychee	300mm	Exotic
243	5 <i>Archontophoenix alexandrae</i> <i>Dypsis lutescens</i> <i>Stenocarpus sinuatus</i> <i>Hymenosporum flavum</i>	Alexander Palm Golden Cane Palms Firewheel Tree Native Frangipani		Exotics and non-local natives planted around pool and garden.
Tree Number	Scientific Name	Common Name	Diameter at breast height	Comments
244	1 <i>Schefflera actinophylla</i> 2 <i>Cupaniopsis anacardioides</i> 2 <i>Jagera pseudorhus</i>	Umbrella Tree Tuckeroo Foambark	300mm 200mm 250mm	Weed Common natives
245	2 <i>Cupaniopsis anacardioides</i> 1 <i>Jagera pseudorhus</i> <i>Diploglottis australis</i>	Tuckeroo Foambark Native Tamarind	250mm 250mm	Common natives
246	1 <i>Syzygium moorei</i>	Coolamon	150mm 2000mm height	Planted
250	1 <i>Eucalyptus robusta</i>	Swamp Mahogany	700mm	Planted, not local to site
265	<i>Anredera cordifolia</i>	Madeira Vine		Weed
268	<i>Erythrina X syksei</i>	Coral Tree		Weed

*Species in **bold** above are listed threatened species under the Biodiversity Conservation Act 2016.

A total of 45 native flora species, including two planted and pruned threatened flora species, would require removal from around the existing house site to achieve the proposed development. Although difficult to quantify, since planted native species are spread out around the house, outbuildings and pool, it is estimated that planted native species expected to be lost cover an area of approximately 300m².

Additionally, **Figure 4** above illustrates potential loss of 0.12ha (1200m²) of regrowth Lowland Rainforest. The two areas (shown outlines in red) form the edges of existing rainforest patches on the east and west sides of the proposed development. Weed species dominate the canopy and understorey of these two areas. Since the intended development design involves five buildings

Rainforest restoration is proposed to offset any habitat loss

With the imposition of best practice pre-construction survey and minimization of construction impacts (**Section 5**), only common regrowth native species and planted threatened flora species of unknown provenance are likely to be impacted by the proposed works.

Assessments of Significance (**Appendix 4**) have been undertaken for the two threatened species listed in bold above, being one Coolamon and one Rough-shelled Bush Nut, both planted near the house.

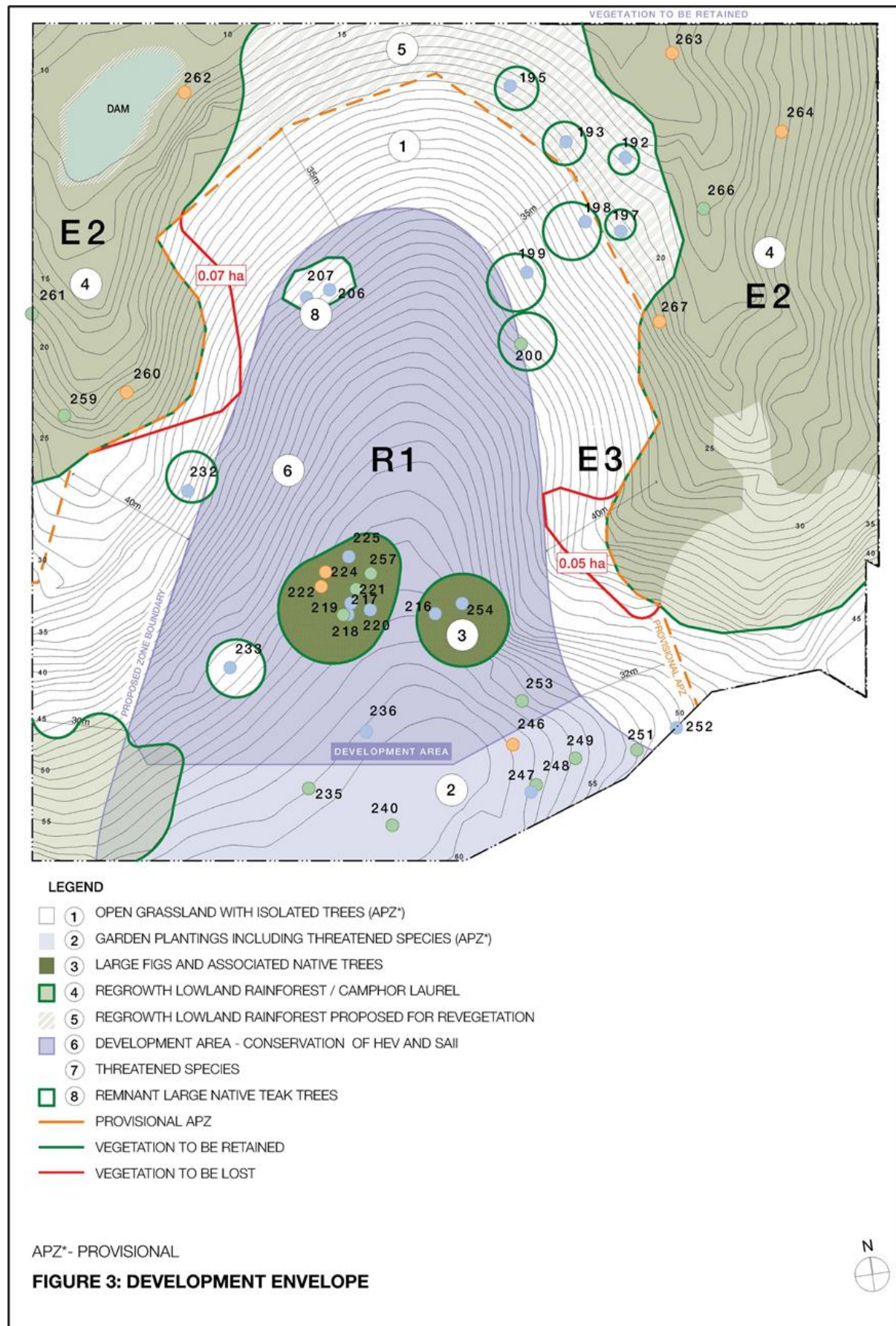


Figure 5: HEV likely to be modified or lost from the proposed development is indicated by red shading above. The combined area totals 0.12ha.

5 Avoidance / Mitigation of Ecological Impacts

The preliminary site plans show components of the proposed development within cleared land areas of the site that are predominately devoid of native woody vegetation, or within and around the house site where gardens include a significant number of planted native species. Therefore, the proposal is not anticipated to result in a significant impact on existing habitat values where native regrowth rainforest vegetation remains within the site.

Notwithstanding, remapping of the site values has resulted in alteration to the proposed Environmental Protection area to protect existing rainforest. The final development design will need to undertake measures to setback buildings or increase fire safety rating for this reduced bushfire asset protection zone where the proposed E2 zone is increased and the E3 reduced.

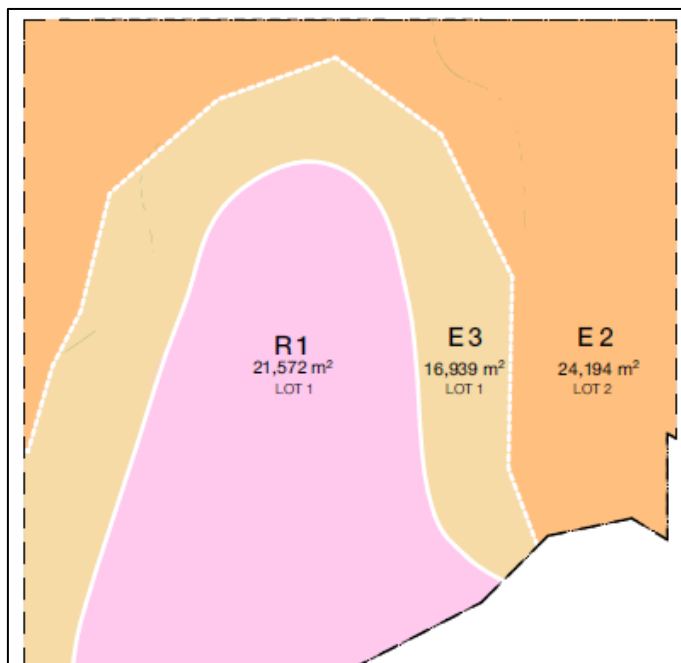


Figure 6: Previously proposed LEP zoning map

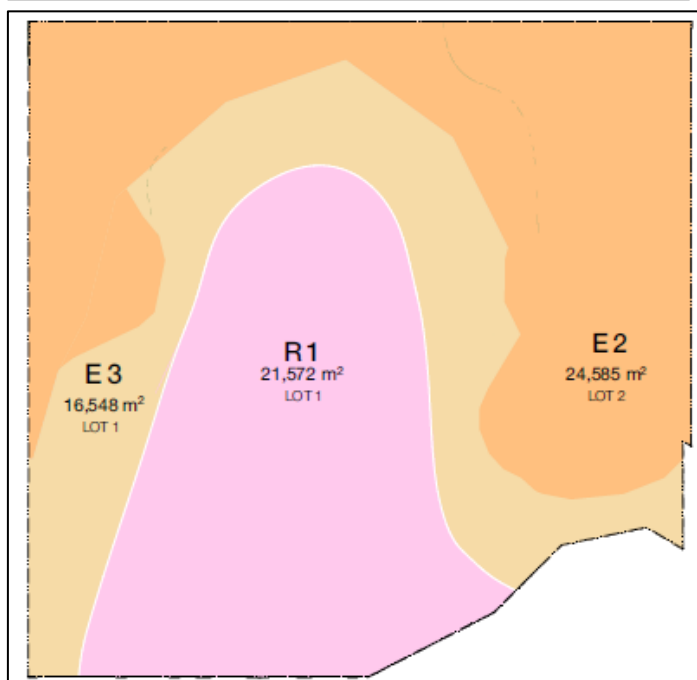


Figure 7: Revised LEP zoning map now proposed

The following measures are recommended to avoid or mitigate against potential ecological impacts associated with the proposed development.

Mitigation of impacts within the Development Area

This Planning Proposal has considered avoiding impacts at the source, through the redesign of the land use configuration. Where development impacts cannot be avoided opportunities have been sought to minimise and/or mitigate the impacts through careful planning of natural resource management where areas of vegetation are enhanced in conservation areas and compensating the impacts of vegetation removal due to construction.

Indirect and cumulative impacts will be minimised through this proposal where building within the Development Area will allow a managed native planting surrounding the buildings. There will be spacing of native plant materials in order to suppress fire hazard and create a transition buffer between the building footprint at the top of the ridgeline merging into high function biodiversity conservation areas in the lower gullies on the east and west side and undulating land to the north. Should the Planning Proposal be approved the land holder will be required to pursue a development application. At this phase a Habitat Restoration Plan will be provided where the existing conservation areas will be scheduled for vegetation management activities. In this way the ongoing degradation of biodiversity values can be avoided and the areas enhanced.

Prior to construction

- The disturbance footprint is to be clearly delineated from adjoining vegetation which is to be retained and protected by high-visibility fencing (e.g. scrim or flicker tape).



Example of traffic barrier fencing to protect trees.

- The earthworks required to achieve level unit sites is not to be undertaken within 2m of the trunk of any nearby native trees proposed for retention.
- A pre-clearing survey check is to be undertaken by a qualified person to check for nests, drays or other evidence of current use by fauna. If present, ideally tree felling should be delayed until the young have fledged or the animal has moved on. Alternatively, the fauna should be collected by a faun spotter/catcher and released nearby on the property at the appropriate time of day.
- Weather considerations – work to be undertaken during the drier times of year when significant rainfall is unlikely, and erosion and sediment controls to be in place prior to commencement of earthworks.
- Erosion and sediment control measures to be in place prior to earthworks commencing.

During construction

- No work is to be undertaken outside the proposed development footprint.
- Any native vegetation pruning must be performed in a manner such that damage to adjacent vegetation is minimised. All branches to be felled towards cleared areas. Where lopping is undertaken, it is to be undertaken in a manner so as not to affect the health of the retained tree. Any pruning or disturbance to native trees required as an unavoidable consequence of the proposed development must be overseen by a qualified Arborist.
- Existing fallen dead trees are to be left within the bushland adjacent to the site.
- Construction activities are to be managed to restrict excavations, parking of machinery or stockpiling of materials within 2m of the trunk of retained trees. Prohibited activities are:
 - a. Machine excavation
 - b. excavation for silt trenching
 - c. cultivation
 - d. storage
 - e. preparation of chemicals, including preparation of cement products
 - f. parking of vehicles and plant
 - g. refuelling
 - h. dumping of waste
 - i. wash down and cleaning of equipment
 - j. placement of fill
 - k. lighting of fires
 - l. soil level changes
 - m. temporary or permanent installation of utilities and signs and
 - n. physical damage to the tree.
- No cleared vegetation or disturbed soil is to be pushed into adjacent areas of native vegetation.
- Disturbed grass/topsoil will not be pushed into areas of retained vegetation, onto overland flow paths or stockpiled next to waterways.
- All other vegetation removed should be mulched on site. No burning of vegetation to be undertaken on site.
- All machinery used on site is to be clean – i.e. tracks, vehicle tyres, buckets and attachments are to be visibly free of soil and plant material to minimise the risk of introduction and spread of weed propagules.

6 Relevant Environmental Legislation

6.1 Commonwealth Legislation

Table 8 – Matters of Environmental Significance and their relevancy to the proposal.

EPBC ACT - Matter of NES	Relevancy to the proposed activity
World Heritage Properties	Gondwanan Rainforests of Australia – no impact
National Heritage Places	Gondwanan Rainforests of Australia –not present on site
Wetlands of International Significance (Ramsar Sites)	Moreton Bay – (>100km distant)
Nationally Important Wetlands	Moreton Bay
Great Barrier Reef Marine Park	None
Commonwealth Marine Areas	EEZ and Territorial Sea; Temperate East - no impact to marine area
Commonwealth Marine Region	Temperate East – no impact to marine region
State and Territory Reserves	National Parks – no impact
Threatened Ecological Communities	One potentially applicable to the site <i>Lowland Rainforest of Eastern Australia</i> , however vegetation on site does not meet CEEC criteria.
Threatened Species	Of potential relevance to the site: -Koala (combined populations of Queensland, New South Wales and the Australian Capital Territory) – Vulnerable. No evidence of Koala use on the site.
Migratory Species	None dependent on the particular habitat provided on site
Critical Habitats	None. Closest is Stotts Island Nature Reserve in the Tweed River

6.2 NSW State Legislation

Biodiversity Conservation Act 2016

A small part of the site on the western edge is mapped as High Biodiversity Value on the Biodiversity Values Map (purple shading below). The mapped area on the site represents 'Identified Rainforest'. In fact this small area is dominated by low weeds with few scattered trees. None of the mapped area occurs within the proposed development footprint, nor will it be impacted by the proposal. No removal of native vegetation is required from this mapped area to achieve the proposed zoning redistribution.

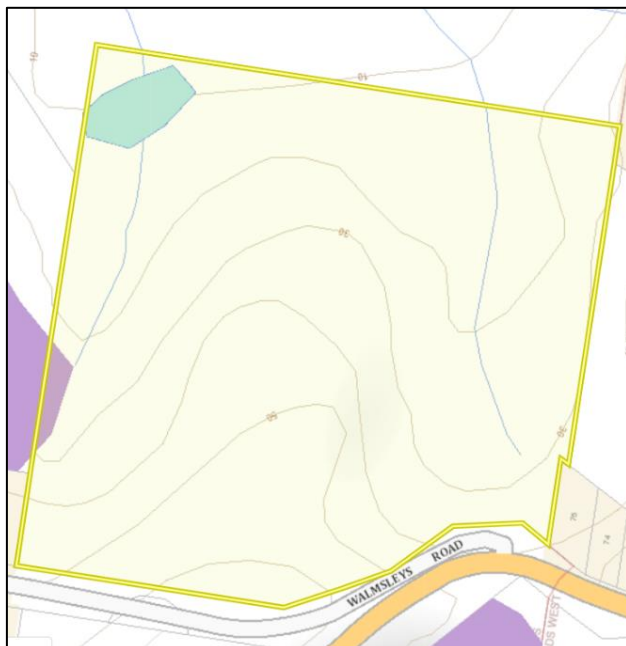


Figure 6: The Biodiversity Values map shows High Biodiversity Value as purple shading to left. This area does not contain a tree canopy on site, but will be retained and restored.

The site is not within an 'Area of Outstanding Biodiversity Value', with the closest being Mitchell's Rainforest Snail habitat on Stotts Island Nature Reserve in the Tweed River.

Project actions do not represent Prescribed Impacts.

Loss of forty-five native flora species, of which the majority have been planted, over an area of 2000m² of vegetation from within and adjacent the proposed house site area will be necessary to achieve the proposed development and a suitable bushfire asset protection zone. The total area of proposed loss of native vegetation is significantly less than the BOS 'area' trigger of minimum 5000m².

Threatened species and EEC searches were submitted for a 10km radius of the subject site and all species considered regarding potential project impacts. Habitat loss and modification has been avoided throughout the project and no significant loss of native vegetation will result from the proposal.

Six (6) threatened flora species were recorded during site survey. Of the six, four will be retained within existing regrowth rainforest areas to be restored, or outside the proposed development envelope. The specifics are as follows:

Cassia marksiana – protected within proposed E2 zoning.

Cryptocarya foetida – protected within E2 and central retained Moreton Bay Fig areas.

Davidsonia jerseyana – all to remain outside the development envelope.

Lepiderema pulchella – all to be protected in E2 and Fig areas.

Macadamia tetraphylla – one to be removed (in middle of proposed car park).

Syzygium moorei – one to be removed.

Threatened fauna species with potential to use on site include Grey-headed Flying-fox, various microbats, possum and glider species, Rose-crowned and Superb Fruit Doves. Detailed scat searches revealed no Koala scats in the survey area. No Flying-fox camps are present in the local area. Significant impacts are not expected to any listed threatened fauna species or EEC.

Serious and Irreversible Impacts (SAIL)

The approval authority must not grant approval if they determine the proposal is likely to have a serious and irreversible impact on biodiversity values. Although SAIL applies only to the Biodiversity Offsets Scheme, which is not triggered by the proposal.

The project does not trigger the Biodiversity Offset Scheme.

6.3 Relevant Environmental Planning Instruments and Strategies

SEPP (Coastal Management)

The subject site is located within the coastal zone. It does not contain 'Coastal Wetland', 'Littoral Rainforest' or their buffers. The property is entirely mapped as 'Coastal Environment Area'. Clause 13 of the SEPP Coastal Management states that *Development consent must not be granted to development on land that is within the coastal environment area unless the consent authority has considered whether the proposed development is likely to cause an adverse impact on the following:*

- (a) the integrity and resilience of the biophysical, hydrological (surface and groundwater) and ecological environment,
- (b) coastal environmental values and natural coastal processes,
- (c) the water quality of the marine estate (within the meaning of the [Marine Estate Management Act 2014](#)), in particular, the cumulative impacts of the proposed development on any of the sensitive coastal lakes identified in Schedule 1,

- (d) marine vegetation, native vegetation and fauna and their habitats, undeveloped headlands and rock platforms,
- (e) existing public open space and safe access to and along the foreshore, beach, headland or rock platform for members of the public, including persons with a disability,
- (f) Aboriginal cultural heritage, practices and places,
- (g) the use of the surf zone.

(2) Development consent must not be granted to development on land to which this clause applies unless the consent authority is satisfied that—

- (a) the development is designed, sited and will be managed to avoid an adverse impact referred to in subclause (1), or
- (b) if that impact cannot be reasonably avoided—the development is designed, sited and will be managed to minimise that impact, or
- (c) if that impact cannot be minimised—the development will be managed to mitigate that impact.

Response: The development will have no impact on the marine or coastal values and processes, surf zone, coastal lakes, marine vegetation or public access and use of the beach and foreshore. The site is not mapped on TSC's Cultural heritage maps nor were any Aboriginal sites recorded during the AHIMS search. The

SEPP (Koala Habitat Protection) 2020 and 2021

Koala SEPP 2021 applies to land zoned R1 General Residential. It is unclear whether Clause 10 of Koala SEPP 2021 applies to the land zoned 7(d) Scenic Escarpment. Since DPIE have not permitted such land to be zoned for environmental protection in the Standard LEP (in the absence of meeting one of the E2 or E3 criteria), it could be regarded as rural land, where SEPP 2020 applies. The 7(d) zoning currently includes both areas of planted Eucalypts on the site, however, R1 zoning if applied as requested in the Planning Proposal would include the planted row of eucalypt species along the driveway running directly from Scenic Drive and impact one tree within the south-west plantation.

The driveway row contains only non-local Eucalyptus species including *Eucalyptus dunnii* and *Eucalyptus nichollii*. None of the species in this area are included within Schedule 2 of SEPP 2021. Direct impact to these trees could include thinning to achieve the bushfire asset protection zone.

The south-west eucalypt plantation contains three tree species listed in Schedule 2 of Koala SEPP 2021 for the North Coast koala management area: being Forest Red Gum, Flooded Gum and Sydney Blue Gum. No impact is likely to the planted Forest Red Gums or Sydney Blue Gums, while one Flooded Gum will be lost. One separate planted Swamp Mahogany is also proposed for removal near the house site. If this area is considered under SEPP 2020, the plot undertaken on site indicated that Forest Red Gum was present at 12% in the plantation and therefore the patch does not represent Potential Koala habitat. SAT assessment undertaken under all eucalypts in site did not indicate any Koala use.

Tweed Draft Koala Plan of Management

The TCCKPoM is now known as a Draft Koala Plan of Management under *State Environmental Planning Policy (Koala Habitat Protection) 2021* (Koala SEPP 2021). Clause 10 of the SEPP states:

10 Development assessment process—approved koala plan of management for land.

- (1) This clause applies to land to which this Policy applies and to which an approved koala plan of management applies.*
- (2) The council's determination of the development application must be consistent with the approved koala plan of management that applies to the land.*

The site is within the Tweed Heads Koala Management Area (KMA) representing the broader Tweed Heads area north of the Tweed River. North of the Tweed River, the Habitat Study showed evidence of a highly depleted population on the brink of local extinction, the recovery of which does not appear possible due to lack of suitable habitat to support a long-term population and ongoing urban intensification. The management objectives for Tweed Heads KMA are:

- a) To minimise harm to remaining animals through habitat retention and other protective measures.
 - b) To ensure that any development affecting koala habitat contributes to koala recovery being undertaken elsewhere on the Tweed Coast.
 - c) To periodically review the management intent for this area in the event that koala numbers are observed to increase (TCCCKPoM 2015).
- The site is not in a Koala Activity Precinct (KAP) or Koala Linkage Precinct (KLP).
 - No records of koala sightings were recorded on the site or immediate surrounds (Atlas of Living Australia 1949-2018). Search date 7 January 2020.
 - A vegetation survey was undertaken in November 2018 (BRS March 2019) which identified a single planted Koala Preferred Food Tree *Eucalyptus robusta* Swamp Mahogany (Waypoint 250) and a clump of approximately 20 unidentified planted eucalypts (Waypoint 234).
 - Preferred Koala Habitat mapped on site has been shown to be incorrect, with no Preferred Koala feed trees present in the mapped area.
 - The site does not contain meet Core Koala Habitat criteria under the TCCCKPoM.
 - Plantation eucalypts located in the south- east corner of the site are to be retained with the exception of one Flooded Gum.
 - There is scope to compensate the loss of the single Koala Preferred Food Tree *Eucalyptus robusta* Swamp Mahogany and the Flooded Gum present in the SE clump within higher parts of the site.



Figure 6: TSC mapped Preferred Koala Habitat (shaded green) has been shown to be incorrect during site survey.
Source: TSC Koala Habitat mapping online 6 January 2020

Tweed DCP A19 - Biodiversity and Habitat Management

The site represents a privately-owned land holding with an area >2500m² containing native vegetation communities. The development aims to achieve unit development following rezoning. This report represents the Baseline Ecological Assessment. The development does not trigger the Biodiversity Offset Scheme.

The development footprint has been minimized as far as possible, however loss of forty-five native flora species will be necessary to achieve the development footprint. No 'very large native trees, old growth trees or hollow-bearing trees require removal. In terms of 'red flags' listed in the DCP:

Table 9 – Matters to be addressed in Tweed DCP Biodiversity and Habitat Management.

Listed ecological communities (EECs)	None
Over-cleared vegetation types	PCT 887 is not regarded as an over-cleared vegetation type
Over-cleared landscapes	The property is not regarded as part of an over-cleared landscape, being part of the Lamington Volcanics and Mount Warning Exhumed Slopes Mitchell landscapes.
Old growth	No old growth trees occur on site
Important wetlands	None
Other wetlands	None
Other bushland on a slope greater than 18 degrees	Not applicable
Pre-existing protected habitat	Not applicable
Wildlife Corridors	
Land within a defined wildlife corridor	The site is not within or adjacent a Regional or Sub-regional fauna corridor
Threatened and Significant Species	
Areas within a species polygon for threatened fauna or other significant fauna that are known or predicted to occur at the site	Not applicable
Areas within a species polygon for threatened flora or other significant flora that are known to occur at the site	Not applicable
Koala Habitat (not applicable to development subject to Tweed Coast Comprehensive Koala Plan of Management)	
Core koala habitat	Not applicable
Primary or Secondary (class A) koala habitat	Not applicable
Isolated or scattered primary koala food trees with evidence of koala activity	Not applicable, scattered planted primary Koala food trees but no evidence of koala activity.
Any other areas where koalas are present	Not applicable
Waterways and Riparian Areas	
First order stream	The proposed development is approximately 50m from the drainage lines running through the property
Second order stream	Two first order streams occur within the proposed E2 zone, to the north-east and north-west of the proposed development. These areas will be protected and restored.
Third order stream	Not applicable
Fourth order stream	Not applicable
Estuarine area	Not applicable
Flying Fox Camps	
Year round or intermittently occupied flying fox camp	Flying-fox camp within 200m on Trutes Bay
Other Habitat Features	
Very large native trees	Very large native trees (<800mm dbh) have been mapped using GPS waypoints and overlain on the proposed develop envelope (Figure 2). None of these trees will require

	removal to achieve the development.
<i>Stags and hollow-bearing trees</i>	Absent
<i>Raptor nests</i>	No known or visible raptor nest observed during survey.

Habitat Retention

The limited number of plants to be removed inside the Development Envelope will be compensated by restoration of native vegetation in the biodiversity areas surrounding the Development Envelope. In this way the ecological integrity of this location will be greatly enhanced. To achieve this objective a detailed vegetation site survey has been undertaken by Bushland Restoration Services to establish an accurate account of the existing plant species on the site. The vegetation survey measures the location and size of each plant. Further building of biodiversity in non-development areas can be recorded and monitored during and after the development implementation.

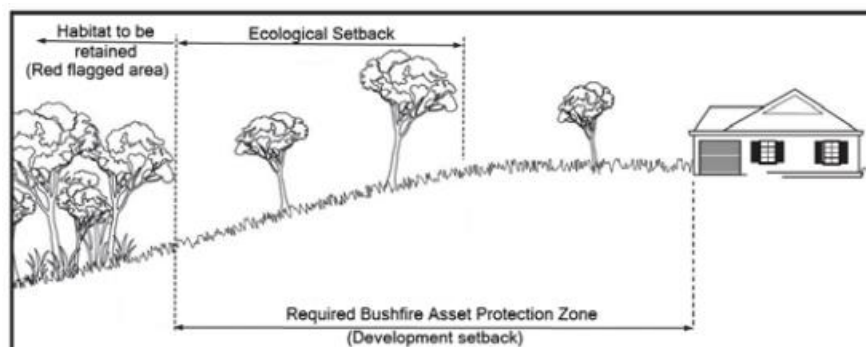
Much of the existing biodiversity on the site will be retained as *in situ* conservation areas. Utilising this approach, ensures the prevention of habitat loss and degradation will be avoided in the existing bushland areas on the lower slopes and east and west gullies on the site (mapped in Figure 3 Areas 4 and 5). In Figure 1 above it can be seen that the existing land use zoning of residential and environmental uses creates a fragmented ecological landscape. The Planning Proposal provides the opportunity to re-align the land use boundaries by creating a continuous habitat, linking to neighbouring biodiversity corridors and landscape connectivity, see Figure 2. The gullies contain seasonal flows of water and are anticipated to be rehabilitated during the construction phase of the development. This approach has been adopted as connected biodiversity areas are more likely to retain a higher degree of biodiversity in the long term.

In the centre of the Development Envelope there is a cluster of vegetation that consist of both weeds and native species including threatened species. It is proposed that this area labelled “Area 4” in Figure 3 below, will be retained and protected as a condition of consent and will be a landscape feature within the Development Envelope boundary.

Fire Hazard Buffer Zone

The Asset Protection Areas (APZ) is anticipated to be part of the E3 zoned ecological buffer that surrounds the Development Area. This buffer will consist of native plants spaced in a manner to avoid tree canopies from touching and have the appearance of a managed landscape aesthetic. In this way, existing large native trees can be retained, the potential fuel loads in the vegetation accumulating over time can be managed where biodiversity is enhanced, and fire risk mitigated.

To address bush fire hazard a blended and managed landscape of native species will exist between the environmental zone (E2 Zone) and the proposed Development Envelope.



Typical scenario under C20 showing the *development setback* for the required bushfire asset protection zone (APZ) measured from the edge of the retained habitat. In almost all cases required APZ distance will exceed the ecological setback required under C1.

Figure 7. Cross section diagram showing the APZ and Ecological Setback

Environmental Benefits from the Planning Proposal – proposed ecological restoration overview

The environmental benefits of the proposal will result in the two regrowth areas, which are currently dominated by weeds, being restored to high conservation value Lowland Rainforest. The re-alignment of the land use boundary in this proposal will allow poorly functioning ecological remnants to be linked along the northern boundary forming a continuous corridor linking to the vegetation to the north, which also contains *Cassia marksiana*. This would not be feasible under the current land use map, where residential land use zoning creates further fragmentation of the remanent bushland.

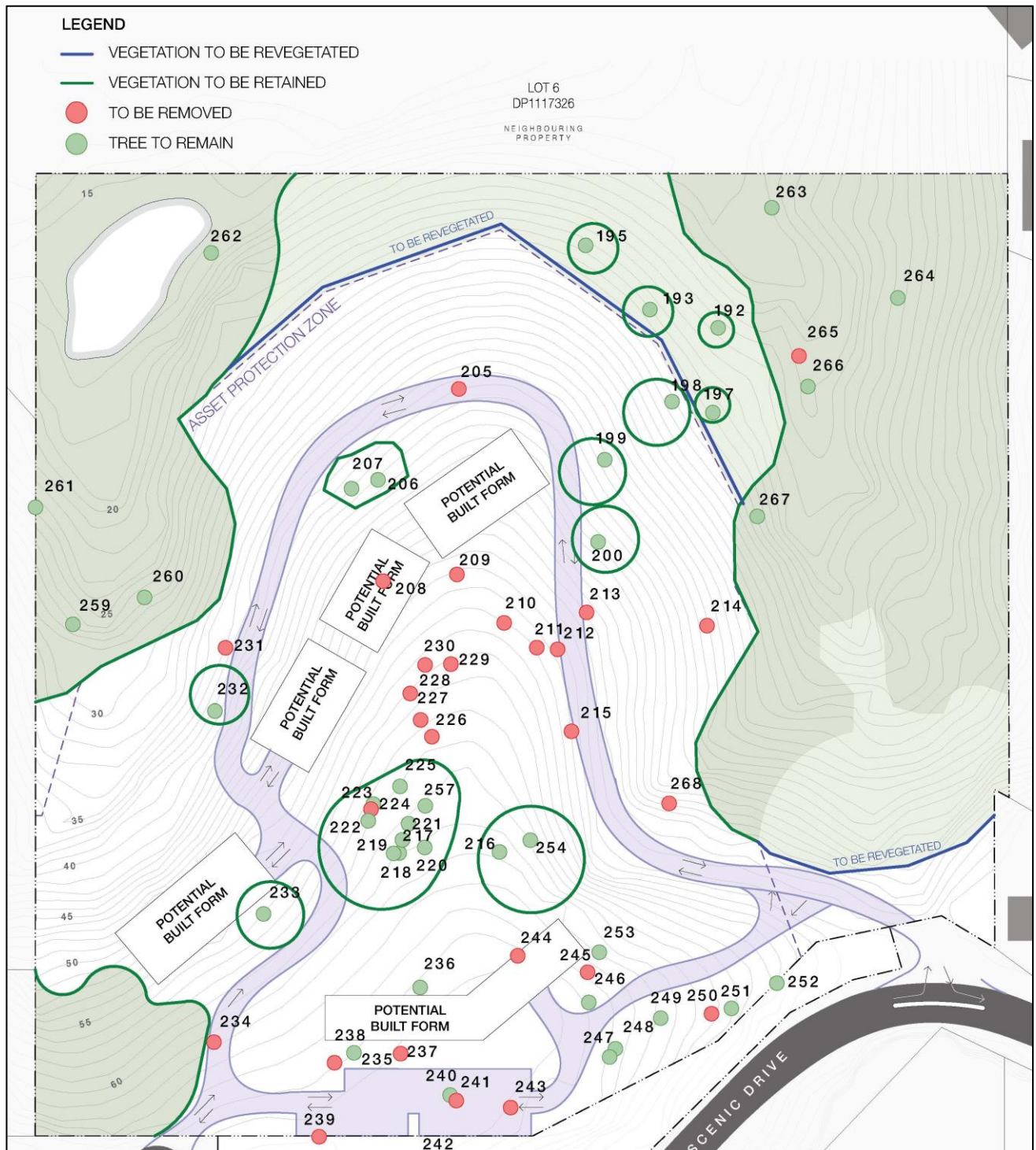


Figure 8: Proposed Ecological Restoration Zones include areas outlined in green above for restoration work, with the blue line area representing parts of the site to be revegetated to improve connectivity. The circled areas include two large Moreton Bay Fig trees and associated native and weed species, to be retained with protection provided via a revised Voluntary Planning Agreement.

7 References

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- NSW Department of Planning, Industry and Environment (2020). Gateway Determination: Planning Proposal (Department Ref. PP-2020-4058) to rezone Lot 1 DP 1032820, Scenic Drive (1 Walmsleys Road) Bilambil, for residential development and environmental protection and management purposes.
- NSW DPIE Biodiversity and Conservation Division (2021). Detailed BCD Comments – Planning Proposal Walmsleys Road, Bilambil Heights.
- NSW Office of Environment and Heritage <http://www.bionet.nsw.gov.au/> (Sourced May 2021).
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- Tweed Shire Council (2020). Draft Tweed LEP Amendment - Planning Proposal Version – Gateway: Lot 1 DP 1032820 Scenic Drive Bilambil (Known as 1 Walmsleys Road). Unpublished report to DPIE.
- Tweed Shire Council Online Mapping - Environment Mapping <http://tweedsc.maps.arcgis.com/apps/webappviewer> (Sourced May 2021)

Appendix 1: Native Plants recorded on the property

Scientific Name	Common Name
<i>Acacia melanoxylon</i>	Blackwood
<i>Adiantum hispidulum</i>	Maiden -hair Fern
<i>Alpinia caerulea</i>	Native Ginger
<i>Aphananthe phillipinensis</i>	Rough-leaved Elm
<i>Araucaria cunninghamiana</i>	Hoop Pine
<i>Archontophoenix cunninghamii</i>	Bangalow Palm
<i>Asplenium australasicum</i>	Birds Nest Fern
<i>Baloghia inophylla</i>	Brush Bloodwood
<i>Capparis arborea</i>	Caper Bush
<i>Cassia marksiana</i>	Brush Cassia
<i>Casuarina glauca</i>	Swamp Oak
<i>Christella dentata</i>	Soft fern
<i>Cissus anartica</i>	Kangaroo Vine
<i>Cissus hypoglauca</i>	Native Grape
<i>Commersonia bartramia</i>	Brown Kurrajong
<i>Cordyline petiolaris</i>	Broad-leaved Palm Lily
<i>Corymbia citriodora</i> *	Lemon-scented Gum
<i>Cupaniopsis anacardioides</i>	Tuckeroo
<i>Cryptocarya foetida</i>	Stinking Cryptocarya
<i>Cryptocarya triplinervis</i>	Three-veined Laurel
<i>Cyathea cooperi</i>	Tree Fern
<i>Cyperus polystachyos</i>	Bunchy Sedge
<i>Davidsonia jerseyana</i>*	Davidson's Plum
<i>Denhamia celastroides</i>	Denhamia
<i>Derris involuta</i>	Fish Poison Vine
<i>Dianella caerulea</i>	Blue Flax Lily
<i>Elaeocarpus obovatus</i>	Hard Quandong
<i>Eucalyptus grandis</i> *	Flooded Gum
<i>Eucalyptus robusta</i> *	Swamp Mahogany
<i>Eucalyptus saligna</i> *	Sydney Blue Gum
<i>Ficus coronata</i>	Creek Sandpaper Fig
<i>Ficus fraseri</i>	Sandpaper Fig
<i>Ficus macrophylla</i>	Moreton Bay Fig
<i>Ficus rubiginosa</i>	Rusty Fig
<i>Ficus watkinsiana</i>	Strangler Fig
<i>Flindersia australis</i>	Teak
<i>Flindersia bennetiana</i>	Bennett's Ash
<i>Glochidion ferdinadii</i>	Cheese Tree
<i>Glochidion sumatranum</i>	Umbrella Cheese Tree
<i>Guioa semiglauca</i>	Guioa
<i>Grevillea robusta</i>	Silky Oak
<i>Hibbertia scandens</i>	Yellow Guinea Flower

Scientific Name	Common Name
<i>Jagera psuedorhus</i>	Foambark
<i>Lepiderema pulchella</i>	Fine-leaved Tuckerroo
<i>Linospadix monostachyos</i>	Walking Stick Palm
<i>Lomandra spicata</i>	Forest Lomandra
<i>Macadamia tetraphylla</i>*	Rough-shelled Bush Nut
<i>Macaranga tanarius</i>	Macaranga
<i>Maclura cochinchinensis</i>	Cockspur
<i>Mallotus philippinensis</i>	Red Kamala
<i>Neolitsea dealbata</i>	White Bolly Gum
<i>Notelaea longifolia</i>	Large Mock-olive
<i>Parsonsia straminea</i>	Common Silkpod
<i>Ptilidostigma glabrum</i>	Plum Myrtle
<i>Pittosporum undulatum</i>	Sweet Pittosporum
<i>Poutaria australis</i>	Black Apple
<i>Pteridium esculentum</i>	Bracken Fern
<i>Schoenoplectiella mucronata</i>	Bog Bullrush
<i>Smilax australis</i>	Smilax
<i>Sparganium subglandulosum</i>	Burr Plant
<i>Stephania japonica</i>	Snake Vine
<i>Streblus brunonianus</i>	Whalebone Tree
<i>Synoum glandulosum</i>	Scentless Rosewood
<i>Syzygium moorei</i>*	Coolamon
<i>Toona ciliata</i>	Red Cedar
<i>Trema tormentosa</i>	Poison Peach
<i>Typha orientalis</i>	Typha

KEY**Species in Bold** = Threatened species

*Species asterixed = Planted around house site and in Eucalypt plantation

Appendix 2: Exotic species recorded on the property

Scientific Name	Common Name
<i>Ageratina adenophora</i>	Crofton Weed
<i>Ageratina riparia</i>	Mistflower
<i>Ageratum houstonianum</i>	Blue Billygoat Weed
<i>Anredera cordifolia</i>	Maderia Vine
<i>Archontophoenix alexandre</i>	Alexander Palm
<i>Asparagus aethiopicus</i>	Ground Asparagus
<i>Brachiaria decumbens</i>	Signal Grass
<i>Cestrum nocturnum</i>	Night Jasmine
<i>Chloris gayana</i>	Windmill Grass
<i>Cinnamomum camphora</i>	Camphor Laurel
<i>Cuphea carthagenensis</i>	Cuphea
<i>Desmodium uncinatum</i>	Silver-leaf Desmodium
<i>Dolichandra unguis-cati</i>	Cat's Claw Creper
<i>Duranta repens</i>	Duranta
<i>Eclipta prostrata</i>	False Daisy
<i>Erythrina X sykesii</i>	Coral Tree
<i>Eugenia uniflora</i>	Brazilian Cherry
<i>Ipomoea cairica</i>	Coastal Morning Glory
<i>Lantana camara</i>	Lantana
<i>Ligustrum lucidum</i>	Large-leaved Privet
<i>Ligustrum sinense</i>	Small-leaved Privet
<i>Ludwigia peruviana</i>	Peruvian Water Primrose
<i>Macroptilium atropurpureum</i>	Siratro
<i>Macrotyloma axillare</i>	Horse Gram
<i>Magnifera sp</i>	Mango
<i>Megathyrsus maximus</i>	Guinea Grass
<i>Melinis minutiflora</i>	Molasses Grass
<i>Melinis repens</i>	Red Natal Grass
<i>Murraya koenigii</i>	Curry Leaf Tree
<i>Murraya paniculata</i>	Orange Jessamine
<i>Neotonia wightii</i>	Glycine
<i>Nymphaea caerulea</i>	Blue Lotus
<i>Ochna serrulata</i>	Mickey Mouse Plant
<i>Panicum antidotale</i>	Blue Panicum
<i>Paspalum mandiocanum</i>	Broad-leaved Paspalum
<i>Passiflora edulis</i>	Edible Passionfruit
<i>Passiflora suberosa</i>	Corky Passionflower
<i>Passiflora subpeltata</i>	White Passionflower
<i>Pennisetum purpureum</i>	Elephant Grass
<i>Pinus elliottii</i>	Slash Pine
<i>Rubus ellipticus</i>	Golden Himalayan Raspberry
<i>Schefflera actinophylla</i>	Umbrella Tree

Scientific Name	Common Name
<i>Schefflera arboricola</i>	Dwarf Schefflera
<i>Schinus terebinthifolia</i>	Broad-leaved Pepper Tree
<i>Senna pendula</i> var <i>glabrata</i>	Winter Senna
<i>Senna septemtrionalis</i>	Smooth Senna
<i>Setaria sphaecelata</i>	Pigeon Grass
<i>Solanum capsicoides</i>	Devil's Apple
<i>Solanum chrysotrichum</i>	Giant Devil's Fig
<i>Solanum mauritianum</i>	Tobacco Bush
<i>Sorghum halepense</i>	Johnson Grass
<i>Sphagneticola trilobata</i>	Signapore Daisy
<i>Syagrus romazoffianum</i>	Cocos Palm
<i>Triumfetta rhomboidea</i>	Chinese Burr
<i>Verbena</i> sp	Verbena

Appendix 3: Numbered Flora species recorded on the property

- 192- 1 Jagera psuedorhus DBH 800mm
- 193- 1 Jagera pseudorhus DBH 800mm / 1 Jagera pseudorhus DBH 600mm / Mallotus philipinensis, Guioa semiglauca.
- 194- false record
- 195- 1 Jagera pseudorhus DBH 1200mm
- 196- 1 Jagera pseudorhus DBH 350mm / Pittosporum undulatum
- 197- 1 Jagera pseudorhus DBH 800mm
- 198- 1 Jagera pseudorhus DBH 1200mm / 5 Cinnamomum camphora DBH 200-800mm / Cupaniopsis anacardioides, Mallotus philipinensis, Guioa semiglauca.
- 199- 1 Flindersia australis DBH 1400mm / Cupaniopsis anacardioides DBH 500mm / Cinnamomum camphora, Mallotus philipinensis, Ficus fraseri, Jagera pseudorhus.
- 200- Cryptocarya foetida 1@ 500mm height
- 201- 1 Flindersia australis 600mm DBH / 2 Cinnamomum camphora DBH 300-500mm / Macaranga tanarius, Ligustrum lucidum
- 202- 1 Glochidion sumatranum DBH 700mm / 6 Cinnamomum camphora DBH 200-400mm
- 203- 7 Elaeocarpus obovatus DBH 200-300mm plus coppicing stems
- 204- 1 Cupaniopsis anacardioides DBH 600mm
- 205- 1 Pinus ellotii DBH 600mm
- 206- 1 Flindersia australis DBH 800 / 2 Jagera pseudorhus DBH 250mm / 2 Cinnamomum camphora DBH 200mm**
- 207- 1 Flindersia australis DBH 1200mm / 1 Cinnamomum camphora DBH 300mm / Cupaniopsis anacardioides, Guioa semiglauca, Mallotus philipinensis.**
- 208- 3 Acacia melanoxylon DBH 200mm
- 209- 1 Cupaniopsis anacardioides DBH 400mm
- 210- 1 Cupaniopsis anacardioides DBH 600mm
- 211- 1 Glochidion ferdinandi DBH 500mm
- 212- 2 Cinnamomum camphora DBH 800-1000mm / 1 Elaeocarpus obovatus DBH 300mm / 2 Glochidion sumatranum DBH 300mm / Jagera pseudorhus, Cupaniopsis anacardioides, Pittospermum undulatum.
- 213- 1 Glochidion sumatranum DBH 500mm / 1 Cinnamomum camphora DBH 300mm / Macaranga tanarius, Cupaniopsis anacardioides, Acacia melanoxylon.
- 214- 1 Cinnamomum camphora multiple stems DBH 300mm / *Not native veg as suggested on original site map
- 215- 1 Acacia melanoxylon DBH 200mm
- 216- 1 Ficus watkinsiana DBH 2000mm
- 217- 1 Ficus macrophylla DBH 1500mm
- 218- 1 Ficus macrophylla DBH 2000mm
- 219- Cryptocarya foetida 8 stems up to 1000mm height
- 220- 1 Ficus obliqua DBH 3500mm
- 221- Cryptocarya foetida 5 stems up to 1000mm height
- 222- Lepiderema pulchella 1@1500mm height
- 223- 1 Jacaranda Spp DBH 1300mm
- 224- Lepiderema pulchella 2@ 1000mm
- 225- 1 Ficus macrophylla DBH 2500mm
- 226- 1 Magnifera spp DBH 1000mm
- 227- 1 Magnifera spp DBH 1200 plus Dolichandra unguis-cati
- 228- 1 Magnifera spp DBH 1200mm
- 229- 1 Magnifera spp DBH 1300mm
- 230- 1 Jagera pseudorhus DBH 400mm
- 231- 1 Pinus ellotii DBH 600mm
- 232- 1 Ficus rubignosa DBH 1500mm

- 233 – 1 *Elaeocarpus obovatus* DBH 1700mm / 1 *Cinnamomum camphora* DBH 400mm / 2 *Briedelia exaltata* DBH 600mm
- 234- Approximately 20 planted Eucalypts (Forest Red Gum and Flooded Gum??) Guessing
- 235- 1 *Davidsonia jerseyana* 2000mm height. Planted
- 236- 1 *Grevillea robusta* DBH 800mm
- 237- 3 *Grevillea robusta* DBH 600mm / 1 *Brachychiton acerifolius* DBH 300mm / *Elaeocarpus grandis* DBH 250mm / 3 *Archontophoenix cunninghamii* DBH 200mm / *Toona ciliata* DBH 250mm / *Hymenospermum flavum* DBH / *Gmelia leichartii* / *Syzygium luemannii* / *Cupaniopsis anacardioides* DBH 250mm / *Lagunaria* spp 250mm (all planted)
- 238- 1 *Diploglottis australis* DBH 500mm
- 239- 1 *Araucaria cunninghamii* DBH 400mm (planted)
- 240- 1 *Macadamia tetraphylla* DBH 400mm (heavily pruned)
- 241- 1 *Litchi* spp DBH 300mm (not native veg as per original site plan)
- 242- 1 *Ficus fraseri* DBH 200mm
- 243- 5 *Archontophoenix alexandrae* and Golden cane palms around pool and garden. Also planted *Stenocarpus sinuatus*, *Hymenospermum flavum*.
- 244- 1 *Schefflera actinophylla* DBH 300mm / 2 *Cupaniopsis anacardioides* DBH 200mm / 2 *Jagera pseudorhus* DBH 250mm
- 245- 2 *Cupaniopsis anacardioides* DBH 250mm / 1 *Jagera pseudorhus* DBH 250mm / *Diploglottis australis*
- 246- 1 *Syzygium moorei* 4000mm height (planted)
- 247- 1 *Ficus rubiginosa* DBH 2500 + *Dolichandra unguis-cati* (Fig is almost dead)
- 248- 1 *Davidsonia jerseyana* DBH 3000mm (planted)
- 249- 1 *Davidsonia jerseyana* DBH 2000mm (planted)
- 250- 1 *Eucalyptus robusta* DBH 700mm
- 251- *Cryptocarya foetida* 1@1500mm
- 252- 1 *Corymbia intermedia* DBH 800mm / *Cupaniopsis anacardioides* DBH 300mm
- 253- 1 *Cryptocarya foetida* 5000mm height
- 254- 1 *Ficus macrophylla* DBH 1500mm
- 255- Photo Point (2 images)
- 256- Photo Point (2 images)
- 257- *Cryptocarya foetida* 5@ 1000-4000mm height
- 258- Photo Point (Looking at *Cassia marksiana*)
- 259- *Cryptocarya foetida* 1@2000mm height
- 260- *Cassia marksiana* DBH 700mm + seedling
- 261- *Cryptocarya foetida* 1@500mm height
- 262- *Lepiderema pulchella*
- 263- *Lepiderema pulchella* 1@3000mm height
- 264- *Lepiderema pulchella* 1@9000mm height
- 265- *Anredera cordifolia* Weed
- 266- *Cryptocarya foetida* 2@5000mm height
- 267- *Lepiderema pulchella* 1@3000mm height
- 268- *Erythrina X syksei* Weed

Appendix 4: Assessments of Significance

The following is to be taken into account for the purposes of determining whether a proposed development or activity is likely to significantly affect threatened species or ecological communities, or their habitats:

- a. in the case of a threatened species, whether the proposed development or activity is likely to have an adverse effect on the life cycle of the species such that a viable local population of the species is likely to be placed at risk of extinction,

Response: The proposal is likely to result in the loss of one Coolamon *Syzygium moorei* and one Rough-shelled Bush Nut *Macadamia tetraphylla*. Since both species are planted adjacent to the existing house and outbuildings, their provenance is unknown. Neither species is considered to be part of a local viable local population and thus a viable local population will not be placed at risk. Restoration of regrowth rainforest on the site will create opportunities for the species to be introduced to the site over time.

- b. in the case of an endangered ecological community or critically endangered ecological community, whether the proposed development or activity:

- i. is likely to have an adverse effect on the extent of the ecological community such that its local occurrence is likely to be placed at risk of extinction, or

- ii. is likely to substantially and adversely modify the composition of the ecological community such that its local occurrence is likely to be placed at risk of extinction,

Response: The EEC Lowland Rainforest in low condition is outside the development envelope and will be retained and restored. No adverse impacts are likely.

- c. in relation to the habitat of a threatened species or ecological community:

- i. the extent to which habitat is likely to be removed or modified as a result of the proposed development or activity, and

- ii. whether an area of habitat is likely to become fragmented or isolated from other areas of habitat as a result of the proposed development or activity, and

- iii. the importance of the habitat to be removed, modified, fragmented or isolated to the long-term survival of the species or ecological community in the locality,

Response: Loss of planted threatened species in landscaped gardens does not represent loss of threatened species habitat. The highest value vegetation will be restored and improved.

- d. whether the proposed development or activity is likely to have an adverse effect on any declared area of outstanding biodiversity value (either directly or indirectly),

Response: The site does not represent an area of outstanding biodiversity value.

- e. whether the proposed development or activity is or is part of a key threatening process or is likely to increase the impact of a key threatening process.

Response: The proposal includes loss of native vegetation, listed as a key threatening process. Given that this vegetation has been planted and includes exotic and non-local native species, the loss of landscaped gardens is unlikely to increase the impact of the threatening process.

Appendix 5: Planning Agreement