Planning Proposal Environmental Assessment for Lot 84 in DP 259212 (Village Road and Banyandah Street, South Durras) & part of Lot 74 DP776541 (9 Moir Place, Broulee).

Report Prepared for:
Eurobodalla Shire Council

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EXECUTIVE SUMMARY

Eurobodalla Shire Council have proposed the reclassification of two lots from community land to operational land under the Eurobodalla Local Environment Plan 2012. The lots are identified as:

- Lot 84 in DP 259212 (Village Road and Banyandah Street, South Durras), and
- Part of Lot 74 DP776541 (9 Moir Place, Broulee).

The lots were identified as having native vegetation that would require assessment under relevant state and commonwealth legislation for impacts of any future development of either site.

This report assessed the floristics and habitat features at each site, and assessed the suitability of the vegetation to species identified for a 10-kilometre radius of each lot.

The assessment found that for:

- Lot 84 in DP 259212 (Village Road and Banyandah Street, South Durras) vegetation consisted of PCT 3271- *Shoalhaven Spotted Gum-Blackbutt Moist Forest* in a somewhat disturbed state as the site is modified for Asset Protect Zone bushfire compliance which removes leaf litter and structural elements as well as floristics in patches across the lot. A walking track also occurs through the land though it is not substantial. The lot has some weed burden but it is not considered high.

- Lot 74 DP776541 (9 Moir Place, Broulee) consists of PCT 3638- *South Coast Sands Bangalay Forest* in a highly modified state with a high weed burden, minor walking tracks, cleared areas and encumbered with an infrastructure sewer pipe constraint. PCT 3638 is listed as a Threatened Ecological Community- *Bangalay Sand Forest of the Sydney Basin and the South East Corner Bioregion*.

For those species or threatened ecological communities considered with potential to utilise either site and potentially be impacted by any future clearing, the NSW *Biodiversity Conservation Act* 2016 Assessment of Significance (5-part Test) was applied. Assessment was completed for five entities at South Durras and six entities at Broulee.

For Lot 84 in DP 259212 (Village Road and Banyandah Street, South Durras) this included:

- *Daphoenositta chrysoptera* (Varied Sitella)
- *Cercartetus nanus* (Eastern Pygmy Possum)
- *Petauroides volans* (Greater Glider)
- *Petaurus australis* (Yellow-bellied Glider)
- *Sminthopsis leucopus* (White-footed Dunnart)

For Lot 74 DP776541 (9 Moir Place, Broulee) this included:

- Bangalay Sand Forest of the Sydney Basin and South East Corner bioregions
- *Callocephalon fimbriatum* (Gang-gang Cockatoo)
- *Glossopsitta pusilla* (Little Lorikeet)
- *Falsistrellus tasmaniensis* (Eastern false Pipstrelle)
- *Micronomus norfolkensis* (Eastern Coastal freetailed Bat)
- *Saccolaimus flaviventris* (Yellow-bellied Sheathtail-bat)

Three species were also evaluated under the Commonwealth *Environment Protection and Biodiversity Conservation Act* 1999 Significance Assessment criteria:

- *Petauroides volans* (Greater Glider)
- *Petaurus australis* (Yellow-bellied Glider)
- *Callocephalon fimbriatum* (Gang-gang Cockatoo)

Significance assessments found that no significant impact would occur to any listed entity listed under the NSW *Biodiversity Conservation Act* 2016 or the Commonwealth *Environment Protection and Biodiversity Conservation Act* 1999.

The conclusion of this report is that no threatened entity would be significantly impacted by the potential future clearing of Lot 84 DP 259212, South Durras or Lot 74 DP 776541, Broulee. However, any future assessment of the lots would be required to evaluate the individual proposal against these species and any subsequent listed species that have not formed part of this report, and to also reassess each species in the light of future information on that species and the locality the works occurs in.

1.0 INTRODUCTION

1.1. Purpose of works and this report

Southern Cross Environmental (SCE) was commissioned by Eurobodalla Shire Council to prepare an environmental assessment of two lots proposed for reclassification from Community land to Operational land under the Eurobodalla Local Environmental Plan 2012.

The lots are identified as:

- ITEM 2 – Lot 84 in DP 259212 (Village Road and Banyandah Street, South Durras), and
- ITEM 11 – Part of Lot 74 DP776541 (9 Moir Place, Broulee).

This report provides a detailed assessment of the potential environmental constraints and impacts related to the proposed reclassification and potential impacts on threatened species (TS) from any future activities on the lots. It has been undertaken in line with the requirements of the NSW *Biodiversity Conservation Act 2016* (BC Act) and the Commonwealth *Environment Protection and Biodiversity Act 1999* (EPBC Act) for assessing significant impacts on TS.

1.2. Location and description of works

The location and description of the two lots is summarised as per the *Planning Proposal for the reclassification of Community land to Operational land under the Eurobodalla Local Environmental Plan 2012* (ESC 2023).

Item 2

Lot 84 DP 259212 is situated between Village Road and Banyandah Street, South Durras, with frontage to both.

Currently the land is a public reserve and classified as community land in accordance with sections 25 and 26 under the Local Government Act 1993. The land is currently zoned R2 – Low Density Residential. The allotment is a rectangle, consistent with existing subdivision in the area and a site area of 1,251sqm.

The land is currently listed in Council's Natural Areas and Undeveloped Reserves Plan of Management. The primary reserve category for the land is General Community Use – Undeveloped with a secondary category of Natural Bushland.

The land currently provides an informal pedestrian link between Village Road and Banyandah Street. The land is steep, rising from Banyandah Street to Village Road and vegetated with a Spotted Gum Burrawang forest. The land is currently managed by the NSW Rural Fire Service as an Asset Protection zone. The site is surrounded by residential dwellings that sit within a natural landscape.

ITEM 11

Lot 74 DP776541 (9 Moir Place, Broulee) is a public reserve and classified as community land in accordance with Sections 25 and 26 of the Local Government Act 1993. The land is currently zoned R2 – Low Density Residential. The area of the subject land is 659sqm.

The land is currently listed in Council's Broulee and Mossy Point Community Land Plan of Management. The reserve category for the subject land is General Community Use.

The property is between Moir Place and Banksia and Pacific Streets. The subject land contains some remnant vegetation including large eucalyptus trees and managed gardens. The site is predominantly surrounded by single-storey residential dwellings.

Mapping of the works relevant to this report are attached in Figure 1-1 and 1-2, with further photos of each location at Appendix A.

Figure 1-1. ITEM 2- Lot 84 in DP 259212 (Village Road and Banyandah Street, South Durras)

Figure 1-2. ITEM 11 – Part of Lot 74 DP776541 (9 Moir Place, Broulee).

2.0 ENVIRONMENTAL LEGISLATION RELATING TO THE PROPOSAL

Table 2-1 Environmental Legislation and State/local policies relating to the proposed works

Law, Policy or Regulation	Requirement for proposal
Environmental Planning and Assessment Act 1979 The relevant state planning legislation for NSW is the Environmental Planning and Assessment Act 1979 (EP&A Act). The objects of the EP&A Act, among other things, are to encourage the proper management, development and conservation of natural and artificial resources for the purpose of promoting the social and economic welfare of the community and a better environment and the protection of the environment, including the protection and conservation of native animals and plants, including threatened species, populations and ecological communities, and their habitats. Eurobodalla Shire Council, as a Public Authority is the determining authority under Division 5.1 of the EP&A Act. Consent authorities are required under Part 1 Section 1.7 of the EP&A Act to consider whether a development proposal is likely to significantly affect threatened species, populations or ecological communities listed under the Schedules of the Biodiversity Conservation Act (BC Act) 2016. Refer to the BC Act heading, below, for further detail.	*This proposal is a planning proposal prepared in accordance with section* 3.33(2) *of the EP&A Act 1979. This Assessment of Significance for items 2 and 11 provides an assessment of the potential environmental impact of any future proposed activities but is not prepared to meet requirements of s1.7 of EP&A Act for any specific objective. Any future proposal for either site would be required to complete an assessment under the requirements of the EP&A Act 1979 for the particular development activity.*
Biodiversity Conservation Act 2016. The BC Act established that a person must not, by an act or omission, do anything that causes damage to any threatened species, the habitat of a threatened species, an endangered population or an endangered ecological community.	*This report applies the Assessment of Significance to threatened entities that may potentially be impacted by the proposal (determined via initial likelihood of occurrence assessment for each Lot), in order to determine the significance of the potential impact. As a planning proposal does not directly impact on environmental values, this report considers a worst-case scenario of total vegetation clearing as part of any future potential development.* *Refer to section 4 and Appendices A & B for detail.*

Law, Policy or Regulation	Requirement for proposal
Under Part 2 of the BC Act a determining authority may undertake works within the meaning of, and in compliance with, Part 5 of the EP&A Act. The authority must assess five (5) factors in relation to threatened species, populations or ecological communities listed under the BC Act. This process is known formally as the 'Assessment of Significance'. If the determination is made during the current impact assessment that there is likely to be a significant effect, then either: • A Species Impact Statement (SIS) must be prepared as per requirements set by the Environment Agency Head, or • A Biodiversity Development Assessment Report must be prepared, or • The proposal may be modified such that a significant effect on threatened entities or their habitats is downgrade to unlikely (DEC 2004).	
Environment Protection & Biodiversity Conservation Act 1999 The Environment Protection and Biodiversity Conservation Act 1999 (EPBC Act) enables the Australian Government to join with the states and territories in providing a national scheme of environment and heritage protection and biodiversity conservation. Under the EPBC Act, actions that have, or are likely to have a significant impact on a matter of National Environmental Significance (MNES) require approval from the Australian Government Minister for the Environment, Heritage and the Arts (DEWHA 2009). The nine matters of NES that are protected under the EPBC Act are: • World heritage properties • National heritage places • Wetlands of international importance (RAMSAR)	*This report provides an assessment of relevant MNES to ascertain impacts, including whether the reclassification and sale and any subsequent development of either lot would trigger referral to the Commonwealth.* *Refer to section 4 and Appendices A & C for detail.*

Law, Policy or Regulation	Requirement for proposal
• Listed threatened species and ecological communities • Migratory species protection under international agreements • Commonwealth marine areas • The Great Barrier Reef Marine Park • Nuclear actions including uranium mines • a water resource, in relation to coal seam gas development and large coal mining development	
State Environmental Planning Policy (Biodiversity & Conservation Protection) The Biodiversity and Conservation SEPP incorporates the repealed *Clearing vegetation in non-rural areas* and *Koala Habitat Protection 2021* as it applies to residential zoned land, along with impacts on River Murray and water catchment lands, and strategic developments. Chapters 2 and 4 apply to these lots. The aim of the Biodiversity & Conservation SEPP is to protect the biodiversity values, and preserve the amenity of, trees and other vegetation in non-rural areas of NSW. It also aims to conserve and manage natural vegetation in areas of koala habitat "to support a permanent free-living population over their present range and reverse the current trend of koala population decline."	*As the proposed clearing is assessable under the EP&A Act, the clearing of vegetation is not inconsistent with chapter 2 of this SEPP and would be required to be evaluated in any future development application for either site.* *No record of Koala are documented within a 10km radius of either lot in the last 18 years, and vegetation on both lots is considered suboptimal as a food resource based on the known preferential foraging trees of Koala on the south coast (DPE, 2023; OEH, 2018). Any future development application will be required to address the SEPP (Biodiversity & Conservation Protection). Therefore, the proposal is not inconsistent with chapter 4 of this SEPP.*
State Environmental Planning Policy 2018 (Coastal Management) The aim of SEPP 2018 (Coastal Management) is to promote an integrated and coordinated approach to land use planning in the coastal zone in a manner consistent with the objects of the *Coastal Management Act 2016.*	*Both Lots are located within the Coastal Environmental Area and therefore consideration must be given to whether any future 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* The integrity and resilience of the biophysical, hydrological (surface and groundwater) would require further assessment for any proposed development application. The ecological environment is assessed in this report. *(b) Coastal environmental values and natural coastal processes,* Coastal environmental values and natural coastal processes would not be impacted from any future development of either lot.

Law, Policy or Regulation	Requirement for proposal
	(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, Water quality of the marine estate would not be impacted from any future development of the lots. *(d) Marine vegetation, native vegetation and fauna and their habitats, undeveloped headlands and rock platforms,* Marine vegetation, undeveloped headlands and rock platforms would not be impacted from any future development of either lot. Native vegetation and fauna, and their habitats, are considered in this report. *(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,* Existing public open spaces and safe access to and along the foreshore, beach, headland and rock platforms would not be impacted from any future development of either lot. *(f) Aboriginal cultural heritage, practices and places,* Any future development would require an assessment of the potential for Aboriginal Heritage for any development application. *(g) The use of the surf zone.* The use of the surf zone would not be impacted from any future development of either lot.
Eurobodalla Local Environmental Plan 2012 The LEP is the principal legal document for controlling development at the council level. The zoning provisions establish permissibility of uses and standards regulate the extent of development on any site.	*The proposal is to amend the ESC LEP 2012 for two separate lots, Lot 84 DP 259212, South Durras and Lot 74 DP 776212, Broulee. Both lots are zoned as R2 – Low Density Residential and classified as community land.* *Lot 84 DP 259212, South Durras is not constrained by existing infrastructure and is proposed to be reclassified as operational land.* *Lot 74 DP 776212, Broulee is constrained with a sewer pipe that runs east-west through the lot. As such, the proposal will exclude a 6m width over the pipeline (3m each side of centre). As the lot is approximately 30m long this excludes 180m^2 from the reclassification and will remain community land.*
Eurobodalla Shire Council Significant Tree Register The ESC Significant Tree Register lists trees with outstanding visual or aesthetic significance, botanic or scientific significance, significant ecological value, historical and commemorative significance or social significance.	*No trees within Lot 84, DP 259212 are listed under the Significant Tree Register.* *No trees within Lot 74, DP 776212 is listed under the Significant Tree Register, however, one large Bangalay (Eucalyptus botryoides) on adjacent Crown Land is listed for Moir Place, Broulee.*

Law, Policy or Regulation	Requirement for proposal
	 *This tree contains two large and one small trunk hollows that may provide habitat for fauna species, though the two on the northern side of the tree were noted with exotic bees. The use of hollows by threatened species is taken into account in the likelihood of occurrence and impacts at Appendix A.*
Eurobodalla Shire Council Conservation of the Yellow-bellied Glider in the Broulee area This Policy was developed by ESC and NW NPWS to better protect Yellow-bellied Glider and its habitats within the Broulee area, with a "Code of Practice" aimed at providing "a platform for a similar approach to the entire Coastal Plains of Eurobodalla Shire."	*Lot 84, DP 259212 is not within the management area of this code, however, as per clause 3 the principles of the code can be utilised by ESC to assess development applications and proposed activities on other land within the coastal plains. Clause 4 outlines the "minimum standards for development or activities that lead to land clearing on land containing suitable habitat for the Yellow-bellied Glider". These are:* *(a) Retention of all sap-trees, (which are to be identified in the development application or review of environmental factors);* No sap trees identified on Lot 84 DP 259212 *(b) Retention of all large hollow-bearing trees, (which are to be identified in the development application or review of environmental factors), except where it can be demonstrated that Yellow-bellied Gliders do not utilise the hollow-bearing tree;* No hollow-bearing trees identified on Lot 84 DP 259212 *(c) Clearing of vegetation around these retained habitat elements must not inhibit access of Yellow-bellied Gliders to these resources; and* N/A to Lot 84 DP 259212 *(d) Retained vegetation must be configured to allow movement of individual Yellow-bellied Gliders across the property and onto suitable habitat on adjoining properties.* This would be designed in any proposed development of the Lot however; it is considered that the Rural Fire Service Planning for Bushfire Protection (PBP) requirements would see the loss of all vegetation on the Lot. This report considers this loss to the movement of Yellow-bellied Gliders through South Durras. *Lot 74, DP 776212 is within the Broulee area but is outside of the retained habitat area as defined by clause 8 and map 2. As per clause 9, "All land outside of this retained habitat area to the east of George Bass Drive outlined in clause 8 can be developed / cleared without significantly impacting upon the local population of the Yellow-bellied Glider in the Broulee Study Area."*

3.0 EXISTING ENVIRONMENT

3.1. Geology, topography and hydrology

SOUTH DURRAS

The soil landscape of the South Durras area is classified as part of the *Wandandian Coastal Plains,* with soils noted as Hydrosols/Yellow Podzolic low fertility soils (E-Spade 2023).

Lot 84 DP 259212 is a relatively sloped lot, rising from Banyandah Street to Village Road. No gully or riparian habitat occurs on the lot but it is within 105 metres of a substantial dam located between housing and Cookies Beach to the east.

The lot is vegetated and contains no known infrastructure constraints. Clearing activities are seen across the lot with shrub and ground litter removal and thinning of vegetation, though patches of native species occur with a few smaller fallen logs scattered over the lot. Exotic flora species were noted on the northern side boundary that are encroaching on the lot and a number of weeds noted also to the eastern (Banyandah St) edge.

BROULEE

The soil landscape of Lot 74 DP 776212, Broulee is classified as part of the *Moruya Barrier*, with soils noted as Kurosols-Dark to light grey fine sands (E-spade 2023).

Lot 74 DP 766541 is flat with no hydrological features present. ESC infrastructure in the form of a sewer pipe runs through the centre of the lot. This is proposed to be retained as community land and would provide an access for pedestrians from Moir Place to Banksia Street and on to Broulee business and beach areas. The lot contains three large canopy trees, and a mix of endemic and planted native species but with major exotic infiltration mainly of groundcover.

Close to this lot on the northeastern side a crown lands reserved area occurs that contains an ESC listed Significant Tree. The tree, a Bangalay, is a hollow-bearing tree (HBT) with two large and one small hollows. Canopy is close to that on Lot 74 DP 766541 and provides a tenuous link to other native canopy in Banksia St and on to Candlagan Drive, but no other connectivity occurs to the north, south or west. The patch of vegetation on Lot 74 DP 766541 is a remnant of an already heavily dissected forest.

3.2. Flora and Fauna

3.2.1. Methods

DATABASE AND LITERATURE REVIEW

Databases used to generate a list of threatened and migratory species known or predicted within 10km of the works site were:

- The BioNet Atlas of NSW Wildlife (OEH, 2023).

- The Environmental Protection and Biodiversity Conservation (EPBC) Act Protected Matters Search Tool (DCCEEW, 2023).

All entities recorded from the above database searches were assessed for their likelihood of occurrence in the vicinity of the proposal (Appendix B). For this report, marine species/shore birds were excluded from the assessment due to the proposal comprising of lands situated away from marine environments.

Assessments of significance were carried out for any entities with the potential to be affected by the proposal, in accordance with the NSW BC Act and the EPBC Act where applicable.

Applicable studies in the surrounding areas were also used for information on the species known for the South Durras and Broulee localities and the likelihood of species to use either Lot 84 DP 259212 or Lot 74 DP 766541.

FIELD SURVEY METHODS

Survey limitations

Surveys for flora and fauna can be limited by the season, disturbance history and weather conditions in which they are undertaken. Many grasses can only be identified when they are flowering or fruiting, and many orchids can only be detected when they are flowering.

Not all fauna species that use a site will be recorded during ecological survey due to their mobility, cryptic nature and unpredictable movement throughout their habitat. Migratory species may be present on a site sometimes through the year and absent at others.

In addition to ecological reasons, environmental factors (such as weather, drought and bushfire) may impact on the type and number of species recorded within a site at any one time.

To address these issues and due to the small nature of the proposed reclassification Lots, and the urban and confined vegetation surrounding Item 11, habitat was used as a tool to measure if threatened species were likely to utilise either site or not. Any threatened species (flora or fauna) considered to have potential habitat within the site was considered in this assessment of environmental significance. This process ensured that all threatened species with potential to use the site were considered in the impact assessment, rather than only those that were recorded during survey, as per the Office of the Environment and Heritage draft *Threatened Biodiversity Survey and Assessment: Guidelines for Developments and Activities* (OEH, 2004) and in line with the NSW government's *Threatened Species Test of Significance Guidelines* (OEH 2018).

The following attributes were recorded in areas comprising or adjacent to native vegetation and/or fauna habitat:

- Flora species composition (for EEC determinations and condition assessment).
- Threatened flora species searches.
- Habitat features including hollow-bearing trees, feed trees, rock outcropping and scats.

- No targeted fauna surveys were undertaken due to the small-scale nature of the Lots and that both occur within predominately urban environments where call playback and other survey methods are often affected by human interference.

Flora species nomenclature was checked against the NSW Royal Botanic Gardens PlantNet website.

Plant Community Types (PCT) and Threatened Ecological Communities (TEC) are classified in accordance with the - BioNet Vegetation Classification (OEH, 2023) utilising both SouthEast Local Land Services (SELLS) mapping (*Shoalhaven Biometric VIS 3900*) and State vegetation Type Mapping (SVTM) (*SVTM_NSW_Extant_PCT*), with TECs also checked against the relevant State and Federal descriptions where necessary (OEH, 2023; DCCEEW, 2023).

3.2.2. Flora survey results

A general flora survey was conducted at each site as a random meander to catalogue species at ground, mid and upper stratum. This method was considered most optimum to gain information on the flora species present and the site characteristics that indicate whether threatened flora species are likely to be present. Flora species found are recorded below.

SOUTH DURRAS	
Species Name	**Common Name**
Native	
Eucalyptus paniculata sp. paniculata	Grey Ironbark
Eucalyptus piluris	Blackbutt
Corymbia maculata	Spotted Gum
Eucalyptus botryoides	Bangalay
Eucalyptus globoides	White Stringybark
Casuarina glauca	Swamp Oak
Exocarpus cuppresiformis	Cherry Ballart
Pittosporum undulatum	Sweet Pittosporum
Elaeocarpus reticulatus	Blueberry Ash
Allocasuarina littoralis	Black She-oak
Tristaniopsis laurina	Water Gum
Notelaea longifolia	Large Mock-olive
Grevillea robusta	Silky Oak (non-endemic native)
Zieria smithii	Sandfly Zieria
Breynia oblongifolia	Coffee Bush
Persoonia linearis	Narrow-leaved Geebung
Banksia ericifolia	Heath-leaved Banksia
Leucopogon juniperinus	Prickly Beard-heath
Hibbertia aspera	Rough Guinea Flower
Pimelea linifolia	Slender Rice Flower
Hakea dactyloides	Finger Hakea
Lepidosperma laterale	Sword-sedge
Lomandra longifolia	Spiny-headed Mat-rush
Veronica plebeia	Trailing Speedwell
Lagenophora stipitata	Blue Bottle Daisy
Rhagodia candolleana	Sea Berry Saltbush
Sannantha pluriflora	(Tall Baeckea)
Lobelia purpurascens	Whiteroot
Grona varians	Slender Tick-trefoil
Carex longebrachiata	A carex (Bergalia Tussock)

Polyscias sambucifolia subsp. Bipinnate leaves	Ferny Panax
Senecio spp.	A senecio
Dianella caerulea var. caerulea	Blue Flax-lily
Cassytha pubescens	(Devil's Twine)
Hibbertia scandens	Climbing Guinea Flower
Glycine clandestina	A glycine
Hardenbergia violacea	Purple Coral Pea
Eustrephus latifolius	Wombat Berry
Sarcopetalum harveyanum	Pearl Vine
Stephania japonica	Snake Vine
Oplismenus aemulus	Australian Basket Grass
Entolasia stricta	Wiry Panic
Microlaena stipoides	Weeping Grass
Pteridium esculentum	Braken
Dichondra repens	Kidney Weed
Cissus hypoglauca	Water Vine
Centella asiatica	Indian Pennywort
Exotic	
Asparagus aethiopicus	Ground Asparagus
Nephrolepis cordifolia	Fishbone Fern
Bidens pilosa	Cobbler's Pegs
Agapanthus praecox subsp. orientalis	Lily of the Nile
Billarderia fusiformis	Bluebell
Stenotaphrum secundatum	Buffalo Grass (Banyandah St edge)

BROULEE	
Species Name	**Common Name**
Native	
Eucalyptus piluris	Blackbutt
Brachychiton populneus subsp. populneus	Kurajong
Tristaniopsis laurina	Water Gum
Pittosporum undulatum	Sweet Pittosporum
Acmena smithii	Lilly Pilly
Melaleuca quinquenervia	Broad-leaved Paperbark
Adenanthos sericeus	Woolly Bush (non-endemic native)
Asplenium australasicum	Bird's Nest Fern
Dianella longifolia var. longifolia	(Blue Flax Lily)
Geitonoplesium cymosum	Scrambling Lily
Exotic	
Asparagus aethiopicus	Ground Asparagus
Nephrolepis cordifolia	Fish Bone Fern
Monstera deliciosa	Monstera
Cotoneaster glaucophyllus	(Glaucus Cotoneaster)
Plumbago auriculata	(Blue Plumbago)
Stenotaphrum secundatum	Buffalo Grass
Xanthosoma sagittifolium	Elephant's Ears
Epidendrum radicans x secundum hybrid complex	Crucifix Orchid
Yucca spp.	Yucca
Hippeastrum spp.	Hippeastrum
Dracaena trifasciata	Mother-in-law's Tongue
Senna pendula	(Cassia)
Osteospermum spp.	(African Daisy)
Ehrharta erecta	Panic Veldtgrass
Syagrus romanzoffiana	Quenn Palm, Cocos Palm
Tecoma capensis	Cape Honeysuckle

3.2.2.1. Plant Community Types

SOUTH DURRAS

Vegetation on Lot 84 DP 259212, South Durras is mapped under SELLS as PCT 1206- *Spotted Gum - Blackbutt shrubby open forest on the coastal foothills, southern Sydney Basin Bioregion and northern South East Corner Bioregion,* which equates to the SVTM PCT 3271- *Shoalhaven Spotted Gum-Blackbutt Moist Forest.*

Under SVTM mapping the site is partly SVTM 3662- *South Coast Lowland Blackbutt Forest* and partly not classified most likely due to the residential nature of the area (Figure 3-1).

Both PCTs are similar in composition, but vary based on landscape position and dominance of individual flora species.

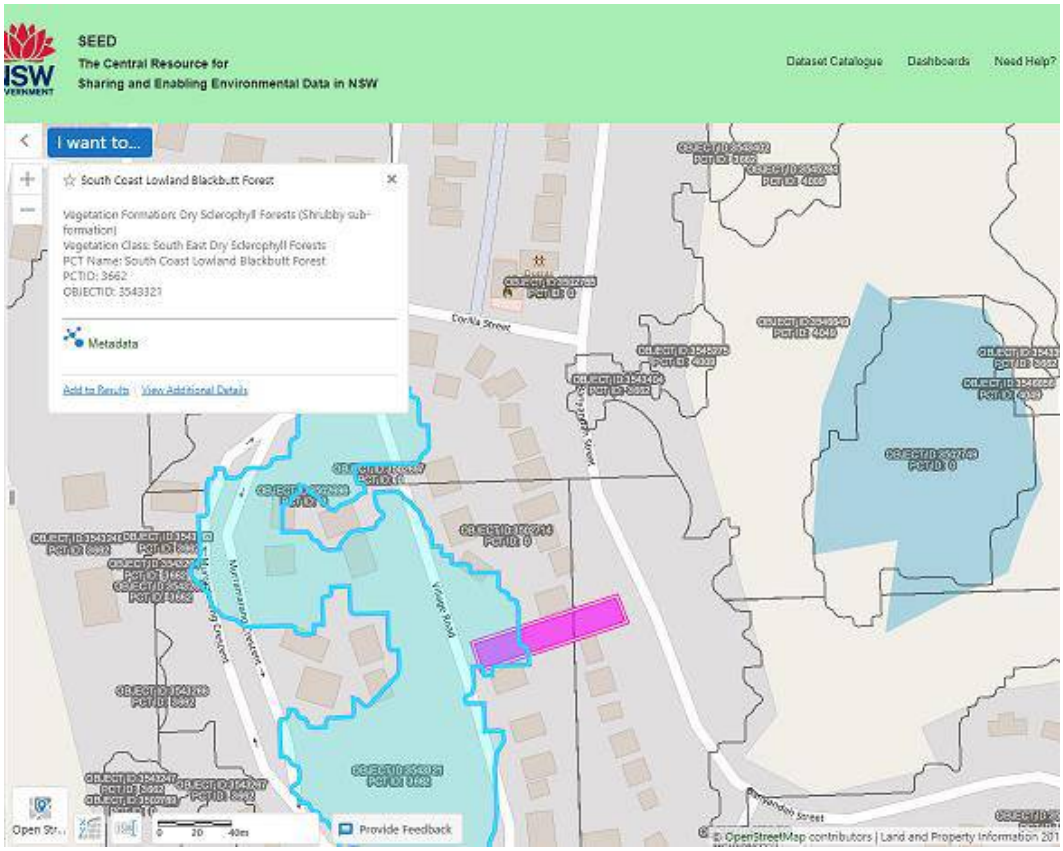

Figure 3-1. SVTM Vegetation mapping for Lot 84 DP 259212, South Durras- Source SEED.

On site assessment concludes the vegetation present is PCT 3271 based on the descriptive attributes for the PCT- "A tall to extremely tall sclerophyll open forest with a layered mid-stratum of mesophyll and sclerophyll shrubs with a ground layer of grasses, climbers and cycads found in warm and wet low-lying coastal sedimentary hills and rises at elevations of mainly below 150 metres asl" "on the coastal ranges between Batemans Bay and Nowra" (OEH, 2023b).

PCT 3271 has a "tree canopy...very frequently dominated by *Corymbia maculata* and *Eucalyptus pilularis*, the former almost always present. One or both species are occasionally replaced or accompanied by *Eucalyptus paniculata, Corymbia gummifera* or one of several stringybark eucalypt species of which *Eucalyptus globoidea* is most frequently recorded." The presence of a wide varied of mid-strata species including *Elaeocarpus reticulatus* and *Allocasuarina littoralis* and vines *Cissus hypoglauca*, *Hibbertia scandens* and *Grona varians* noted for the PCT (OEH, 2023b), and *Sannantha pluriflora* helped conclude PCT identification. PCT 3271 is considered "common in Murramarang and Meroo national parks and adjoining state forests including Boyne and Brooman" (OEH, 2023b).

PCT 3662 by comparison is defined to be a "almost always dry shrubby sclerophyll open forest found on sandy soils on gentle low relief coastal hills and rises between Eden and Nowra" and to "almost always includes *Corymbia gummifera* very frequently with a high cover of *Eucalyptus pilularis* and occasionally *Eucalyptus sieberi* is present in local stands. Other eucalypt species are recorded at very low frequencies" (OEH, 2023b). This site did not include Bloodwood (*Corymbia gummifera*) or Silver-top Ash (*Eucalyptus sieberi*). *Allocasaurina littoralis* and *Banksia serrata* are frequently present as smaller trees and "commonly *Lomatia ilicifolia, Acacia terminalis, Platysace lanceolata*" (OEH, 2023b) within the shrub layer of which only *Leucopogon lanceolatus* was identified on site. The ground layer "almost always includes *Gonocarpus teucrioides*" (OEH, 2023b), a common species along the south coast in drier forests that was not seen in this site. The PCT also "occurs on a range of substrates including Permian sediments and older metasediments, however soils are often sandy" (OEH, 2023b) and that on Lot 84 DP 259212 was considered more sedimentary than sandy.

BROULEE

Vegetation on Lot 74 DP 776541 is not mapped as an identified PCT (Figure 3-2) and was found on site visit to be highly disturbed from a natural state. The site contains several established large Blackbutt trees and a number of species recognizable for the PCT 659- *Bangalay - Old-man Banksia open forest on coastal sands, Sydney Basin Bioregion and South East Corner Bioregion* that is well represented in the locality. However, understorey and ground cover are predominantly exotic or planted natives, many not endemic to the NSW South coast and not indicated in PCT 659.

PCT 659 equates to SVTM PCT 3638- *South Coast Sands Bangalay Forest* and the TEC- *Bangalay Sand Forest of the Sydney Basin and the South East Corner Bioregion.* It is a high to tall, dry shrubby sclerophyll open forest found on low-lying marine sand deposits and occasionally on wind-formed headland dunes from Botany Bay in Sydney to Eden, mainly at elevations of below 40 metres asl (OEH, 2023b).

Eucalyptus botryoides dominates the canopy and is sometimes the only tree present, though occasionally localised stands of *Eucalyptus pilularis* or rarely *Corymbia gummifera*, *Angophora costata* or *Angophora floribunda*. The mid-stratum is very frequently layered, with taller small trees of *Banksia serrata* and *Banksia integrifolia* and low dry shrubs such as *Monotoca elliptica, Acacia longifolia* and *Breynia oblongifolia*. *Pittosporum undulatum* is present in long unburnt sites. "The ground layer is characterised by a mid-dense cover of *Pteridium esculentum, Lomandra longifolia* and *Imperata cylindrica* which are almost always present, the former with highest foliage cover" (OEH, 2023b).

The vegetation on this site is now so altered it is considered a highly disturbed isolated patch of PCT 3638 and most likely is a non-functioning remnant with the lack of ability for flora species to recolonize and lack of flora species variability. No Biodiversity Assessment Methodology (BAM) plot was undertaken on the lot due to its small size making a 50x20m plot unattainable, however assessment of the species tabulated from the site indicate the vegetation would not meet many of the benchmark conditions for the PCT. Conservatively, 75.6Ha of the TEC occurs within a 1500m radius of the Lot (Figure 3-3).

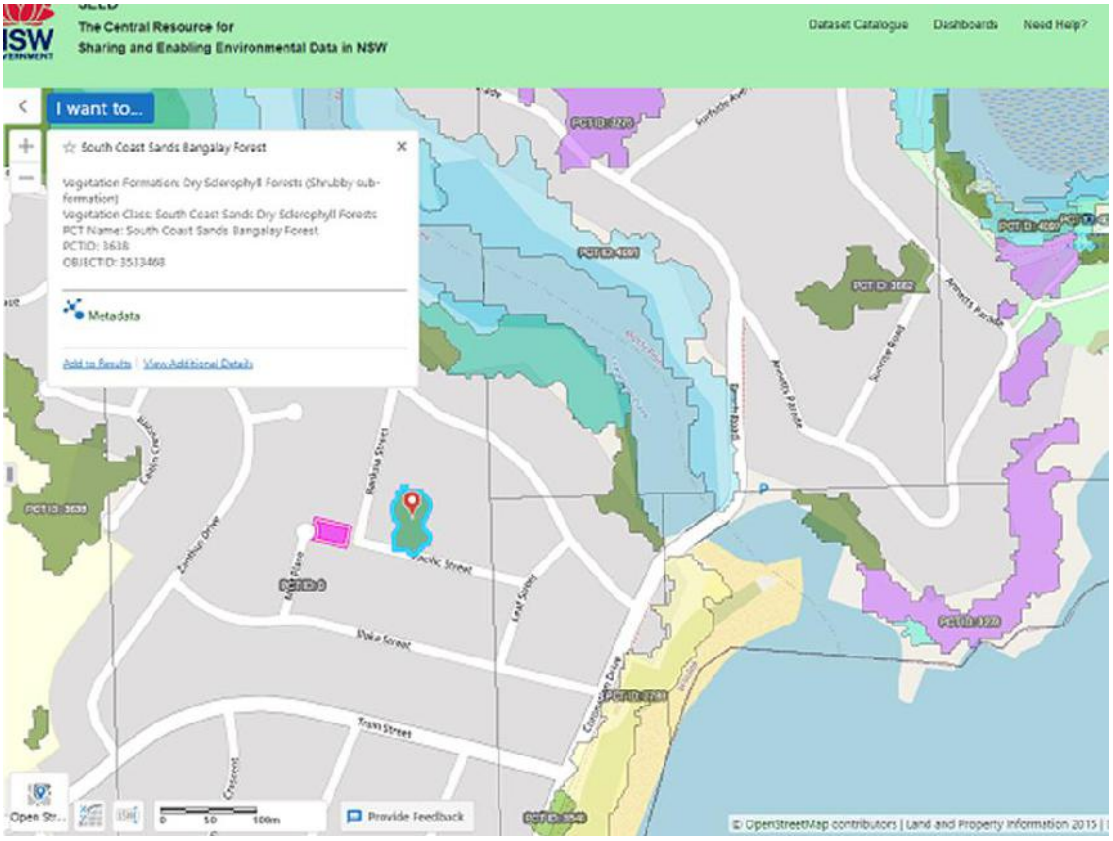

Figure 3-2. SVTM Vegetation mapping for Lot 74 DP 776541, Broulee. Source- SEED.

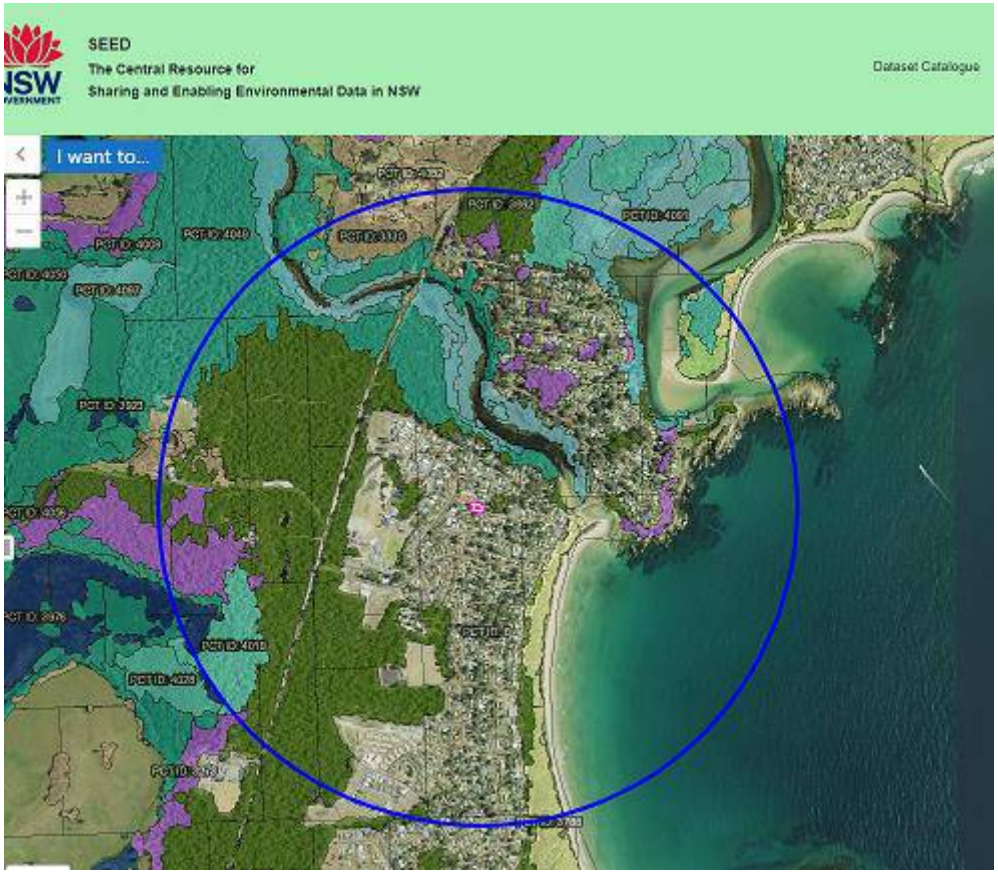

Figure 3-3. PCT 3638 (dark green) in 1500m radius of Lot 74 DP 776541, Broulee. Source- SEED

3.2.2.2. Threatened ecological communities (TEC)

No threatened ecological community was found within the footprint of Lot 84 in DP 259212, South Durras.

The vegetation on Lot 74 DP 776541, Broulee, is considered a remnant and highly degraded patch of the EEC *Bangalay Sand Forest of the Sydney Basin and the South East Corner Bioregion*. The vegetation is considered to no longer meet benchmarks of the EEC in canopy, mid or ground strata species diversity, in structural diversity nor many of the benchmarks for cover. The Lot is within a highly urban area, with limited connectivity to stronger patches of the EEC known in the locality and considered to be highly susceptible to edge effects due to the small area.

3.2.2.3. Threatened flora species

No threatened flora species were recorded within either of the Lots. Given the disturbed condition of the vegetation at both sites it is deemed highly unlikely that any of the more cryptic threatened flora species known from the region would be found during further survey during other seasons. Therefore, no flora species listed under the schedules of the NSW TSC Act or the Commonwealth EPBC Act are included in the threatened/migratory species significance assessments.

3.2.3. Fauna Habitats and Connectivity

Whilst small remnant patches of vegetation can provide potential habitat for individuals of a species, ecological assessment of an area under the BC Act and the EPBC Act looks at the quality of any habitat to the survival of the species as a population. Therefore, assessment does not rely on absence /presence alone but the features within a patch that are important for life stages such as breeding. Connectivity is an important part of this assessment as, whilst a site may provide foraging, if there is limited linkage to areas for denning or to breeding features, the species will not persist in the landscape.

SOUTH DURRAS

HABITATS

Lot 84 DP 259212, South Durras contains patchy ground habitat in the form of small clumps of retained vegetation with some fallen timber amid areas cleared for a walking path and for APZs (Photos 1 & 2). Habitat also includes a variety of mid storey vegetation and therefore is considered to be marginally suitable for threatened species such as Eastern Pygmy Possum that would rely on variety of flowering/fruiting species to survive in a small area. Whilst logs seen were smaller diameter at breast height (DBH), two contained cavities this species could use. The impact though of domestic or feral species on ground fauna on this site is likely to be high and is an identified threat to the Eastern Pygmy Possum.

Canopy vegetation is also varied and, whilst the site is small, trees could provide some foraging for more mobile threatened species on migration, such as Swift Parrot, or resident, such as Varied Sitella. For less mobile species and most ground species connectivity and impacts from domestic pets and roads are the key limiting factors to the use of the site.

Photo 1. Patches of thicker more intact vegetation on Lot 84 DP 259212

Photo 2. APZ activity over Lot 84 DP 259212, southern boundary area

CONNECTIVITY

Connectivity around the South Durras area is strong with its proximity to Murramarang National Park, a 12,374Ha area of a variety of PCTs including large tracts of that similar to South Durras (Figure 3-4).

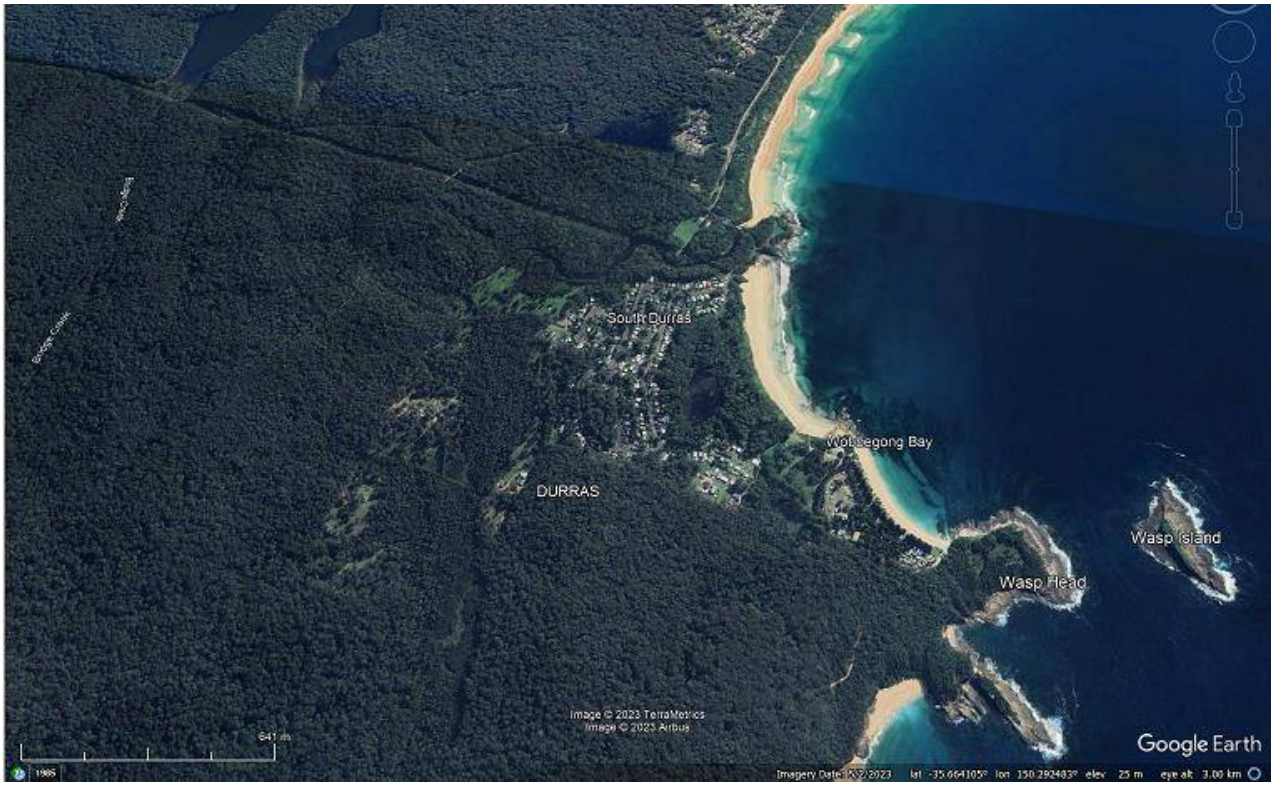

Figure 3-4. Surrounding connectivity and habitats to South Durras. Source-Google Earth.

Within the South Durras village, canopy connectivity is more scattered than in surrounding forested areas. Distances between patches of trees within the village were measured from aerial photos in regards to gliding distances for Greater and Yellow-bellied Gliders and none were considered unachievable for either species, most gaps being under 50m. Several passages that provide connectivity are noted surrounding this lot (Figure 3-5). Connectivity at Lot 84 DP 259212 is considered more disjointed on the eastern (Banyandah St) and southern sides than on the western and northern areas though gliding distances would be sustainable for both Greater and Yellow-bellied Gliders east-west (Photos 3-6). However, no evidence of arboreal mammals was seen on the lot such as scratch marks on tree trunks or scats, only evidence of the Eastern Grey Kangaroo (*Macropus giganteus*) and avian species.

Photo 3. Canopy break, Banyandah St looking north-east

Photo 4. Canopy break, Banyandah St looking south-east

Photo 5. Canopy break, Village Rd looking north-west.

Photo 6. Canopy break, Village Rd looking south-west.

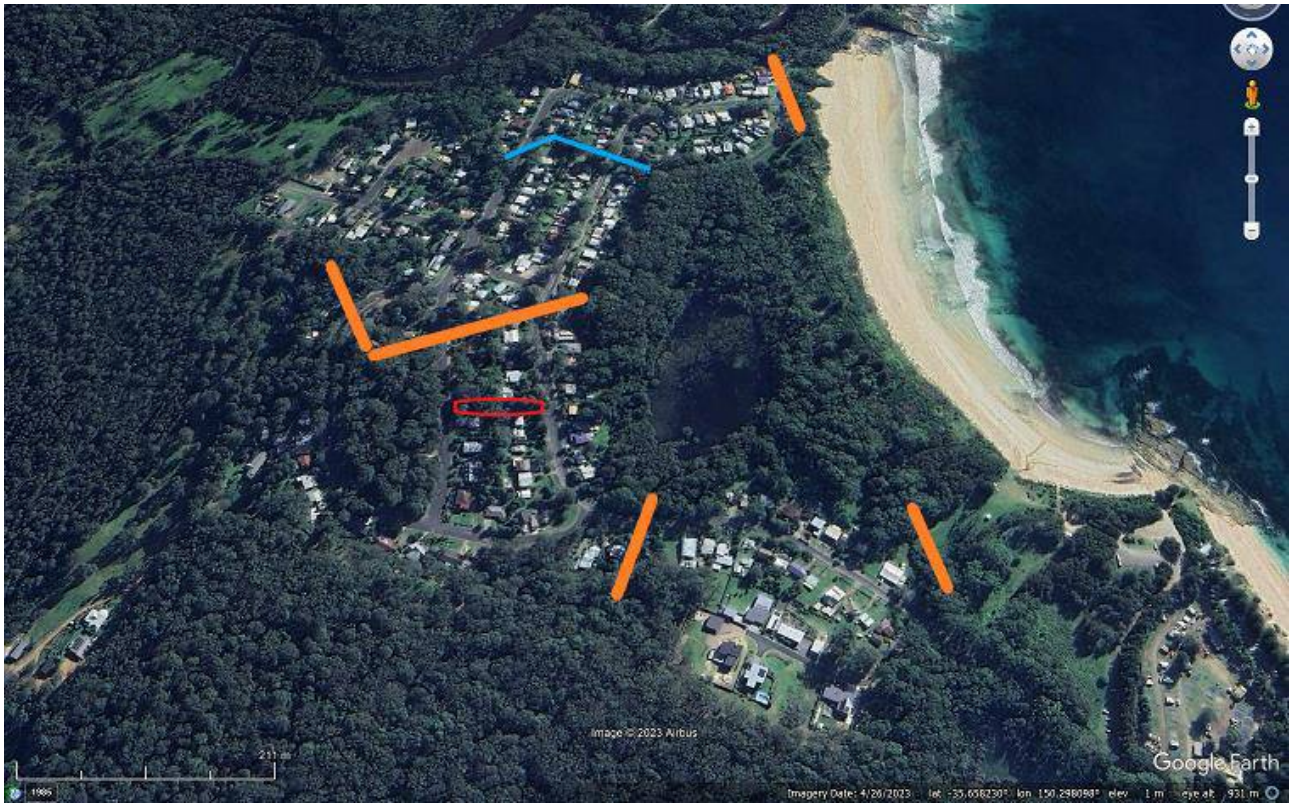

Figure 3-5. Connectivity links within South Durras village for arboreal mammals such as Yellow-bellied Glider and Greater Glider with shorter gliding distance routes in orange and longer gliding distance in blue. Source Google Earth.

BROULEE

HABITATS

Lot 74 DP 776541, Broulee contains limited fauna habitat due to the isolated nature of the small area in an urban environ.

Ground dwelling species such as small lizards and snakes may occur in the exotic undergrowth below the large Blackbutts on site. No reptiles are listed as threatened in the Eurobodalla. For threatened ground mammals the lot provides no habitat. There is no denning or ground vegetation cover suitable to species such as Bandicoot or Potoroo. Fallen timber often provides good habitat for threatened ground mammals, however on this site ground timber was mostly absent or small diameter providing no denning habitat.

Mid storey is lacking in variety and cover over much of the lot making its use for nesting by threatened avian and mammals such as the Eastern Pygmy Possum unlikely.

Canopy trees would provide some sheltering and foraging habitat for the more common bird species seen in the area. However, the likelihood that any of the threatened bird or mammal species would use the tree to such an extent that its removal would jeopardize their survival is not considered likely. At most the lot provides a small amount of foraging habitat for insectivorous or nectivorous avian species like the Little Lorikeet and the Grey-headed Flying-fox, and foraging for more common species such as Brush-tailed Possum or Galah that may use the HBT that connects from the adjacent Crown Land reserve. With the availability of larger tracts of better-quality habitat to the south and west, the loss of trees on this lot for any potential future development would not constitute a significant impact on the foraging resources of any threatened species.

CONNECTIVITY

The Broulee area has a broken connectivity due to urban development, agriculture and long linear breaks for roads and wide powerline easements along with natural movement barriers such Candlagan Creek and Tomago River to the north and Moruya River to the South. Broulee Nature Reserve to the south of Broulee and larger blocks on the western side of George Bass Dr near Candlagan Creek provide the main linkage for species through the Broulee area (Figure 3.6).

Figure 3-6. Overview of connectivity in the Broulee area. Source- Google Earth.

Connectivity is disjointed on all sides of Lot 74 DP 776541 for the majority of threatened species with only volante species likely to utilize the lot (Photos 7 & 8). A sole HBT on the adjacent crown land connects to the vegetation on site (Figure 3-7). This tree is listed on the ESC Significant Tree Register and contains two large and one small trunk hollows (Photos 9 & 10). Whilst the hollows are suitable in size for a number of threatened species, suitability for many threatened species is considered unlikely due to a lack of access to fresh water and impacts from surrounding human habitation, such as roads, lighting and domestic pets. Two of the hollows on the northern side (one large, one small) of the tree were also inhabited by exotic bees at the time of site visit. Bees ca be aggressive in their defense of a hive so it is unlikely native fauna are able to use these two hollows. The southern side large hollow, though upward facing which allows rain to enter, may provide some habitat. The lack of diversity in vegetation across the lot also makes its use by threatened species that can utilize smaller areas unlikely due to foraging requirements. The HBT too stands in isolation on the crown land reserve. Many species favour HBTs within denser canopy to provide shading and protection from predation. Therefore, it is considered the vegetation on the site, combined with that in the surrounds and the proximity to the HBT, would suit microbat species and potentially the Little Lorikeet and Gang-gang Cockatoo.

Photo 7. Canopy break, Banksia St -eastern side of Lot 74 DP 776541.

Photo 8. Canopy Break, Moir Place- western side of Lot 74 DP 776541.

Figure 3-7. HBT listed on ESC Significant Tree Register within crown land reserve adjacent to Lot 74 DP 776541. Source- ESC mapping.

Photo 9. Large & small hollow, northern side of Bangalay in Crown Land reserve.

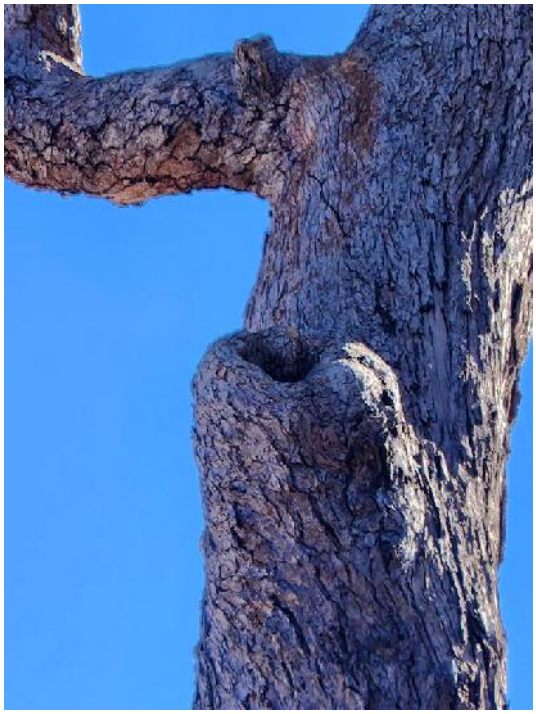

Photo 10. Large hollow, southern side of Bangalay in Crown Land reserve.

4.0 IMPACT ASSESSMENT

4.1. Direct and potential indirect impacts

4.1.1. Direct impacts

Direct impacts of the reclassification of both the lots are limited. No clearing works nor changes to current management actions at the South Durras or Broulee sites is proposed. However, reclassification and any subsequent sale may allow new owners of the land to remove vegetation under existing legislation or to lodge a development application that would require the removal of vegetation. As a worst-case scenario, each lot would be completely cleared which amounts to 1,251m^2 of predominantly native vegetation at South Durras and 479m^2 (659m^2 being the total area of the lot -180m^2 that will remain as community land for the existing sewer pipe and provide access through to Banksia Street) of vegetation that is a mix of native and exotics.

4.1.2. Potential indirect impacts

Vegetation/habitat adjacent to the development area may be subject to potential indirect impacts, including:

- Isolation of the HBT on Crown Land Reserve at Broulee.

4.2. Species/communities requiring significance assessment

Threatened species impact assessment is an integral part of environmental impact assessment. The objectives of Part 5 of the EP&A Act are to improve the standard of consideration afforded to threatened species, populations and ecological communities, and their habitats through the planning and assessment process, and to ensure that the consideration is transparent. This assessment is done to the requirements of the BC Act, section 7.3 as per Part 1 Section 1.7 of the EP&A Act.

A number of threatened species or communities were identified as requiring a significance assessment based on the factor that the reclassification may facilitate future development on the lots, or that clearing of vegetation under existing planning instruments may occur if the land was sold as freehold land. The species under consideration are:

SOUTH DURRAS

1. *Daphoenositta chrysoptera* (Varied Sitella)
2. *Cercartetus nanus* (Eastern Pygmy Possum)
3. *Petauroides volans* (Greater Glider)
4. *Petaurus australis* (Yellow-bellied Glider)
5. *Sminthopsis leucopus* (White-footed Dunnart)

BROULEE

1. Bangalay Sand Forest of the Sydney Basin and South East Corner bioregions

2. *Callocephalon fimbriatum* (Gang-gang Cockatoo)
3. *Glossopsitta pusilla* (Little Lorikeet)
4. *Falsistrellus tasmaniensis* (Eastern false Pipstrelle)
5. *Micronomus norfolkensis* (Eastern Coastal freetailed Bat)
6. *Saccolaimus flaviventris* (Yellow-bellied Sheathtail-bat)

Each species is discussed and assessed using the five factors of the BC Act at Appendix B.

4.3. Conclusion of 5 Part Test

An Assessment of Significance (5 Part Test), attached in Appendix B, has determined that the proposed reclassification and by default any future loss of vegetation on the two lots is unlikely to have a significant effect on any entity listed under the BC Act at the time of writing.

The loss of vegetation at South Durras would not disturb fauna or adjacent vegetation any more than current land uses (grazing, vehicle movements) do.

Further environmental assessment would be required at the time of any future development application that would have to consider these species and any that may be listed in the future. Any such assessment will make conclusions as to the significance of impacts on any species from the specifics of the development proposal.

4.4. Conclusion of EPBC Act significance assessments

Three threatened entities were identified to be assessed in the EPBC Act Significance Assessment (attached in Appendix C):

SOUTH DURRAS

Greater Glider

Yellow-bellied Glider

BROULEE

Gang-gang Cockatoo

It was determined that neither species was likely to be significantly impacted from any future potential clearing. No other MNES listed under the EPBC Act would be impacted.

Referral to the Commonwealth under the EPBC Act is not recommended.

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APPENDIX A- THREATENED SPECIES ASSESSMENT

LIKELIHOOD OF OCCURRENCE AND IMPACT TABLE

An assessment on the likelihood of occurrence was made for threatened and migratory species at each lot. This assessment was based on database or other records, presence or absence of suitable habitat and features within the sites seen in the field survey and professional judgement.

Those species where it was considered that there was a potential for occurrence and that impacts may be possible are further considered in the threatened species assessments.

Note: Whilst both sites are in proximity of marine waters, all listed marine species, including beach nesting species, have been removed from the list due to the absence of marine habitat in the lots, the lack of any nesting habitat and the extremely low risk of any impact from future developments. The exception is the White-bellied Sea Eagle and Osprey, which typically extend further afield ad nest in canopy vegetation.

The terms for likelihood of occurrence are defined below:

- "yes" = the species was or has been observed on the site
- "likely" = a medium to high probability that a species uses the site
- "potential" = suitable habitat for a species occurs on the site, but there is insufficient information to categorise the species as likely to occur, or unlikely to occur
- "unlikely" = a very low to low probability that a species uses the site or that proposed actions will influence habitat for the species.
- "None" = habitat on site and in the vicinity is unsuitable for the species.

The terms for impacts predicted are:

- "yes" = known or high prediction that impacts would occur to the species
- "potential" =impacts have the potential to affect the species
- "none" = no impact is expected on the species

(E = Endangered, V = Vulnerable, M = Migratory, EEC = endangered ecological community, CEEC = critically endangered ecological community)

SOUTH DURRAS

Scientific name	Common name	TSC Act	EPBC Act	Habitat assessment	Likelihood of occurrence	Impacts predicted
LISTED ECOLOGICAL COMMUNITIES						
Araluen Scarp Grassy Forest in the South East Corner Bioregion		EEC		Araluen Scarp Grassy Forest in the South East Corner Bioregion an open forest or grassy woodland dominated by Maiden's Gum (*Eucalyptus maidenii*), Yellow Box (*E. melliodora*) and Forest Red Gum (*E. tereticornis*) in the canopy. Rough-barked Apple (*Angophora floribunda*), White Stringybark (*E. globoidea*) and Black Wattle (Acacia mearnsii) are common associated overstorey species. An open shrub layer may contain Tree Violet (*Melicytus dentatus*), Sweet Pittosporum (*Pittosporum undulatum*) and various vines and climbers. The grassy groundlayer is generally sparse, and may contain species such as Weeping Grass (*Microlaena stipoides*), Common Tick-trefoil (*Desmodium varians*), Creeping Beard Grass (*Oplismenus imbecillis*), Sickle Fern (*Pellaea falcata*) and Prickly Starwort (*Stellaria pungens*). Many other plant species are likely to occur, as outlined in the scientific determination. The community also includes micro-organisms, fungi, cryptogamic plants and a diverse fauna, both vertebrate and invertebrate. Not present at this site.	None	None
Araluen Scarp Grassy Forest			EEC	As above with some variation in diagnostics, condition classes or distribution. Not present at this site.	None	None
Bangalay Sand Forest of the Sydney Basin and South East Corner bioregions		EEC		Bangalay Sand Forest of the Sydney Basin and South East Corner bioregions typically has a dense to open tree canopy, approximately 5 - 20 m tall, depending on exposure and disturbance history. The most common tree species include Bangalay (*Eucalyptus botryoides*) and Coast Banksia (*Banksia integrifolia subsp. integrifolia*), while Blackbutt (*Eucalyptus pilularis*) and Lilly Pilly (*Acmena smithii*) may occur in more sheltered situations, and Swamp Oak (*Casuarina glauca*) may occur on dunes exposed to salt-bearing sea breezes or where Bangalay Sand Forest	None	None

Scientific name	Common name	TSC Act	EPBC Act	Habitat assessment	Likelihood of occurrence	Impacts predicted
				adjoins Swamp Oak Floodplain Forest of the NSW North Coast, Sydney Basin and South East Corner bioregions, as listed under the Threatened Species Conservation Act 1995. The open shrub stratum may be dominated by sclerophyllous species, such as Old Man Banksia (*Banksia serrata*), Coast Teatree (*Leptospermum laevigatum*) and Tree Broom-heath (*Monotoca elliptica*), or mesophyllous, species, such as Coffee Bush (*Breynia oblongifolia*) and Sweet Pittosporum (*Pittosporum undulatum*), or a combination of both. Shrubs may vary in height from one to ten metres tall. The groundcover varies from open to dense, and may be sparse where the tree canopy is dense or where there is a thick litter of leaves and branches. Dominant species include Flax-lilies (*Dianella spp*.), *Lepidosperma concavum*, Spiny-headed Mat-rush (*Lomandra longifolia*), Bracken (*Pteridium esculentum*), and grasses including Blady Grass (*Imperata cylindrica*), Weeping Grass (*Microlaena stipoides var. stipoides*) and Kangaroo Grass (*Themeda australis*), while herbs, such as Slender Tick-trefoil (*Desmodium gunnii*), Kidney Weed (*Dichondra repens*), Whiteroot (*Lobelia purpurascens*) and Ivy-leaved Violet (*Viola hederacea*), are scattered amongst the larger plants. Vines of Glycine clandestina, False Sarsparilla (*Hardenbergia violacea*), Running Postman (*Kennedia rubicunda*), Common Milk Vine (*Marsdenia rostrata*) and Snake Vine (*Stephania japonica var. discolor*) scramble through the groundcover and occasionally over shrubs or tree trunks. Not present at this site		
Coastal Saltmarsh in the New South Wales North Coast, Sydney Basin and South East Corner Bioregions		EEC		Coastal Saltmarsh occurs in the intertidal zone on the shores of estuaries and lagoons that are permanently or intermittently open to the sea. It is frequently found as a zone on the landward side of mangrove stands. Characteristic plants include *Baumea juncea*, Sea Rush (*Juncus krausii subsp. australiensis*), Samphire (*Sarcocornia quinqueflora subsp. quinqueflora*), Marine Couch (*Sporobolus virginicus*), Streaked Arrowgrass (*Triglochin striata*), Knobby Club-rush (*Ficinia nodosa*), Creeping Brookweed (*Samolus repens*), Swamp Weed (*Selliera radicans*), Seablite (*Suaeda australis*) and Prickly Couch (*Zoysia macrantha*). Occasionally	None	None

Scientific name	Common name	TSC Act	EPBC Act	Habitat assessment	Likelihood of occurrence	Impacts predicted
				mangroves are scattered through the saltmarsh. Tall reeds may also occur, as well as salt pans. Not present at this site.		
Coastal Swamp Oak (Casuarina glauca) Forest of New South Wales and South East Queensland ecological community			EEC	Occurs in sub-tropical, sub-humid and temperate climatic zones from Curtis Island, north of Gladstone, in Queensland to Bermagui in southern New South Wales in coastal catchments, mostly at elevations of less than 20 m above sea-level (ASL) that are typically found within 30 km of the coast. Some variation in distance by catchment. It is typically found on coastal flats, floodplains, drainage lines, lake margins, wetlands and estuarine fringes where soils are at least occasionally saturated, water-logged or inundated with saline to brackish water, though occasionally in fresher water. The canopy layer is dominated by *Casuarina glauca* (swamp oak, swamp she-oak). This often occurs as a relatively uniform upper layer of swamp oak, with height and density dependent on the local environmental conditions. Eucalyptus spp. can emerge from the canopy, such as Forest Red Gum (*Eucalyptus tereticornis*), Bangalay (*E. botryoides*), Flooded Gum (*E. grandis*) Woollybutt (*E. longifolia*), or Swamp Mahogany (*E. robusta*). Melaleuca species may occur in the canopy, sub-canopy or as emergents, including Swamp Paperbark (*Melaleuca ericifolia*), Narrow-leaved Paperbark (*M. linariifolia*), Broad-leaved Paperbark (*M. quinquenervia*), and/or Prickly-leaved Paperbark (*M. styphelioides*). Mid-layers are typically sparse, though juvenile trees can occur more thickly. Shrubs are also sparse and species vary with latitude, with rainforest species more likely north of Sydney. The climbing plant species that is most commonly found in the community is Common Silkpod (*Parsonsia straminea*). Epiphytic plants, such as *Platycerium bifurcatum* (elkhorns) and *Dendrobium teretifolium* (pencil orchids), and the stem parasite *Amyema cambagei* (she-oak mistletoe), could also be present. The ground layer is typically a continuous to semi-continuous cover of either forbs, ferns, sedges, grasses and/or plant litter (including swamp-oak branchlets/needles), but can also often be “patchy,” particularly	None	None

Scientific name	Common name	TSC Act	EPBC Act	Habitat assessment	Likelihood of occurrence	Impacts predicted
				where the ecological community is regenerating. The composition of the ground layer is also influenced by groundwater salinity. Not present at this site.		
Coastal Swamp Sclerophyll Forest of New South Wales and South East Queensland			EEC	Coastal Swamp Sclerophyll Forest ecological community occurs on the mainland and islands near to the coast (within 20 km) from South East Queensland to the Bateman subregion of the South East Corner bioregion. The ecological community typically occurs in low-lying coastal alluvial areas with minimal relief, such as swamps, floodplain pockets, depressions, alluvial flats, back-barrier flats, fans, terraces, and behind fore-dunes. The Coastal Swamp Sclerophyll Forest typically features a canopy and/or sub-canopy dominated by Melaleuca spp. and/or *Eucalyptus robusta*. Other eucalypts, which are also tolerant of regular inundation and are adapted to sandy soils, may emerge from the canopy such as *Corymbia intermedia* (Pink Bloodwood), *E. tereticornis* (Forest Red Gum/Queensland Blue Gum), *E. longifolia* (Woollybutt), *E. botryoides* (Southern Mahogany/Bangalay) and *E. ovata* (Swamp Gum). In many areas, *Casuarina glauca* (Swamp Oak) occurs as a subdominant in patches of the ecological community but where it dominates over a large area this is indicative of a separate ecological community. Other canopy or sub-canopy species can also include the following shrubs and trees: *Acacia leiocalyx* (Black wattle), *A. melanoxylon* (Blackwood), *Alphitona excelsa* (Red Ash, Soapbush, Soap Tree), *Callistemon salignus* (White/Willow Bottlebrush), *Cupaniopsis anacardioides* (Tuckeroo), *Elaeocarpus reticulatus* (Blueberry Ash), *Glochidion ferdinandi* (Cheese Tree) and *G. sumatranum*,*Melicope elleryana* (Pink-flowered Doughwood), and *Pittosporum undulatum* (Sweet Pittosporum). Other characteristic species in some areas include *Livistona australis* (Cabbage Tree Palm) and *Lophostemon suavolens* (NSW Scientific Committee 2011; Tozer et al. in prep.). Vines are frequently found on the trunks and climbing into the crown of melaleucas and eucalypts within the ecological community, notably the woody vine *Parsonsia straminea* (Common silk-pod), *Gynochthodes*	None	None

Scientific name	Common name	TSC Act	EPBC Act	Habitat assessment	Likelihood of occurrence	Impacts predicted
				jasminoides (Climbing Scrub-orange) and *Stephania japonica var. discolour* (Snake-vine) (NSW EPA 2016a, b; OEH 2016; Queensland Government 2019a; Tozer et al. in prep.). Epiphytic plants, such as *Cymbidium suave* (Snake Orchid), can also be found on the branches of larger trees (Keith et al. 2007). Ground species include Blechnum spp. (syn. Telmatoblechnum spp.), *Calochlaena dubia* (False Bracken), Gahnia spp., particularly *Gahnia clarkei (*Tall Saw-sedge), Hypolepsis spp., *Imperata cylindrica* (Blady Grass), Baumea spp. (syn. Machaerina spp.) (Twig-rushes) and *Pteridium esculentum* (Bracken), Baloskion spp. (plume rushes), *Carex appressa* (Tall sedge), *Centella asiatica* (Indian Pennywort), *Dianella caerulea* (Blue Flax Lily), *Entolasia marginata* (Bordered Panic), *E. stricta* (Wiry Panic Grass), *Hemarthria uncinate* (Mat Grass*), Isachne globose* (Swamp Millet), *Ischaemum austral* (Large Bluegrass), Juncus spp., Lobelia ssp., *Lomandra longifolia* (Spiny-headed Mat-rush), Oplismenus spp., Persecaria spp. (Knotweeds),and *Viola hederacea* (Ivy-leaved Violet) (Tozer et al. in prep.). Orchids, including the nationally listed *Phaius australis* (Common Swamp-orchid) and scramblers such as *Glycine clandestine* (Twining Glycine) and *G. tabacina* (Glycine Pea, Variable Glycine) also occur in some patches. Halophytic species may occur more commonly in the ground layer at lower elevations closer to estuarine sites or where groundwater is influenced by brackish inflows, for example, twigrushes. If the canopy cover is dense, limiting light penetration results in a ground layer that is almost devoid of herbs and fosters cryptogams such as mosses (including sphagnum), lichens and liverworts. Sphagnum moss may also be regularly present in waterlogged patches. At wetter sites or during periods of inundation, the ecological community supports wetland specialist plants, such as *Cycnogeton procerum* (Water Ribbons). During drier periods, there are a range of grasses that are likely to be more dominant (Griffith & Wilson 2007a, 2008; NSW EPA 2016a, b; OEH 2016; Queensland Government 2019a).		

Scientific name	Common name	TSC Act	EPBC Act	Habitat assessment	Likelihood of occurrence	Impacts predicted
				There is also often a dense leaf-litter and logs from fallen trees in the ground layer. Not present at this site.		
Freshwater Wetlands on Coastal Floodplains of the New South Wales North Coast, Sydney Basin and South East Corner Bioregions		EEC		Associated with coastal areas subject to periodic flooding and in which standing fresh water persists for at least part of the year in most years. Typically occurs on silts, muds or humic loams in low-lying parts of floodplains, alluvial flats, depressions, drainage lines, backswamps, lagoons and lakes but may also occur in backbarrier landforms where floodplains adjoin coastal sandplains. Generally, occur below 20 m elevation on level areas. They are dominated by herbaceous plants and have very few woody species. The structure and composition of the community varies both spatially and temporally depending on the water regime: Those that lack standing water most of the time are usually dominated by dense grassland or sedgeland vegetation, often forming a turf less than 0.5 metre tall and dominated by amphibious plants *including Paspalum distichum* (water couch), *Leersia hexandra* (swamp rice-grass), *Pseudoraphis spinescens* (mud grass) and *Carex appressa* (tussock sedge). Where they are subject to regular inundation and drying the vegetation may include large emergent sedges over 1 metre tall, such as *Baumea articulata, Eleocharis equisetina and Lepironia articulata*, as well as emergent or floating herbs such as *Hydrocharis dubia* (frogbit), *Philydrum lanuginosum* (frogsmouth), *Ludwigia peploides subsp. montevidensis* (water primrose), *Marsilea mutica* (nardoo) and Myriophyllum spp. (milfoils). As standing water becomes deeper or more permanent, amphibious and emergent plants become less abundant, while floating and submerged aquatic herbs become more abundant. These latter species include *Azolla filiculoides var. rubra, Ceratophyllum demersum* (hornwort), *Hydrilla verticillata* (water thyme), Lemna spp. (duckweeds), *Nymphaea gigantea* (giant waterlily), *Nymphoides indica* (water snowflake), *Ottelia ovalifolia* (swamp lily) and Potamageton spp. (pondweeds). The threatened aquatic plants, *Aldrovanda vesiculosa* and *Najas marina*, also occur within this community.	None	None

Scientific name	Common name	TSC Act	EPBC Act	Habitat assessment	Likelihood of occurrence	Impacts predicted
				Not present at this site.		
Illawarra and south coast lowland forest and woodland ecological community			CEEC	Comprises eucalypt forest or woodlands, which can have a grassy ground layer and/or a shrub layer as well as a small tree layer. A patchy distribution with the remaining occurrences mostly on lowland sandy loam, loam or clay loam soils around Wollongong to Shellharbour, Milton, Bawley Point and Moruya. Typically occurs within 30 km of the coast in coastal valleys and low-lying foothills on the south coast of NSW, with a sharp boundary provided by the steep slopes of the eastern coastal escarpment in the northern extent of range. The ecological community can occur below approximately 350 m above sea level (ASL), but most occurrences are at a much lower altitude; between 10 and 150 m ASL(Tozer et al, 2010). The local expression of the community is influenced by geology and soils, drainage and aspect, site history and current management. The canopy is typically dominated by Eucalyptus or Angophora trees. The composition of the understorey is variable. Many patches have a sub-canopy of smaller trees as well as a shrubs and/or a grassy/sedge ground layer. Many patches have been disturbed and their current state reflects this, past clearance, with fire history and management involving grazing or under-scrubbing having a strong influence on the structural and floristic composition of the ecological community (Mills, 1993; NPWS, 2002a; Gellie, 2005; Miles and Kendall, 2007; Tozer et al, 2010). Includes the NSW listed ***Illawarra Lowlands Grassy Woodland in the Sydney Basin Bioregion.*** Not present at this site.	None	None
Illawarra Lowlands Grassy Woodland in the Sydney Basin Bioregion		EEC		As above with some variation in diagnostics, condition classes or distribution. Not present at this site.	None	None
Illawarra Subtropical Rainforest in the Sydney Basin Bioregion		EEC		Rainforest community that occupies high nutrient soils in the Illawarra coastal plain and escarpment foothills, rarely extending onto the upper escarpment slopes. Characteristic tree species include *Baloghia inophylla* (Brush Bloodwood), *Brachychiton acerifolius* (Flame Tree), *Dendrocnide excelsa* (Giant Stinging Tree), *Diploglottis australis* (Native Tamarind),	None	None

Scientific name	Common name	TSC Act	EPBC Act	Habitat assessment	Likelihood of occurrence	Impacts predicted
				Ficus spp., *Pennantia cunninghamii* (Brown Beech), and *Toona ciliata* (Red Cedar). Species of Eucalyptus, Syncarpia and Acacia may also be present as emergents or incorporated into the dense canopy. While rainforest canopies are generally closed, in highly disturbed stands the canopy of ISR may be irregular and open. The height of the canopy varies considerably, and structurally some stands of ISR are scrub. Usually found on Permian volcanic rocks, but can occur on a range of rock types. Not present at this site.		
Illawarra-Shoalhaven Subtropical Rainforest of the Sydney Basin Bioregion			CEEC	As above with some variation in diagnostics, condition classes or distribution. Not present at this site.	None	None
Littoral Rainforest in the New South Wales North Coast, Sydney Basin and South East Corner Bioregions		EEC		Generally, a closed forest, the structure and composition of which is strongly influenced by its proximity to the ocean. The plant species of this community are predominantly rainforest species. Several species have compound leaves, and vines may be a major component of the canopy. These features differentiate littoral rainforest from forest or scrub, but while the canopy is dominated by rainforest species, scattered emergent individuals of sclerophyll species, such as *Angophora costata, Banksia integrifolia, Eucalyptus botryoides* and *Eucalyptus tereticornis* occur in many stands. Littoral Rainforest occurs only on the coast and is found at locations in the NSW North Coast Bioregion, Sydney Basin Bioregion and South East Corner Bioregion. Littoral Rainforest is very rare and occurs in many small stands. In total, it comprises less than one percent of the total area of rainforest in NSW. Occurs on sand dunes and on soil derived from underlying rocks. Stands on headlands exposed to strong wind-action may take the form of dense, wind-pruned thickets. Stands are generally taller in sheltered sites such as hind dunes, although wind-pruning may still occur on their windward sides. Most stands occur within two kilometres of the sea, though are occasionally found further inland within reach of the maritime influence. A number of species characteristic of Littoral Rainforest in NSW reach their southern limits at various places along the coast; a number of temperate species are restricted to the	None	None

Scientific name	Common name	TSC Act	EPBC Act	Habitat assessment	Likelihood of occurrence	Impacts predicted
				south coast; the total Littoral Rainforest flora declines from north to south. The species composition (flora and fauna) of a site will be influenced by its geographic location, the size of the site, its degree of exposure and rainfall, its disturbance history (including fire) and, if previously disturbed, the stage of regeneration. Not present at this site.		
Littoral Rainforest and Coastal Vine Thickets of Eastern Australia			CEEC	As above with some variation in diagnostics, condition classes or distribution. Not present at this site.	None	None
Lowland Grassy Woodland in the South East Corner Bioregion		EEC	CEEC	Lowland Grassy Woodland in the South East Corner bioregion is the name given to the ecological community associated with rainshadow areas of the south coast and hinterland of New South Wales. Typically, the community comprises an open tree canopy, a near-continuous groundcover dominated by grasses and herbs, sometimes with layers of shrubs and/or small trees. Undisturbed stands of the community may have a woodland or forest structure. Small trees or saplings may dominate the community in relatively high densities after partial or total clearing. Lowland Grassy Woodland may usually be distinguished by the current or former dominance of Forest Red Gum (*Eucalyptus tereticornis*). Other canopy trees include White Stringybark (*E. globoidea*), Rough-barked Apple (*Angophora floribunda*), Yellow Box (*E. melliodora*) and Snow Gum (*E. pauciflora*). Coast Grey Box (*E. bosistoana*), Blue Box (*E. baueriana*) and Maiden's Blue Gum (*E. maidenii*) occur more rarely, as does Ribbon or Manna gum (*E. viminalis*). There is often a sparse small tree layer and an open shrub layer. The dense grassy groundcover is usually dominated by Kangaroo Grass (*Themeda australis*) and Weeping Grass (*Microlaena stipoides*), and a suite of other grasses, herbs and forbs. In some locations trees and shrubs may be absent due to past clearing, but the resultant derived native grassland may still represent Lowland Grassy Woodland if characteristic non-woody species are still present.	None	None

Scientific name	Common name	TSC Act	EPBC Act	Habitat assessment	Likelihood of occurrence	Impacts predicted
				Not present at this site.		
Lowland Rainforest in the NSW North Coast and Sydney Basin Bioregions		EEC		Lowland Rainforest in the NSW North Coast and Sydney Basin Bioregions is an ecological community of subtropical rainforest and some related, structurally complex forms of dry rainforest. Lowland Rainforest, in a relatively undisturbed state, has a closed canopy, characterised by a high diversity of trees whose leaves may be mesophyllous and encompass a wide variety of shapes and sizes. Typically, the trees form three major strata: emergents, canopy and sub-canopy which, combined with variations in crown shapes and sizes results in an irregular canopy appearance. The trees are taxonomically diverse at the genus and family levels, and some may have buttressed roots. A range of plant growth forms are present in Lowland Rainforest, including palms, vines and vascular epiphytes. In disturbed stands of this community the canopy cover may be broken, or the canopy may be smothered by exotic vines. Not present at this site.	None	None
Milton Ulladulla Subtropical Rainforest in the Sydney Basin Bioregion		EEC		Milton Ulladulla Subtropical Rainforest is confined to the Milton region on the South Coast of NSW. It occurs roughly between Yatteyattah in the north, Milton in the east, Croobyar Creek in the west and the upper reaches of Burrill Lake in the south and is confined to soils derived entirely or partially from the Milton Monzonite. Typical species in the southern extent of the EEC are *Ficus superba subsp. henneana, Streblus brunonianus, Litsea reticulata, Toona australis, Elaeocarpus kirtonii, Pollia crispata, Maclura cochinchinensis* and *Legnephora moorei*. Not present at this site.	None	None
River-Flat Eucalypt Forest on Coastal Floodplains of the NSW North Coast, Sydney Basin and South East Corner Bioregions		EEC		This EEC is found on river flats of coastal floodplains and comprises a tall open tree layer of eucalypts, which may exceed 40 m in height, but can be considerably shorter in regrowth stands or under conditions of lower site quality. The combination of features that distinguish River-Flat Eucalypt Forest on Coastal Floodplains from other endangered communities on the coastal floodplains include: its dominance by either a mixed eucalypt canopy or by a single species of eucalypt belonging to either the genus Angophora or the sections Exsertaria or Transversaria of		

Scientific name	Common name	TSC Act	EPBC Act	Habitat assessment	Likelihood of occurrence	Impacts predicted
				the genus Eucalyptus; the relatively low abundance or sub-dominance of Casuarina and Melaleuca species; the relatively low abundance of Eucalyptus robusta; and the prominent groundcover of soft-leaved forbs and grasses. The most widespread and abundant dominant trees within the EEC include *Eucalyptus tereticornis* (Forest Red Gum), *E. amplifolia* (Cabbage Gum), *Angophora floribunda* (Rough-barked Apple) and A. subvelutina (Broad-leaved Apple). *Eucalyptus baueriana* (Blue Box), *E. botryoides* (Bangalay) and *E. elata* (River Peppermint) may be common south from Sydney, *E. ovata* (Swamp Gum) occurs on the far south coast, *E. saligna* (Sydney Blue Gum) and *E. grandis* (Flooded Gum) may occur north of Sydney, while *E. benthamii* is restricted to the Hawkesbury floodplain. A layer of smaller trees may also be present, including *Melaleuca decora, M. styphelioides* (Prickly-leaved Teatree), *Backhousia myrtifolia* (Grey Myrtle), *Melia azaderach* (White Cedar), *Casuarina cunninghamiana* (River Oak) and *C. glauca* (Swamp Oak). Shrubs are scattered and include *Bursaria spinosa, Solanum prinophyllum, Rubus parvifolius, Breynia oblongifolia, Ozothamnus diosmifolius, Melicytus dentata, Acacia floribunda* and *Phyllanthus gunnii*. Abundant forbs, scramblers and grasses include *Microlaena stipoides, Dichondra repens, Glycine clandestina, Oplismenus aemulus, Desmodium gunnii, Lobelia purpurascens, Entolasia marginata, Oxalis perennans* and *Veronica plebeia*. The composition and structure of the understorey is influenced by grazing and fire history, changes to hydrology and soil salinity and other disturbance, and may have a substantial component of exotic shrubs, grasses, vines and forbs also. Not present at this site.		
FLORA						
Caladenia tessellata	Thick-lipped Spider-orchid	-	V	Found in grassy sclerophyll woodland on clay loam or sandy soils, and sometimes heathland on sandy loam soils, *Caladenia tessellata* grows in a	None	None

Scientific name	Common name	TSC Act	EPBC Act	Habitat assessment	Likelihood of occurrence	Impacts predicted
				complex relationship with a mycorrhizal fungus that is necessary for seed germination, and provides some nutrients to the orchid. Pollination is probably via sexual deception (pseudocopulation suggested with pollination by an undescribed black wasp of the genus Phymatothyninus observed at one site in New South Wales by GEC (2003 cited in Duncan 2010). Habitat present at this site not considered suitable for the species.		
Cryptostylis hunteriana	Leafless Tongue-orchid	V	V	Found in a variety of habitats, mostly coastal heathlands, margins of coastal swamps and sedgelands, coastal forest, dry woodland, and lowland forest (Jones et al., 2006; Jones, 2006). It prefers open areas in the understorey of forested communities (DECC, 2005a). The soils include moist sands, moist to dry clay loam and occasionally in accumulated eucalypt leaves (Jones et al., 2006; Jones, 2006). Susceptible to clearing/disturbance events such as APZ activities at this site.	None	None
Correa baeuerlenii	Chef's Cap Correa	V	V	Chef's Cap occurs in sclerophyll forest from the Clyde River near Batemans Bay to Bega, and inland to foothills of the Great Dividing Range, on the NSW south coast. A riparian species, found in damp gullies, on the banks of streams and on rocky slopes. It grows in wet eucalypt forest in association with trees such as *Eucalyptus muelleriana, E. agglomerata, E. sieberi, E. gummifera, Allocasuarina littoralis* and *Corymbia maculata* with and a shrubby understorey including *Doodia aspera, Persoonia linearis, Goodenia ovata* and *Hibbertia dentata*. No suitable habitat at this site.	None	None
Genoplesium baueri	Yellow Gnat-orchid	E	E	Grows in dry sclerophyll forest and moss gardens over sandstone, the species has been recorded from locations between Ulladulla and Port Stephens. No suitable habitat at this site.	None	None
Haloragis exalata subsp. exalata	Square Raspwort		V	Found in damp places near watercourses, this species has a disjointed distributed in the central coast, south coast and north-western slopes of NSW (OEH 2023) but is often found as a coloniser of disturbed areas (Miles & Cameron 2007). No suitable habitat at this site.	None	None
Persicaria elatior	Tall Knotweed	V	V	Grows in damp places, especially beside streams and lakes. Occasionally in swamp forest or associated with disturbance. No suitable habitat at this site.	None	None

Scientific name	Common name	TSC Act	EPBC Act	Habitat assessment	Likelihood of occurrence	Impacts predicted
Prasophyllum affine	Jervis Bay Leek Orchid		E	Jervis Bay Leek Orchid is currently known from three areas south-east of Nowra on the South Coast. These are Kinghorne Point, Wowly Gully near the town of Callala Bay, and near the township of Vincentia. The species grows on poorly drained grey clay soils that support low heathland and sedgeland communities. No suitable habitat at this site.	None	None
Rhodamnia rubescens	Scrub Turpentine	E	CE	Recorded at many rainforest sites in the locality. Occurs in coastal districts north from Batemans Bay to areas inland of Bundaberg in Queensland. Can be found in littoral, warm temperate and subtropical rainforest and wet sclerophyll forest at rainforest transition zones. Soils are volcanic or sedimentary soils, typically near the coast. Occasionally extends inland onto escarpments up to 600 m above sea level in areas with rainfall of 1,000-1,600 mm per year. Not seen in surveys and habitat considered marginal with lack of strong rainforest association and amount of disturbance activity in urban area of South Durras.	Unlikely	None
Rhizanthella slateri	Eastern Underground Orchid		E	PMST predicted. Known from 10 locations within NSW only, the Eastern Underground Orchid is difficult to detect. It is usually located when the soil is disturbed, and there may well be more locations of the species within its known range. The known populations grow in eucalypt forest but no indicative preferred habitat is known. The species has not been recorded in the South Eastern Corner Bioregion/ South Durras locality. Considered unlikely to occur.	Unlikely	None
Syzygium paniculatum	Magenta Lilly Pilly		V	The Magenta Lilly Pilly is found only in NSW, in a narrow, linear coastal strip from Upper Lansdowne to Conjola State Forest. It occurs on grey soils over sandstone, predominantly in remnant stands of littoral (coastal) rainforest on the south coast. No suitable habitat at this site.	None	None
Thesium australe	Austral Toadflax, Toadflax	-	V	Found in grassland on coastal headlands or grassland and grassy woodland/shrubland away from the coast. Often found in association with Kangaroo Grass and damper sites. It occurs in subtropical, temperate and subalpine climates over a wide range of altitudes. It occurs on soils derived from sedimentary, igneous and metamorphic geology on a range of soils including black clay loams to yellow podzolics and peaty	None	None

Scientific name	Common name	TSC Act	EPBC Act	Habitat assessment	Likelihood of occurrence	Impacts predicted
				loams (Leigh et al. 1984; Hunter et al. 1999; Cohn 2004). No suitable habitat at this site.		
Xerochrysum palustre	Swamp Everlasting		V	PMST predicted. Swamp Everlasting grows in wetlands including sedge-swamps and shallow freshwater marshes, often on heavy black clay soils. No suitable habitat at this site.	None	None
AMPHIBIAN						
Heleioporus australiacus	Giant Burrowing Frog	V	-	PMST predicted. The Giant Burrowing Frog is distributed in south eastern NSW and Victoria, and appears to exist as two distinct populations: a northern population largely confined to the sandstone geology of the Sydney Basin and extending as far south as Ulladulla, and a southern population occurring from north of Narooma through to Walhalla, Victoria. Found in heath, woodland and open dry sclerophyll forest on a variety of soil types except those that are clay based. Breeding habitat of this species is generally soaks or pools within first or second order streams. They are also commonly recorded from 'hanging swamp' seepage lines and where small pools form from the collected water. No suitable habitat at this site.	None	None
Litoria aurea	Green and Golden Bell Frog	E	V	Known from a variety of natural and man-made waterbodies, provided they are unpolluted and without heavy shading. Fast flowing streams are not utilised for breeding purposes by this species. Large permanent swamps and ponds exhibiting well-established fringing vegetation (especially bulrushes – Typha sp. and spikerushes – Eleocharis sp.) adjacent to open grassland areas for foraging are preferred. No suitable habitat at this site.	None	None
Litori watsoni	Watson's Tree Frog	E	E	PMST predicted. In New South Wales this species is currently known to occur from Budderoo National Park in the Illawarra region of NSW, along the eastern fall of the Great Dividing Range. Occurs in various forest types, as well as woodland, bushland and heathland. It prefers moist sites, especially in or near tall moist forest. The most important habitat	None	None

Scientific name	Common name	TSC Act	EPBC Act	Habitat assessment	Likelihood of occurrence	Impacts predicted
				factor is the presence of pools that contain water long enough for tadpoles to complete metamorphosis. No suitable habitat at this site.		
Mixophyes balbus	Stuttering Frog	V		*Mixophyes balbus* has only been recorded at three locations south of Sydney. The Dorrigo region, in north-east NSW, appears to be a stronghold for this species. Found in rainforest and wet, tall open forest in the foothills and escarpment on the eastern side of the Great Dividing Range, and typically found in association with permanent streams required for breeding during summer after heavy rain. No suitable habitat at this site.	None	None
FISH						
Prototroctes maraena	Australian Grayling		V	Freshwater fish that spawns close to estuary or creek openings near the ocean, where fry stay for six months before returning to freshwaters. No suitable habitat at this site.	None	None
REPTILE						
Hoplocephalus bungaroides	Broad-headed Snake		V	PMST predicted. The Broad-headed Snake is restricted to the sandstone ranges in the Sydney Basin and within a radius of approximately 200 km of Sydney. Found in rocky outcrops (especially sandstone ridges), and adjacent sclerophyll forest and woodland which is used as summer retreat habitat. Habitat at this site not considered suitable with lack of rock and APZ activities over the site.	None	None
BIRDS						
Anthochaera phrygia	Regent Honeyeater	E	CE, M	The Regent Honeyeater mainly inhabits temperate woodlands and open forests of the inland slopes of south-east Australia. In NSW, the distribution is very patchy and mainly confined to the two main breeding areas and surrounding fragmented woodlands. The Regent Honeyeater is a generalist forager, although it feeds mainly on the nectar from a relatively small number of eucalypts that produce high volumes of nectar. Key eucalypt species include Mugga Ironbark, Yellow Box, White Box and Swamp Mahogany. Other tree species may be regionally important such	None	None

Scientific name	Common name	TSC Act	EPBC Act	Habitat assessment	Likelihood of occurrence	Impacts predicted
				as Bloodwoods on the south coast. There are three known key breeding areas, two of them in NSW - Capertee Valley and Bundarra-Barraba regions. The species breeds between July and January in Box-Ironbark and other temperate woodlands and riparian gallery forest dominated by River Sheoak. Regent Honeyeaters usually nest in horizontal branches or forks in tall mature eucalypts and Sheoaks. Flowering eucalypts on the Lot present potential foraging habitat should the species migrate through the area. Only two Atlas records for the species in a 10km radius are recorded- 1994 & 2003. With the level of forested areas in the locality including Murramarang National Park (NP), a significant impact on the species is not expected if the canopy vegetation was removed for any future development.		
Aphelocephala leucopsis	Southern Whiteface		V	PMST predicted. Ground foraging woodland species. Prefers arid open woodlands with shrub understory or grass plains. Not typically present in coastal areas, prefers acacia woodland dominated by mulga scrub. Unlikely to occur on the site and a significant impact on the species is not expected if the canopy vegetation was removed for any future development.	None	None
Artamus cyanopterus cyanopterus	Dusky Woodswallow	V		Dusky Woodswallows are widespread in eastern, southern and south western Australia. The species occurs throughout most of New South Wales, but is sparsely scattered in, or largely absent from, much of the upper western region. Most breeding activity occurs on the western slopes of the Great Dividing Range. Prefers drier open forest often with grassy groundcover, but has been seen in farmland or wetter forested areas occasionally. Not recorded in this PCT. Not considered likely to inhabit to site, or if present in the area that a significant impact on the species is not expected if the canopy vegetation was removed for any future development.	None	None
Botaurus poiciloptilus	Australasian Bittern		E	Australasian Bitterns are widespread but uncommon over south-eastern Australia. In NSW they may be found over most of the state except for the far north-west. Favours permanent freshwater wetlands with tall, dense vegetation, particularly bullrushes (Typha spp.) and spikerushes (Eleocharis spp.). No suitable habitat.	None	None

Scientific name	Common name	TSC Act	EPBC Act	Habitat assessment	Likelihood of occurrence	Impacts predicted
Calamanthus fuliginosus	Striated Fieldwren	E		The Striated Fieldwren is found in coastal swamp heaths and tussock fields of south-eastern NSW, into southern Victoria and the south-east of South Australia. It is also found in Tasmania. One Atlas record from 2001 from Depot Beach. No suitable habitat.	None	None
Callocephalon fimbriatum	Gang-gang Cockatoo	V	-	Records in the locality however breeding habitat not present. Birds may utilise gums onsite for foraging. With the level of forested areas in the locality including Murramarang NP, a significant impact on the species is not expected if the canopy vegetation was removed for any future development.	None	None
Calyptorhynchus lathami	Glossy Black-Cockatoo	V	V	Predominantly feeds on the seeds of mature casuarina or Allocasaurina trees. The glossy black-cockatoo is selective in its choice of food trees, choosing trees that produce seeds with a high nutrient value. Occasionally eat seeds from eucalypts, angophoras, acacias and hakeas, as well as eating insect larvae. Breeding is in large sized eucalypt hollows, close to preferred feeding areas and proximity to watering places. No suitable habitat on this site for breeding and foraging is marginal.	None	None
Climacteris picumnus victoriae	Brown Treecreeper (eastern subspecies)	V		PMST predicted. Occurs in eucalypt forests and woodlands of inland plains and slopes of the Great Dividing Range. It is less commonly found on coastal plains and ranges. The western boundary of the range of *Climacteris picumnus victoriae* runs approximately through Corowa, Wagga Wagga, Temora, Forbes, Dubbo and Inverell and along this line the subspecies intergrades with the arid zone subspecies of Brown Treecreeper *Climacteris picumnus picumnus* which then occupies the remaining parts of the state. The eastern subspecies lives in eastern NSW in eucalypt woodlands through central NSW and in coastal areas with drier open woodlands such as the Snowy River Valley, Cumberland Plains, Hunter Valley and parts of the Richmond and Clarence Valleys. Unlikely the species would utilise this lot if found on the coast, with wet forest type and limited foraging habitat.	None	None

Scientific name	Common name	TSC Act	EPBC Act	Habitat assessment	Likelihood of occurrence	Impacts predicted
Daphoenositta chrysoptera	Varied Sittella	V		Sedentary species that inhabits eucalypt forests and woodlands, especially those containing rough-barked species and mature smooth-barked gums with dead branches, mallee and Acacia woodland. Builds a cup-shaped nest of plant fibres and cobwebs in an upright tree fork high in the living tree canopy, and often re-uses the same fork or tree in successive years. Cleared land is a barrier to the species. Considered in Assessment of Significance (AoS).	Potential	Potential
Dasyornis brachypterus	Eastern Bristlebird	-	E	Predicted only, no records in locality. Mainly a heathland species. No suitable habitat.	None	None
Falco hypoleucos	Grey Falcon		V	PMST predicted. Notably a bird of open woodlands in arid regions, rare species to coastal areas. No impact expected.	None	None
Glossopsitta pusilla	Little Lorikeet	V	-	Reliant on flowering Eucalypts for foraging and HBTs with small entrances for breeding. Has high nest site fidelity, and mature Eucalypts preferred, often those in riparian areas with greater soil fertility. Flowering eucalypts present in the works area represent potential foraging habitat. No breeding habitat on the site. With the level of forested areas in the locality including Murramarang NP, a significant impact on the species is not expected if the canopy vegetation was removed for any future development.	Potential	None
Grantiella picta	Painted Honeyeater	V	V	PMST predicted only, no records in locality. An inland species that occurs as a rare vagrant in coastal areas. Usually feeds on Mistletoe fruit in Boree/ Weeping Myall (*Acacia pendula*), Brigalow (*A. harpophylla*) and Box-Gum Woodlands and Box-Ironbark Forests. Flowering eucalypts present in the works area represent potential foraging habitat should the species occur as a vagrant. No breeding habitat on the site. With the level of forested areas in the locality including Murramarang NP, a significant impact on the species is not expected if the canopy vegetation was removed for any future development.	Unlikely	None
Haliaeetus leucogaster	White-bellied Sea-Eagle	V		Large, wide-ranging species that would forage over the adjacent ocean, lakes and forested areas. Requires large eucalypts and stags for breeding, with no evidence of breeding on this site and no foraging habitat. No	None	None

Scientific name	Common name	TSC Act	EPBC Act	Habitat assessment	Likelihood of occurrence	Impacts predicted
				impact is expected on the species should future development see canopy removed from the site.		
Hieraaetus morphnoides	Little Eagle	V		Eucalypt forest species that forages and uses a variety of habitats. Nests in tall living trees within a remnant patch, where pairs build a large stick nest in winter. No evidence of breeding on this site however suitable breeding habitat. Forages for reptiles, birds, mammals and occasionally insects. An impact on the species ability to forage in the locality is not expected if the canopy vegetation was removed for any future development. Atlas records occur for Murramarang NP from 1990-1993.	Potential	None
Hirundapus caudacutus	White-throated Needletail		V, M	The species occurs in Australia only between late spring and early autumn, but predominately in summer. Aerial foraging habitat, and some records of tree use (especially hollow bearing ones) on upper slopes of high-altitude areas as the birds require heights from which to take off. Forages aerially, unlikely to alight in the area. No impact.	None	None
Lathamus discolor	Swift Parrot	E	E	Migratory species, moving north in autumn/winter via areas with large flowering events. Known to utilise Spotted Gum and Bloodwood flowerings on the coast, along with Blackbutt. No breeding habitat in NSW. Flowering eucalypts present in the site represent potential foraging habitat, though with the level of forested areas in the locality including Murramarang NP, a significant impact on the species is not expected if the canopy vegetation was removed for any future development.	Potential	None
Lophoictinia isura	Square-tailed Kite	V		Ranges along coastal and subcoastal areas from south-western to northern Australia, Queensland, NSW and Victoria. In NSW, scattered records of the species throughout the state indicate that the species is a regular resident in the north, north-east and along the major west-flowing river systems. It is a summer breeding migrant to the south-east, including the NSW south coast, arriving in September and leaving by March. Occupies large hunting ranges of more than 100km^2. Preference for timbered watercourses for hunting and nesting, where nest is constructed in a tree fork or horizontal limb. One Atlas record from 2016 within 10kms. Unlikely to inhabit this site and a significant impact on the	None	None

Scientific name	Common name	TSC Act	EPBC Act	Habitat assessment	Likelihood of occurrence	Impacts predicted
				species is not expected if the canopy vegetation was removed for any future development with the surrounding forested areas.		
Neophema chrysogaster	Orange-bellied Parrot	CE	CE, M	Forages within 5kms of the coast in heathlands. Habitat not present.	None	None
Neophema pulchella	Turquoise Parrot	V		The Turquoise Parrot's range extends from southern Queensland through to northern Victoria, from the coastal plains to the western slopes of the Great Dividing Range. Lives on the edges of eucalypt woodland adjoining clearings, timbered ridges and creeks in farmland. Spends most of the day on the ground searching for seeds or grasses and herbaceous plants, or browsing on vegetable matter. Atlas record from 1996. Habitat on the site considered marginal for the species, and that it is unlikely to occur.	None	None
Ninox strenua	Powerful Owl	V		Powerful Owls are associated with a wide range of wet and dry forest types with a high density of prey, such as arboreal mammals, large birds and flying foxes (Environment Australia 2000, Debus & Chafer 1994). Large trees with hollows at least 0.5m deep are required for shelter and breeding (Environment Australia 2000). In NSW typically roost under darker canopies close to drainage lines. No breeding habitat on this lot and foraging low with lack of HBTs seen on site or surrounds. May overfly whilst foraging, however no impact expected if vegetation removed for future development.	None	None
Pachycephala olivacea	Olive Whistler	V		Atlas records from 1988 and 1992 from Durras Lake. The Olive Whistler inhabits the wet forests on the ranges of the east coast. It has a disjunct distribution in NSW chiefly occupying the beech forests around Barrington Tops and the MacPherson Ranges in the north and wet forests from Illawarra south to Victoria. In the south it is found inland to the Snowy Mountains and the Brindabella Range. Prefers wet forests above 500m ASL in which to forage and nest and mves to lower altitudes for winter. No breeding is likely for this site and loss of marginal foraging habitat from any future development would not be a significant impact.	None	None

Scientific name	Common name	TSC Act	EPBC Act	Habitat assessment	Likelihood of occurrence	Impacts predicted
Pandion cristatus	Eastern Osprey	V		Requires large water bodies and often found close to the coast. Roosts in large stags or dead crowns of trees close to the ocean. Piscivore diet. No evidence of breeding on this site. Impact not considered likely.	None	None
Petroica boodang	Scarlet Robin	V	-	The Scarlet Robin lives predominantly in dry eucalypt forests and woodlands with an open grassy understorey with few scattered shrubs, and a high level of fallen timber as structure that is important to its hunting style. Occasionally occurs in mallee or wet forest communities, or in wetlands and tea-tree swamps. Nests are built in the fork of tree usually more than 2 metres above the ground often in a dead branch in a live tree, or in a dead tree or shrub. Disperses to more open habitats in Autumn and winter. Habitat at this site is marginal for the species providing only limited foraging and no breeding habitat. With the level of forested areas in the locality including Murramarang NP, a significant impact on the species is not expected if the canopy vegetation was removed for any future development.	None	None
Pycnoptilus floccosus	Pilotbird		V	One record in Atlas from 1987. Sedentary, insectivorous bird of temperate wet sclerophyll forests and occasionally temperate rainforest. Requires dense undergrowth with abundant debris where they forage in brisk movements through leaf litter for insects etc. Whilst vegetation on the site is suitable for the species, the urban surrounds and APZ activities over the site make it highly unlikely the species would utilise the Lot.	Unlikely	None
Rostratula australis	Australian Painted Snipe	E	E	Requires permanent freshwater with fringing vegetation. No suitable habitat on the works site and limited in the immediate locality. No impact is expected.	None	None
Stagonopleura guttata	Diamond Firetail	V		PMST predicted. Found in grassy eucalypt woodlands, open forests, mallee, Natural Temperate Grassland, and in secondary grassland derived from other communities. Often found in riparian areas and sometimes in lightly wooded farmland where they forage on the ground. Birds roost in dense shrubs or in smaller nests built especially for roosting. Appears to be sedentary, though some populations move locally, especially those in the south. Usually encountered in flocks of between 5 to 40 birds, occasionally more. Breeds between August and January. Nests are	None	None

Scientific name	Common name	TSC Act	EPBC Act	Habitat assessment	Likelihood of occurrence	Impacts predicted
				globular structures built either in the shrubby understorey, or higher up, especially under hawk's or raven's nests. Habitat on the site highly marginal for the species and no Atlas records for open woodlands in a 10km area indicate it is highly unlikely to occur.		
Tyto novaehollandiae	Masked Owl	V	-	Species with large home range (c.1000Ha) that encompasses a wide variety of forest types for foraging. Requires moist heavily vegetated gullies for roosting and breeding. Breeding is in large hollows or sometimes caves. No suitable breeding habitat. Foraging habitat considered low with lack of HBTs seen on site or surrounds. May overfly whilst foraging, however no impact expected if vegetation removed for future development.	None	None
Tyto tenebricosa	Sooty Owl	V		Preferential habitat of rainforest or denser wet sclerophyll areas. Requires large hollows for breeding, often in deep gullies. As for Masked Owl, foraging habitat considered low with lack of HBTs seen on site or surrounds. May overfly whilst foraging, however no impact expected if vegetation removed for future development.	None	None
MAMMALS						
Cercartetus nanus	Eastern Pygmy-possum	V		Will utilise a variety of forest types but prefers heath or open woodlands. Forages for nectar and insects in a variety of eucalypt and upper storey flora such as Banksia. Will use Ringtail dreys, old stumps or hollows for nesting. The usual home-range of an individual is c. 0.35 to 0.68 hectares. They may occupy small patches of vegetation in fragmented landscapes and although the species prefers habitat with a rich shrub understory, they are known to occur in grassy woodlands and the presence of Eucalypts alone is sufficient to support populations in low densities. Potential to occur on site.	Potential	Potential
Chalinolobus dwyeri	Large-eared Pied Bat		V	Roosts in caves (near their entrances), crevices in cliffs, old mine workings and in the disused, bottle-shaped mud nests of the Fairy Martin (*Petrochelidon ariel*), frequenting low to mid-elevation dry open forest and woodland close to these features. No suitable habitat on site for roosting and vegetation not typical of foraging habitat. With the level of forested areas in the locality that would include more favourable foraging	None	None

Scientific name	Common name	TSC Act	EPBC Act	Habitat assessment	Likelihood of occurrence	Impacts predicted
				vegetation, a significant impact on the species is not expected if the canopy vegetation was removed for any future development		
Dasyurus maculatus	Spotted-tailed Quoll	V	E	Species with large home range. Forages extensively in many forest types but requires fallen timber, caves or large hollows for denning over these areas. No suitable denning habitat and the urban nature of the surrounding area make it less likely this species would occur even though it is known from urban or peri urban areas. In these instances, the Spotted-tailed Quoll is usually predating on chickens. With the level of forested areas in the locality that would include more favourable foraging and denning vegetation, a significant impact on the species is not expected if the canopy vegetation was removed for any future development	None	None
Falsistrellus tasmaniensis	Eastern False Pipistrelle	V		Tree roosting microbat usually found in moister forests. Roosts predominantly in hollows, but also caves, old buildings and under loose bark on larger trees. Large home range (c>100ha) and changes roost site very frequently. Limited roosting habitat on the site with Blackbutts considered potential roosts. Likely to forage over the Lot. With the level of forested areas in the locality that would include more favourable foraging and roosting habitat, a significant impact on the species is not expected if the canopy vegetation was removed for any future development	Potential	Unlikely
Isoodon obesulus obesulus	Southern Brown Bandicoot (eastern)	E	E	PMST predicted. Predominantly found in heath or forests with a large sedge component in understorey. No suitable habitat on the site.	None	None
Miniopterus orianae oceanensis	Large Bent-winged Bat	V	-	Has been known to utilise buildings as roosts but prefers caves etc. Forages in forested areas. No suitable roosting habitat. May forage over the Lot. With the level of forested areas in the locality that would include more favourable foraging and roosting habitat, a significant impact on the species is not expected if the canopy vegetation was removed for any future development.	None	None
Micronomus norfolkensis	Eastern Coastal Freetailed-bat	V	-	Occurs in dry sclerophyll forest, woodland, swamp forests and mangrove forests east of the Great Dividing Range. Roosts mainly in tree hollows but will also roost under bark or in man-made structures. Limited roosting	Potential	Unlikely

Scientific name	Common name	TSC Act	EPBC Act	Habitat assessment	Likelihood of occurrence	Impacts predicted
				habitat on the site with Blackbutts considered potential roosts. Likely to forage over the Lot. With the level of forested areas in the locality that would include more favourable foraging and roosting habitat, such as found by Craven & Daly in the Fern Drive area north of Durras Drive, a significant impact on the species is not expected if the canopy vegetation was removed for any future development.		
Myotis macropus	Southern Myotis	V		Generally, roost in groups of 10 - 15 close to water in caves, mine shafts, hollow-bearing trees, storm water channels, buildings, under bridges and occassionally in dense foliage. Forages over streams and pools catching insects and small fish by raking their feet across the water surface. No standing water on the site and no HBTs. May forage over nearby waterbodies. Potential development of this site would not impact the species.	None	None
Petauroides volans	Greater Glider	E	E	Arboreal species that feeds exclusively on eucalypt leaves, buds, flowers and mistletoe. Shelters during the day in larger tree hollows and will use up to 18 hollows in their home range, of c.1-4ha to which they show strong fidelity. May use site for foraging, but no denning habitat on site. Loss of connectivity for the species from any potential clearing considered an impact.	Potential	Potential
Petaurus australis	Yellow-bellied Glider	V	V	Numerous Atlas records for the locality. Species with a larger home range of c.35ha that lives in small family groups. Forages for nectar in canopy, and specific trees are targeted for tapping of sap also. Noticeable marks incised onto these sap trees of which none were seen on trees on this site, but some are known in the locality. Can glide large distances however, the loss of connectivity for the species from any potential clearing considered an impact.	Potential	Potential
Phascogale tapoatafa	Brush-tailed Phascogale			One Atlas record from 1981 from Murramarang NP. Small, cryptic species that can utilise a variety of forests, but prefers dry sclerophyll forests with good ground cover and grasses. Requires small hollows for denning, preferentially in trees with a <80cms DBH (Van der Ree & Bennett 2001). Changes hollows often. The home range of a single individual in areas with a paucity of hollows is c40-100ha. The lack of HBTs on the site and	None	None

Scientific name	Common name	TSC Act	EPBC Act	Habitat assessment	Likelihood of occurrence	Impacts predicted
				surrounds, combined with urban nature of the area suggests the species would not persist within South Durras.		
Phascolarctos cinereus	Koala	V	-	PMST predicted. White Stringybark on site is considered the only regional high use feed tree in the south coast management area (OEH 2018). Forested habitat in the locality is potential habitat however no Atlas records for a 10km radius from the Lot.	None	None
Potorous tridactylus	Long-nosed Potoroo	V	V	PMST predicted. Found in a variety of forests with mosaic understorey of open and dense cover for foraging and denning. No suitable habitat on this site.	None	None
Pseudomys novaehollandiae	New Holland Mouse	-	V	PMST predicted. Prefers open heathlands, woodlands and forests with a heathland understorey and vegetated sand dunes preferably areas recovering from fire where seed producing flora is diverse. No suitable habitat.	None	None
Pteropus poliocephalus	Grey-headed Flying-fox	V	V	Flowering eucalypts present on the site represent potential foraging habitat. Though no habitat for roosting camp. With the level of forested areas in the locality that would include higher foraging species diversity and potential roosting habitat, a significant impact on the species is not expected if the canopy vegetation was removed for any future development.	Potential	None
Saccolaimus flaviventris	Yellow-bellied Sheathtail-bat	V		Not recorded in Atlas but a cryptic, summer-migrant to the south coast. Wide distribution and can be found in almost every habitat type from wet and dry sclerophyll forest, to open woodland, Acacia shrubland and mallee. The species predominantly roosts in larger hollows of older trees, but has been known from buildings and sometimes mammal burrows at ground level. Flies above canopy for foraging. With the level of forested areas in the locality that would include more favourable foraging and roosting habitat, a significant impact on the species is not expected if the canopy vegetation was removed for any future development.	None	None
Scoteanax rueppellii	Greater Broad-nosed Bat	V	-	Not predicted or recorded in Atlas but as habitat suitable for foraging considered. Prefers tall, wet forests and also preferentially forages along water courses. Will utilise open forests but often not far from denser vegetation. Roosts mainly in hollows, dead branches, sometimes	None	None

Scientific name	Common name	TSC Act	EPBC Act	Habitat assessment	Likelihood of occurrence	Impacts predicted
				buildings. Habitat on Lot and in surrounding area for foraging, no roosting on the Lot. With the level of forested areas in the locality that would include more favourable foraging and roosting habitat, a significant impact on the species is not expected if the canopy vegetation was removed for any future development.		
Sminthopsis leucopus	White-footed Dunnart	V		Atlas records from Murramarang NP for 2020-21. The White-footed Dunnart occurs in Tasmania and along the Victorian and southern NSW coast. The Shoalhaven area is the species' northern-most limit. Found in a range of different habitats across its distribution, including coastal dune vegetation, coastal forest, tussock grassland and sedgeland, heathland, woodland and forest, the White-footed Dunnart favours vegetation communities with an open understorey structure (contrasting with populations in Victoria which apparently prefer dense shrub and ground layers). It is patchily distributed across these habitats and, where present, typically occurs at low densities. Adult females usually have small, discrete home ranges, approximately 80 metres in length. Adult males have overlapping home ranges, approximately 100 metres in length, but are capable of making regular exploratory movements of up to 1 km. Shelter in bark nests in hollows, rock crevices, under timber- fallen and standing, burrows in the ground, piles of logging debris, in the 'skirts' of grass trees (Xanthorrhoea spp.) and cycads (Macrozamia spp.). Habitat on the site considered suitable for the species and the loss of connectivity from any potential clearing is considered a potential impact.	Potential	Potential
EPBC LISTED MIGRATORY SPECIES						
Migratory terrestrial species						
Cuculus optatus	Oriental Cuckoo		M	No breeding habitat in Australia. Found in monsoonal rainforest, vine thickets, wet sclerophyll forest or open Casuarina, Acacia or Eucalyptus woodlands. Frequently at edges or ecotones between habitat types. Under Commonwealth guidelines for referral (2015) a significant impact is only expected when a proposal will affect substantial important habitat or an ecologically significant proportion of the population. For the Oriental Cuckoo this is 1000 individuals. This reclassification proposal and		None

Scientific name	Common name	TSC Act	EPBC Act	Habitat assessment	Likelihood of occurrence	Impacts predicted
				the potential loss of vegetation on the lot would not impact on the species.		
Monarcha melanopsis	Black-faced Monarch		M	Wet forest specialist, found mainly in rainforest and wet sclerophyll forest, especially in sheltered gullies and slopes with a dense understorey of ferns and/or shrubs. Under Commonwealth guidelines for referral (2015) a significant impact is only expected when a proposal will affect substantial important habitat or an ecologically significant proportion of the population. For the Black-faced Monarch this is 460 individuals. This reclassification proposal and the potential loss of vegetation on the lot would not impact on the species.		None
Myiagra cyanoleuca	Satin Flycatcher		M	Summer breeding migrant to south coast so uncommon in area. They are particularly common in tall wet sclerophyll forest, often in gullies or along water courses. In woodlands they prefer open, grassy woodland types. During migration, habitat preferences expand, with the species recorded in most wooded habitats except rainforests. Under Commonwealth guidelines for referral (2015) a significant impact is only expected when a proposal will affect substantial important habitat or an ecologically significant proportion of the population. For the Satin Flycatcher this is 1700 individuals. This reclassification proposal and the potential loss of vegetation on the lot would not impact on the species.		None
Rhipidura rufifrons	Rufous Fantail		M	Prefers wetter forested habitat but also known from riparian or mangrove vegetation and open forests during migration. Under Commonwealth guidelines for referral (2015) a significant impact is only expected when a proposal will affect substantial important habitat or an ecologically significant proportion of the population. For the Rufous Fantail this is 4800 individuals. This reclassification proposal and the potential loss of vegetation on the lot would not impact on the species.		None
Symposiachrus trivirgatus	Spectacled Monarch		M	Dense vegetation, mainly in rainforest but also in moist forest or wet sclerophyll and occasionally in other dense vegetation such as mangroves, drier forest and woodlands. Under Commonwealth guidelines for referral (2015) a significant impact is only expected when a proposal will affect substantial important habitat or an ecologically		None

Scientific name	Common name	TSC Act	EPBC Act	Habitat assessment	Likelihood of occurrence	Impacts predicted
				significant proportion of the population. For the Spectacled Monarch this is 650 individuals. This reclassification proposal and the potential loss of vegetation on the lot would not impact on the species.		
Migratory marine bird/other species (list attached in Appendix B)			M	Marine species have come up in the EPBC Act species search due to the site occurring in the vicinity of marine habitat. However, the site does not provide preferred or suitable nesting, breeding or foraging habitat for such species.		None
Migratory wetlands bird species (list attached in Appendix D – EPBC Act search)			M	The work site does not represent preferred or suitable nesting, breeding or foraging habitat for such species. Suitable habitat does occur in the locality but would not be affected by the proposal.		None

BROULEE

Scientific name	Common name	TSC Act	EPBC Act	Habitat assessment	Likelihood of occurrence	Impacts predicted
LISTED ECOLOGICAL COMMUNITIES						
Araluen Scarp Grassy Forest in the South East Corner Bioregion		EEC		Araluen Scarp Grassy Forest in the South East Corner Bioregion an open forest or grassy woodland dominated by Maiden's Gum (*Eucalyptus maidenii*), Yellow Box (*E. melliodora*) and Forest Red Gum (*E. tereticornis*) in the canopy. Rough-barked Apple (*Angophora floribunda*), White Stringybark (*E. globoidea*) and Black Wattle (Acacia mearnsii) are common associated overstorey species. An open shrub layer may contain Tree Violet (*Melicytus dentatus*), Sweet Pittosporum (*Pittosporum undulatum*) and various vines and climbers. The grassy groundlayer is generally sparse, and may contain species such as Weeping Grass (*Microlaena stipoides*), Common Tick-trefoil (*Desmodium varians*), Creeping Beard Grass (*Oplismenus imbecillis*), Sickle Fern (*Pellaea falcata*) and Prickly Starwort (*Stellaria pungens*). Many other plant species are likely to occur, as outlined in the scientific determination. The community also includes micro-organisms, fungi, cryptogamic plants and a diverse fauna, both vertebrate and invertebrate. Not present at this site.	None	None
Araluen Scarp Grassy Forest			EEC	As above with some variation in diagnostics, condition classes or distribution. Not present at this site.	None	None
Bangalay Sand Forest of the Sydney Basin and South East Corner bioregions		EEC		Bangalay Sand Forest of the Sydney Basin and South East Corner bioregions typically has a dense to open tree canopy, approximately 5 - 20 m tall, depending on exposure and disturbance history. The most common tree species include Bangalay (*Eucalyptus botryoides)* and Coast Banksia (*Banksia integrifolia subsp. integrifolia*), while Blackbutt (*Eucalyptus pilularis*) and Lilly Pilly (*Acmena smithii*) may occur in more sheltered situations, and Swamp Oak (*Casuarina glauca*) may occur on dunes exposed to salt-bearing sea breezes or where Bangalay Sand Forest adjoins Swamp Oak Floodplain Forest of the NSW North Coast, Sydney Basin and South East Corner bioregions. The open shrub stratum may be	Yes	Potential

Scientific name	Common name	TSC Act	EPBC Act	Habitat assessment	Likelihood of occurrence	Impacts predicted
				dominated by sclerophyllous species, such as Old Man Banksia (*Banksia serrata*), Coast Teatree (*Leptospermum laevigatum*) and Tree Broom-heath (*Monotoca elliptica*), or mesophyllous, species, such as Coffee Bush (*Breynia oblongifolia*) and Sweet Pittosporum (*Pittosporum undulatum*), or a combination of both. Shrubs may vary in height from one to ten metres tall. The groundcover varies from open to dense, and may be sparse where the tree canopy is dense or where there is a thick litter of leaves and branches. Dominant species include Flax-lilies (Dianella spp.), *Lepidosperma concavum*, Spiny-headed Mat-rush (*Lomandra longifolia*), Bracken (*Pteridium esculentum*), and grasses including Blady Grass (*Imperata cylindrica*), Weeping Grass (*Microlaena stipoides var. stipoides*) and Kangaroo Grass (*Themeda triandra*), while herbs, such as Slender Tick-trefoil (*Desmodium gunnii*), Kidney Weed (*Dichondra repens*), Whiteroot (*Lobelia purpurascens*) and Ivy-leaved Violet (*Viola hederacea*), are scattered amongst the larger plants. Vines of *Glycine clandestina*, False Sarsparilla (*Hardenbergia violacea*), Running Postman (*Kennedia rubicunda*), Common Milk Vine (*Marsdenia rostrata*) and Snake Vine (*Stephania japonica var. discolor*) scramble through the groundcover and occasionally over shrubs or tree trunks. Lot 74 DP776541 is considered the EEC *Bangalay Sand Forest of the Sydney Basin and South East Corner bioregions* in poor condition.		
Brogo Vine Forest of the South East Corner Bioregion		EEC		Brogo Wet Vine Forest is a tall forest with a sparse small tree layer, open shrub layer and grassy ground layer. Forest Red Gum (*Eucalyptus tereticornis*) and Rough-barked Apple (*Angophora floribunda*) are the dominant tree species and their presence distinguishes this EEC from other vegetation communities in the south east forests of NSW. Kurrajong (*Brachychiton populneus*), Sweet Pittosporum (*Pittosporum undulatum*), Hickory Wattle (*Acacia implexa*) and occasionally Port Jackson Fig (*Ficus rubiginosa*) also occur in the upper stratum. The shrub layer is diverse and may include *Cassinia trinerva*, Tree Violet (*Hymenanthera dentata*), Coffee Bush (*Breynia oblongifolia*) and Blackthorn (*Bursaria spinosa*). The groundlayer is dominated by the grasses Weeping Grass (*Microlaena stipoides*), Creeping Beard Grass (*Oplismenus imbecillis*) and Forest	None	None

Scientific name	Common name	TSC Act	EPBC Act	Habitat assessment	Likelihood of occurrence	Impacts predicted
				Hedgehog Grass (*Echinopogon ovatus*), the herbs Kidney Weed (*Dichondra repens*), Stinking Pennywort (*Hydrocotyle laxiflora*), Large Tick-trefoil (*Desmodium brachypodum*), *Stellaria flaccida* and *Glycine clandestina*, and the ferns, *Cheilanthes sieberi* and Sickle Fern (*Pellaea falcata*). Not present at this site.		
Coastal Saltmarsh in the New South Wales North Coast, Sydney Basin and South East Corner Bioregions		EEC		Coastal Saltmarsh occurs in the intertidal zone on the shores of estuaries and lagoons that are permanently or intermittently open to the sea. It is frequently found as a zone on the landward side of mangrove stands. Characteristic plants include *Baumea juncea*, Sea Rush (*Juncus krausii subsp. australiensis*), Samphire (*Sarcocornia quinqueflora subsp. quinqueflora*), Marine Couch (*Sporobolus virginicus*), Streaked Arrowgrass (*Triglochin striata*), Knobby Club-rush (*Ficinia nodosa*), Creeping Brookweed (*Samolus repens*), Swamp Weed (*Selliera radicans*), Seablite (*Suaeda australis*) and Prickly Couch (*Zoysia macrantha*). Occasionally mangroves are scattered through the saltmarsh. Tall reeds may also occur, as well as salt pans. Not present at this site.	None	None
Coastal Swamp Oak (Casuarina glauca) Forest of New South Wales and South East Queensland ecological community			EEC	Occurs in sub-tropical, sub-humid and temperate climatic zones from Curtis Island, north of Gladstone, in Queensland to Bermagui in southern New South Wales in coastal catchments, mostly at elevations of less than 20 m above sea-level (ASL) that are typically found within 30 km of the coast. Some variation in distance by catchment. It is typically found on coastal flats, floodplains, drainage lines, lake margins, wetlands and estuarine fringes where soils are at least occasionally saturated, water-logged or inundated with saline to brackish water, though occasionally in fresher water. The canopy layer is dominated by *Casuarina glauca* (swamp oak, swamp she-oak). This often occurs as a relatively uniform upper layer of swamp oak, with height and density dependent on the local environmental conditions. Eucalyptus spp. can emerge from the canopy, such as Forest Red Gum (*Eucalyptus tereticornis*), Bangalay (*E. botryoides*), Flooded Gum (*E. grandis*) Woollybutt (*E. longifolia*), or Swamp Mahogany (*E. robusta*).	None	None

Scientific name	Common name	TSC Act	EPBC Act	Habitat assessment	Likelihood of occurrence	Impacts predicted
				Melaleuca species may occur in the canopy, sub-canopy or as emergents, including Swamp Paperbark (*Melaleuca ericifolia*), Narrow-leaved Paperbark (*M. linariifolia*), Broad-leaved Paperbark (*M. quinquenervia*), and/or Prickly-leaved Paperbark (*M. styphelioides*). Mid-layers are typically sparse, though juvenile trees can occur more thickly. Shrubs are also sparse and species vary with latitude, with rainforest species more likely north of Sydney. The climbing plant species that is most commonly found in the community is Common Silkpod (*Parsonsia straminea*). Epiphytic plants, such as *Platycerium bifurcatum* (elkhorns) and *Dendrobium teretifolium* (pencil orchids), and the stem parasite *Amyema cambagei* (she-oak mistletoe), could also be present. The ground layer is typically a continuous to semi-continuous cover of either forbs, ferns, sedges, grasses and/or plant litter (including swamp-oak branchlets/needles), but can also often be "patchy," particularly where the ecological community is regenerating. The composition of the ground layer is also influenced by groundwater salinity. Not present at this site.		
Coastal Swamp Sclerophyll Forest of New South Wales and South East Queensland			EEC	Coastal Swamp Sclerophyll Forest ecological community occurs on the mainland and islands near to the coast (within 20 km) from South East Queensland to the Bateman subregion of the South East Corner bioregion. The ecological community typically occurs in low-lying coastal alluvial areas with minimal relief, such as swamps, floodplain pockets, depressions, alluvial flats, back-barrier flats, fans, terraces, and behind fore-dunes. The Coastal Swamp Sclerophyll Forest typically features a canopy and/or sub-canopy dominated by Melaleuca spp. and/or *Eucalyptus robusta*. Other eucalypts, which are also tolerant of regular inundation and are adapted to sandy soils, may emerge from the canopy such as *Corymbia intermedia* (Pink Bloodwood), *E. tereticornis* (Forest Red Gum/Queensland Blue Gum), *E. longifolia* (Woollybutt), *E. botryoides* (Southern Mahogany/Bangalay) and *E. ovata* (Swamp Gum). In many areas, *Casuarina glauca* (Swamp Oak) occurs as a subdominant in patches of the ecological community but where it dominates over a large area this is indicative of a separate ecological community. Other canopy	None	None

Scientific name	Common name	TSC Act	EPBC Act	Habitat assessment	Likelihood of occurrence	Impacts predicted
				or sub-canopy species can also include the following shrubs and trees: *Acacia leiocalyx* (Black wattle), *A. melanoxylon* (Blackwood), *Alphitona excelsa* (Red Ash, Soapbush, Soap Tree), *Callistemon salignus* (White/Willow Bottlebrush), *Cupaniopsis anacardioides* (Tuckeroo), *Elaeocarpus reticulatus* (Blueberry Ash), *Glochidion ferdinandi* (Cheese Tree) and *G. sumatranum*, *Melicope elleryana* (Pink-flowered Doughwood), and *Pittosporum undulatum* (Sweet Pittosporum). Other characteristic species in some areas include *Livistona australis* (Cabbage Tree Palm) and *Lophostemon suavolens* (NSW Scientific Committee 2011; Tozer et al. in prep.). Vines are frequently found on the trunks and climbing into the crown of melaleucas and eucalypts within the ecological community, notably the woody vine *Parsonsia straminea* (Common silk-pod), *Gynochthodes jasminoides* (Climbing Scrub-orange) and *Stephania japonica var. discolour* (Snake-vine) (NSW EPA 2016a, b; OEH 2016; Queensland Government 2019a; Tozer et al. in prep.). Epiphytic plants, such as *Cymbidium suave* (Snake Orchid), can also be found on the branches of larger trees (Keith et al. 2007). Ground species include Blechnum spp. (syn. Telmatoblechnum spp.), *Calochlaena dubia* (False Bracken), Gahnia spp., particularly *Gahnia clarkei (*Tall Saw-sedge), Hypolepsis spp., *Imperata cylindrica* (Blady Grass), Baumea spp. (syn. Machaerina spp.) (Twig-rushes) and *Pteridium esculentum* (Bracken), Baloskion spp. (plume rushes), *Carex appressa* (Tall sedge), *Centella asiatica* (Indian Pennywort), *Dianella caerulea* (Blue Flax Lily), *Entolasia marginata* (Bordered Panic), *E. stricta* (Wiry Panic Grass), *Hemarthria uncinate* (Mat Grass*), Isachne globose* (Swamp Millet), *Ischaemum austral* (Large Bluegrass), Juncus spp., Lobelia ssp., *Lomandra longifolia* (Spiny-headed Mat-rush), Oplismenus spp., Persecaria spp. (Knotweeds),and *Viola hederacea* (Ivy-leaved Violet) (Tozer et al. in prep.). Orchids, including the nationally listed *Phaius australis* (Common Swamp-orchid) and scramblers such as *Glycine clandestine* (Twining		

Scientific name	Common name	TSC Act	EPBC Act	Habitat assessment	Likelihood of occurrence	Impacts predicted
				Glycine) and *G. tabacina* (Glycine Pea, Variable Glycine) also occur in some patches. Halophytic species may occur more commonly in the ground layer at lower elevations closer to estuarine sites or where groundwater is influenced by brackish inflows, for example, twigrushes. If the canopy cover is dense, limiting light penetration results in a ground layer that is almost devoid of herbs and fosters cryptogams such as mosses (including sphagnum), lichens and liverworts. Sphagnum moss may also be regularly present in waterlogged patches. At wetter sites or during periods of inundation, the ecological community supports wetland specialist plants, such as *Cycnogeton procerum* (Water Ribbons). During drier periods, there are a range of grasses that are likely to be more dominant (Griffith & Wilson 2007a, 2008; NSW EPA 2016a, b; OEH 2016; Queensland Government 2019a). There is also often a dense leaf-litter and logs from fallen trees in the ground layer. Not present at this site.		
Freshwater Wetlands on Coastal Floodplains of the New South Wales North Coast, Sydney Basin and South East Corner Bioregions		EEC		Associated with coastal areas subject to periodic flooding and in which standing fresh water persists for at least part of the year in most years. Typically occurs on silts, muds or humic loams in low-lying parts of floodplains, alluvial flats, depressions, drainage lines, backswamps, lagoons and lakes but may also occur in backbarrier landforms where floodplains adjoin coastal sandplains. Generally, occur below 20 m elevation on level areas. They are dominated by herbaceous plants and have very few woody species. The structure and composition of the community varies both spatially and temporally depending on the water regime: Those that lack standing water most of the time are usually dominated by dense grassland or sedgeland vegetation, often forming a turf less than 0.5 metre tall and dominated by amphibious plants *including Paspalum distichum* (water couch), *Leersia hexandra* (swamp rice-grass), *Pseudoraphis spinescens* (mud grass) and *Carex appressa* (tussock sedge). Where they are subject to regular inundation and drying the vegetation may include large emergent sedges over 1 metre tall, such	None	None

Scientific name	Common name	TSC Act	EPBC Act	Habitat assessment	Likelihood of occurrence	Impacts predicted
				as *Baumea articulata, Eleocharis equisetina and Lepironia articulata*, as well as emergent or floating herbs such as *Hydrocharis dubia* (frogbit), *Philydrum lanuginosum* (frogsmouth), *Ludwigia peploides subsp. montevidensis* (water primrose), *Marsilea mutica* (nardoo) and Myriophyllum spp. (milfoils). As standing water becomes deeper or more permanent, amphibious and emergent plants become less abundant, while floating and submerged aquatic herbs become more abundant. These latter species include *Azolla filiculoides var. rubra, Ceratophyllum demersum* (hornwort), *Hydrilla verticillata* (water thyme), Lemna spp. (duckweeds), *Nymphaea gigantea* (giant waterlily), *Nymphoides indica* (water snowflake), *Ottelia ovalifolia* (swamp lily) and Potamageton spp. (pondweeds). The threatened aquatic plants, *Aldrovanda vesiculosa* and *Najas marina*, also occur within this community. Not present at this site.		
Illawarra and south coast lowland forest and woodland ecological community		CEEC		Comprises eucalypt forest or woodlands, which can have a grassy ground layer and/or a shrub layer as well as a small tree layer. A patchy distribution with the remaining occurrences mostly on lowland sandy loam, loam or clay loam soils around Wollongong to Shellharbour, Milton, Bawley Point and Moruya. Typically occurs within 30 km of the coast in coastal valleys and low-lying foothills on the south coast of NSW, with a sharp boundary provided by the steep slopes of the eastern coastal escarpment in the northern extent of range. The ecological community can occur below approximately 350 m above sea level (ASL), but most occurrences are at a much lower altitude; between 10 and 150 m ASL(Tozer et al, 2010). The local expression of the community is influenced by geology and soils, drainage and aspect, site history and current management. The canopy is typically dominated by Eucalyptus or Angophora trees. The composition of the understorey is variable. Many patches have a sub-canopy of smaller trees as well as a shrubs and/or a grassy/sedge ground layer. Many patches have been disturbed and their current state reflects this, past clearance, with fire history and management involving grazing or under-scrubbing having a strong influence on the structural and floristic composition of the ecological	None	None

Scientific name	Common name	TSC Act	EPBC Act	Habitat assessment	Likelihood of occurrence	Impacts predicted
				community (Mills, 1993; NPWS, 2002a; Gellie, 2005; Miles and Kendall, 2007; Tozer et al, 2010). Includes the NSW listed ***Illawarra Lowlands Grassy Woodland in the Sydney Basin Bioregion.*** Not present at this site.		
Littoral Rainforest in the New South Wales North Coast, Sydney Basin and South East Corner Bioregions		EEC		Generally, a closed forest, the structure and composition of which is strongly influenced by its proximity to the ocean. The plant species of this community are predominantly rainforest species. Several species have compound leaves, and vines may be a major component of the canopy. These features differentiate littoral rainforest from forest or scrub, but while the canopy is dominated by rainforest species, scattered emergent individuals of sclerophyll species, such as *Angophora costata, Banksia integrifolia, Eucalyptus botryoides* and *Eucalyptus tereticornis* occur in many stands. Littoral Rainforest occurs only on the coast and is found at locations in the NSW North Coast Bioregion, Sydney Basin Bioregion and South East Corner Bioregion. Littoral Rainforest is very rare and occurs in many small stands. In total, it comprises less than one percent of the total area of rainforest in NSW. Occurs on sand dunes and on soil derived from underlying rocks. Stands on headlands exposed to strong wind-action may take the form of dense, wind-pruned thickets. Stands are generally taller in sheltered sites such as hind dunes, although wind-pruning may still occur on their windward sides. Most stands occur within two kilometres of the sea, though are occasionally found further inland within reach of the maritime influence. A number of species characteristic of Littoral Rainforest in NSW reach their southern limits at various places along the coast; a number of temperate species are restricted to the south coast; the total Littoral Rainforest flora declines from north to south. The species composition (flora and fauna) of a site will be influenced by its geographic location, the size of the site, its degree of exposure and rainfall, its disturbance history (including fire) and, if previously disturbed, the stage of regeneration. Not present at this site.	None	None
Littoral Rainforest and Coastal Vine Thickets of Eastern Australia			CEEC	As above with some variation in diagnostics, condition classes or distribution.	None	None

Scientific name	Common name	TSC Act	EPBC Act	Habitat assessment	Likelihood of occurrence	Impacts predicted
				Not present at this site.		
Lowland Grassy Woodland in the South East Corner Bioregion		EEC	CEEC	Lowland Grassy Woodland in the South East Corner bioregion is the name given to the ecological community associated with rainshadow areas of the south coast and hinterland of New South Wales. Typically, the community comprises an open tree canopy, a near-continuous groundcover dominated by grasses and herbs, sometimes with layers of shrubs and/or small trees. Undisturbed stands of the community may have a woodland or forest structure. Small trees or saplings may dominate the community in relatively high densities after partial or total clearing. Lowland Grassy Woodland may usually be distinguished by the current or former dominance of Forest Red Gum (Eucalyptus tereticornis). Other canopy trees include White Stringybark (E. globoidea), Rough-barked Apple (Angophora floribunda), Yellow Box (E. melliodora) and Snow Gum (E. pauciflora). Coast Grey Box (E. bosistoana), Blue Box (E. baueriana) and Maiden's Blue Gum (E. maidenii) occur more rarely, as does Ribbon or Manna gum (E. viminalis). There is often a sparse small tree layer and an open shrub layer. The dense grassy ground cover is usually dominated by Kangaroo Grass (Themeda australis) and Weeping Grass (Microlaena stipoides), and a suite of other grasses, herbs and forbs. In some locations trees and shrubs may be absent due to past clearing, but the resultant derived native grassland may still represent Lowland Grassy Woodland if characteristic non-woody species are still present. Not present at this site.	None	None
River-Flat Eucalypt Forest on Coastal Floodplains of the NSW North Coast, Sydney Basin and South East Corner Bioregions		EEC		This EEC is found on river flats of coastal floodplains and comprises a tall open tree layer of eucalypts, which may exceed 40 m in height, but can be considerably shorter in regrowth stands or under conditions of lower site quality. The combination of features that distinguish River-Flat Eucalypt Forest on Coastal Floodplains from other endangered communities on the coastal floodplains include: its dominance by either a mixed eucalypt canopy or by a single species of eucalypt belonging to either the genus Angophora or the sections Exsertaria or Transversaria of the genus Eucalyptus; the relatively low abundance or sub-dominance of	None	None

Scientific name	Common name	TSC Act	EPBC Act	Habitat assessment	Likelihood of occurrence	Impacts predicted
				Casuarina and Melaleuca species; the relatively low abundance of Eucalyptus robusta; and the prominent groundcover of soft-leaved forbs and grasses. The most widespread and abundant dominant trees within the EEC include *Eucalyptus tereticornis* (Forest Red Gum), *E. amplifolia* (Cabbage Gum), *Angophora floribunda* (Rough-barked Apple) and A. subvelutina (Broad-leaved Apple). *Eucalyptus baueriana* (Blue Box), *E. botryoides* (Bangalay) and *E. elata* (River Peppermint) may be common south from Sydney, *E. ovata* (Swamp Gum) occurs on the far south coast, *E. saligna* (Sydney Blue Gum) and *E. grandis* (Flooded Gum) may occur north of Sydney, while *E. benthamii* is restricted to the Hawkesbury floodplain. A layer of smaller trees may also be present, including *Melaleuca decora, M. styphelioides* (Prickly-leaved Teatree), *Backhousia myrtifolia* (Grey Myrtle), *Melia azaderach* (White Cedar), *Casuarina cunninghamiana* (River Oak) and *C. glauca* (Swamp Oak). Shrubs are scattered and include *Bursaria spinosa, Solanum prinophyllum, Rubus parvifolius, Breynia oblongifolia, Ozothamnus diosmifolius, Melicytus dentata, Acacia floribunda* and *Phyllanthus gunnii*. Abundant forbs, scramblers and grasses include *Microlaena stipoides, Dichondra repens, Glycine clandestina, Oplismenus aemulus, Desmodium gunnii, Lobelia purpurascens, Entolasia marginata, Oxalis perennans* and *Veronica plebeia*. The composition and structure of the understorey is influenced by grazing and fire history, changes to hydrology and soil salinity and other disturbance, and may have a substantial component of exotic shrubs, grasses, vines and forbs also. Not present at this site.		
River-flat eucalypt forest on coastal floodplains of southern New South Wales and eastern Victoria			CEEC	As above with some variation in diagnostics, condition classes or distribution. Not present at this site.	None	None
Subtropical and Temperate Coastal Saltmarsh		V		Occurs within a relatively narrow margin of the Australian coastline, within the subtropical and temperate climatic zones south of the South-east Queensland IBRA bioregion boundary at 23° 37' latitude along the	None	None

Scientific name	Common name	TSC Act	EPBC Act	Habitat assessment	Likelihood of occurrence	Impacts predicted
				east coast and south of (and including) Shark Bay at 26° on the west coast and consists mainly of salt-tolerant vegetation (halophytes) including: grasses, herbs, sedges, rushes and shrubs. Succulent herbs, shrubs and grasses generally dominate and vegetation is generally of less than 0.5 m height (with the exception of some reeds and sedges) Not present at this site.		
Swamp Oak Floodplain Forest of the New South Wales North Coast, Sydney Basin and South East Corner Bioregion		EEC		As for ***Coastal Swamp Oak (Casuarina glauca) Forest of New South Wales and South East Queensland ecological community*** with some variation in diagnostics, condition classes or distribution. Not present at this site.	None	None
Swamp Sclerophyll Forest on Coastal Floodplains of the New South Wales North Coast, Sydney Basin and South East Corner Bioregions		EEC		As for ***Coastal Swamp Sclerophyll Forest of New South Wales and South East Queensland*** with some variation in diagnostics, condition classes or distribution. Not present at this site.	None	None
Themeda grassland on seacliffs and coastal headlands in the NSW North Coast, Sydney Basin and South East Corner Bioregions		EEC		Kangaroo Grass is the dominant species in the *Themeda Grassland on seacliffs and coastal headlands in the NSW North Coast, Sydney Basin and South East Corner Bioregion* ecological community. Whilst an extremely widespread species, in this community, it may have a distinctive appearance, being prostrate and having glaucous leaves. These features are retained in cultivation and the form is believed to be genetically distinct. *Banksia integrifolia subsp. integrifolia, Westringia fruticosa* and *Acacia sophorae* occur as emergent shrubs or as a dense cover where they have recruited over grasslands. Smaller shrubs occur often as prostrate to dwarf forms, most frequently *Pimelea linifolia, Hibbertia vestita, Pultenaea maritima* and *Westringia fruticosa*. Although a number of woody species are listed as part of the community, these are usually sparsely distributed and may be absent from some stands. In central and south coastal stands tussocks of *Poa poiformis* may be found in some stands of the community, but Poa poiformis-dominated tussock grassland is generally found lower on cliffs (closer to the sea and more exposed to spray) than on steeper slopes. Other grasses that occur in the community	None	None

Scientific name	Common name	TSC Act	EPBC Act	Habitat assessment	Likelihood of occurrence	Impacts predicted
				include *Zoysia macarantha* and *Cynodon dactylon*. A number of threatened species occur in some stands of the community, including *Diuris sp. aff. chrysantha, Pultenaea maritima, Rutidosus heterogama, Thesium australe* and *Zieria prostrata*. Herbs in the ground layer include the twining *Polymeria calycina*, succulent *Apium prostratum*, *Senecio pinnatifolius subsp. pinnatifolius* and *Xerochrysum bracteatum*. Not present at this site.		
FLORA						
Aldrovanda vesiculosa	Waterwheel Plant	E		Found free-floating in near-coastal shallow freshwater lagoons that are rich in organic matter. Known from Racecourse Swamp and the Waldrons Swamp complex. No suitable habitat.	None	None
Caladenia tessellata	Thick-lipped Spider-orchid	E	V	Predicted habitat only. Found in grassy sclerophyll woodland on clay loam or sandy soils, and sometimes heathland on sandy loam soils, *Caladenia tessellata* grows in a complex relationship with a mycorrhizal fungus that is necessary for seed germination, and provides some nutrients to the orchid. Pollination is probably via sexual deception (pseudocopulation suggested with pollination by an undescribed black wasp of the genus Phymatothyninus observed at one site in New South Wales by GEC (2003 cited in Duncan 2010). The disturbance level at this site makes it highly unlikely the species would occur.	Unlikely	None
Calochilus pulchellus	Pretty Beard Orchid	E	E	PMST predicted. All currently known sites (3) are within the Shoalhaven Local Government Area. Preferred habitat seems to be heath on sandy to sandy-loam soils. No suitable habitat.	None	None
Cryptostylis hunteriana	Leafless Tongue-orchid	V	V	Found in a variety of habitats, mostly coastal heathlands, margins of coastal swamps and sedgelands, coastal forest, dry woodland, and lowland forest (Jones et al., 2006; Jones, 2006). It prefers open areas in the understorey of forested communities (DECC, 2005a). The soils include moist sands, moist to dry clay loam and occasionally in accumulated eucalypt leaves (Jones et al., 2006; Jones, 2006). Susceptible to clearing/disturbance events. As this site is highly disturbed, the species is highly unlikely to occur.	Unlikely	None

Scientific name	Common name	TSC Act	EPBC Act	Habitat assessment	Likelihood of occurrence	Impacts predicted
Correa baeuerlenii	Chef's Cap Correa	V	V	Chef's Cap occurs in sclerophyll forest from the Clyde River near Batemans Bay to Bega, and inland to foothills of the Great Dividing Range, on the NSW south coast. A riparian species, found in damp gullies, on the banks of streams and on rocky slopes. It grows in wet eucalypt forest in association with trees such as *Eucalyptus muelleriana, E. agglomerata, E. sieberi, E. gummifera, Allocasuarina littoralis* and *Corymbia maculata* with and a shrubby understorey including *Doodia aspera, Persoonia linearis, Goodenia ovata* and *Hibbertia dentata*. No suitable habitat at this site.	None	None
Genoplesium vernale	East Lynne Midge-orchid	V	V	PMST predicted. Grows in dry sclerophyll forest and moss gardens over sandstone, the species has been recorded from locations between Ulladulla and Port Stephens. No suitable habitat at this site and outside of known range	None	None
Haloragis exalata subsp. exalata	Square Raspwort	V	V	Found in damp places near watercourses, this species has a disjointed distributed in the central coast, south coast and north-western slopes of NSW (OEH 2023) but is often found as a coloniser of disturbed areas (Miles & Cameron 2007). No suitable habitat at this site.	None	None
Persicaria elatior	Tall Knotweed	V	V	Grows in damp places, especially beside streams and lakes. Occasionally in swamp forest or associated with disturbance. No suitable habitat at this site.	None	None
Pomaderris parrisiae	Parris' Pomaderris	V	V	PMST predicted. Parris' Pomaderris is found on skeletal soils in rocky shrubland or tall open forest chiefly on escarpment ranges. Parris' Pomaderris has been recorded in Egan Peaks Nature Reserve, Wadbilliga National Park (near Wadbilliga Trig.) and South East Forests National Park (Brown Mountain / Cochrane Dam area), with a questionable record in Ben Boyd National Park. Outside of known range and no suitable habitat.	None	None
Rhizanthella slateri	Eastern Underground Orchid	V	E	PMST predicted. Known from 10 locations within NSW only, the Eastern Underground Orchid is difficult to detect. It is usually located when the soil is disturbed, and there may well be more locations of the species within its known range. The known populations grow in eucalypt forest but no indicative preferred habitat is known. The species has not been recorded in the South Eastern Corner Bioregion. Considered unlikely to occur with the level of disturbance over this site.	None	None

Scientific name	Common name	TSC Act	EPBC Act	Habitat assessment	Likelihood of occurrence	Impacts predicted
Rhodamnia rubescens	Scrub Turpentine	CE	CE	PMST predicted. Occurs in coastal districts north from Batemans Bay to areas inland of Bundaberg in Queensland. Can be found in littoral, warm temperate and subtropical rainforest and wet sclerophyll forest at rainforest transition zones. Soils are volcanic or sedimentary soils, typically near the coast. Occasionally extends inland onto escarpments up to 600 m above sea level in areas with rainfall of 1,000-1,600 mm per year. Outside of known range and n suitable habitat.	None	None
Thesium australe	Austral Toadflax	V	V	Found in grassland on coastal headlands or grassland and grassy woodland/shrubland away from the coast. Often found in association with Kangaroo Grass and damper sites. It occurs in subtropical, temperate and subalpine climates over a wide range of altitudes. It occurs on soils derived from sedimentary, igneous and metamorphic geology on a range of soils including black clay loams to yellow podzolics and peaty loams (Leigh et al. 1984; Hunter et al. 1999; Cohn 2004). No suitable habitat at this site.	None	None
AMPHIBIANS						
Heleioporus australiacus	Giant Burrowing Frog	V	V	PMST predicted. The Giant Burrowing Frog is distributed in south eastern NSW and Victoria, and appears to exist as two distinct populations: a northern population largely confined to the sandstone geology of the Sydney Basin and extending as far south as Ulladulla, and a southern population occurring from north of Narooma through to Walhalla, Victoria. Found in heath, woodland and open dry sclerophyll forest on a variety of soil types except those that are clay based. Breeding habitat of this species is generally soaks or pools within first or second order streams. They are also commonly recorded from 'hanging swamp' seepage lines and where small pools form from the collected water. No suitable habitat at this site.	None	None
Litoria aurea	Green and Golden Bell Frog	E	V	Known from a variety of natural and man-made waterbodies, provided they are unpolluted and without heavy shading. Fast flowing streams are not utilised for breeding purposes by this species. Large permanent swamps and ponds exhibiting well-established fringing vegetation	None	None

Scientific name	Common name	TSC Act	EPBC Act	Habitat assessment	Likelihood of occurrence	Impacts predicted
				(especially bulrushes – Typha sp. and spikerushes – Eleocharis sp.) adjacent to open grassland areas for foraging are preferred. No suitable habitat at this site.		
Litori watsoni	Watson's Tree Frog	E	E	PMST predicted. In New South Wales this species is currently known to occur from Budderoo National Park in the Illawarra region of NSW, along the eastern fall of the Great Dividing Range. Occurs in various forest types, as well as woodland, bushland and heathland. It prefers moist sites, especially in or near tall moist forest. The most important habitat factor is the presence of pools that contain water long enough for tadpoles to complete metamorphosis. No suitable habitat at this site.	None	None
Mixophyes balbus	Stuttering Frog	E	V	*Mixophyes blabus* has only been recorded at three locations south of Sydney. The Dorrigo region, in north-east NSW, appears to be a stronghold for this species. Found in rainforest and wet, tall open forest in the foothills and escarpment on the eastern side of the Great Dividing Range, and typically found in association with permanent streams required for breeding during summer after heavy rain. No suitable habitat at this site.	None	None
FISH						
Prototroctes maraena	Australian Grayling		V	Listed as endangered under NSW Fisheries Management Act 1994. Freshwater fish that spawns close to estuary or creek openings near the ocean, where fry stay for six months before returning to freshwaters. The small creek within the Merimbula footprint runs into the Merimbula Lake coastal lagoon and does not provide any substantial freshwater habitat for this species to breed in.	None	None
BIRDS						
Anthochaera phrygia	Regent Honeyeater	E	CE, M	The Regent Honeyeater mainly inhabits temperate woodlands and open forests of the inland slopes of south-east Australia. In NSW, the distribution is very patchy and mainly confined to the two main breeding areas and surrounding fragmented woodlands. The Regent Honeyeater is a generalist forager, although it feeds mainly on the nectar from a	Unlikely	None

Scientific name	Common name	TSC Act	EPBC Act	Habitat assessment	Likelihood of occurrence	Impacts predicted
				relatively small number of eucalypts that produce high volumes of nectar. Key eucalypt species include Mugga Ironbark, Yellow Box, White Box and Swamp Mahogany. Other tree species may be regionally important. For example, the Lower Hunter Spotted Gum forests have recently been demonstrated to support regular breeding events. There are three known key breeding areas, two of them in NSW - Capertee Valley and Bundarra-Barraba regions. The species breeds between July and January in Box-Ironbark and other temperate woodlands and riparian gallery forest dominated by River Sheoak. Regent Honeyeaters usually nest in horizontal branches or forks in tall mature eucalypts and Sheoaks. Flowering eucalypts on the Lot present potential foraging habitat should the species migrate through the area. a significant impact on the species is not expected if the canopy vegetation was removed for any future development.		
Aphelocephala leucopsis	Southern Whiteface		V	PMST predicted. Ground foraging woodland species. Prefers arid open woodlands with shrub understory or grass plains. Not typically present in coastal areas, prefers acacia woodland dominated by mulga scrub. Unlikely to occur on the site and a significant impact on the species is not expected if the canopy vegetation was removed for any future development.	None	None
Artamus cyanopterus cyanopterus	Dusky Woodswallow	V		Dusky Woodswallows are widespread in eastern, southern and south western Australia. The species occurs throughout most of New South Wales, but is sparsely scattered in, or largely absent from, much of the upper western region. Most breeding activity occurs on the western slopes of the Great Dividing Range. Prefers drier open forest often with grassy groundcover, but has been seen in farmland or wetter forested areas occasionally. Not considered likely to inhabit to site with lack of connecting canopy cover and urban nature surrounding.	None	None
Botaurus poiciloptilus	Australasian Bittern	E	E	Australasian Bitterns are widespread but uncommon over south-eastern Australia. In NSW they may be found over most of the state except for the far north-west. Favours permanent freshwater wetlands with tall, dense vegetation, particularly bullrushes (Typha spp.) and spikerushes (Eleocharis spp.). No suitable habitat.	None	None

Scientific name	Common name	TSC Act	EPBC Act	Habitat assessment	Likelihood of occurrence	Impacts predicted
Callocephalon fimbriatum	Gang-gang Cockatoo	V	E	Records in the locality with one breeding record from Broulee. In spring and summer, generally found in tall mountain forests and woodlands, particularly in old growth or heavily timbered wet sclerophyll forests where breeding is most commonly in eucalypt hollows minimum 7 cm in diameter and 3 metres or more above the ground. In autumn and winter, the species often moves to lower altitudes in drier more open eucalypt forests and woodlands, particularly box-gum and box-ironbark assemblages, or in dry forest in coastal areas and is often found in urban areas. May also occur in sub-alpine Snow Gum (*Eucalyptus pauciflora*) woodland and occasionally in temperate rainforests. May utilise gums on the Lot for foraging and the HBT adjacent is considered suitable for the species. Considered in AoS.	Potential	Unlikely
Calyptorhynchus lathami	Glossy Black-Cockatoo	V	V	Records in the locality however neither foraging or breeding habitat present at this site.	None	None
Climacteris picumnus victoriae	Brown Treecreeper (eastern subspecies)	V	V	PMST predicted. Occurs in eucalypt forests and woodlands of inland plains and slopes of the Great Dividing Range. It is less commonly found on coastal plains and ranges. The western boundary of the range of *Climacteris picumnus victoriae* runs approximately through Corowa, Wagga Wagga, Temora, Forbes, Dubbo and Inverell and along this line the subspecies intergrades with the arid zone subspecies of Brown Treecreeper *Climacteris picumnus picumnus* which then occupies the remaining parts of the state. The eastern subspecies lives in eastern NSW in eucalypt woodlands through central NSW and in coastal areas with drier open woodlands such as the Snowy River Valley, Cumberland Plains, Hunter Valley and parts of the Richmond and Clarence Valleys. Unlikely to occur on this site with larger open urban areas surrounding.	None	None
Daphoenositta chrysoptera	Varied Sittella	V		Sedentary, species that inhabits eucalypt forests and woodlands, especially those containing rough-barked species and mature smooth-barked gums with dead branches, mallee and Acacia woodland. Builds a cup-shaped nest of plant fibres and cobwebs in an upright tree fork high in the living tree canopy, and often re-uses the same fork or tree in	None	None

Scientific name	Common name	TSC Act	EPBC Act	Habitat assessment	Likelihood of occurrence	Impacts predicted
				successive years. Not considered likely to utilise the lot with the urban surrounds and lack of connectivity required by this species.		
Dasyornis brachypterus	Eastern Bristlebird	E	E	Predicted only, no records in locality. Mainly a heathland species. No suitable habitat.	None	None
Falco hypoleucos	Grey Falcon	V	V	PMST predicted. Notably a bird of open woodlands in arid regions, rare species to coastal areas. No impact expected.	None	None
Glossopsitta pusilla	Little Lorikeet	V		Known from the area. Reliant on flowering Eucalypts for foraging and HBTs with small entrances for breeding, with entrances c.3cms preferred. Has high nest site fidelity, and mature Eucalypts preferred, often those in riparian areas with greater soil fertility. Flowering eucalypts present represent potential foraging habitat, with the HBT adjacent containing one potentially suitable sized hollow. This trunk hollow was inhabited by a feral bee colony at the time of site visit. Considered in AoS.	Potential	Potential
Grantiella picta	Painted Honeyeater	V	V	PMST predicted only, no records in locality. An inland species that occurs as a rare vagrant in coastal areas. Usually feeds on Mistletoe fruit in Boree/ Weeping Myall (*Acacia pendula*), Brigalow (*A. harpophylla*) and Box-Gum Woodlands and Box-Ironbark Forests. Flowering eucalypts present in the lot represent potential foraging habitat should the species occur as a vagrant to the Broulee area. No breeding habitat on the site. A significant impact on the species is not expected if the canopy vegetation was removed for any future development.	None	None
Haliaeetus leucogaster	White-bellied Sea-Eagle	V	Marine	Large, wide-ranging species known to forage over surrounding beaches, lagoons and creeks. Requires large eucalypts and stags for breeding, which were not seen on this site. Would not be impacted from any future development of the site.	None	None
Lathamus discolor	Swift Parrot	E	E	Migratory species, moving north in autumn/winter via areas with large flowering events. Known to utilise Spotted Gum and Bloodwood flowerings on the coast, with many of the Atlas records being within intact forests west of the Princes Highway. No breeding habitat in NSW. Flowering eucalypts present in the site represent potential foraging habitat, but limited being only 3 Blackbutts. Impact on the species is not		None

Scientific name	Common name	TSC Act	EPBC Act	Habitat assessment	Likelihood of occurrence	Impacts predicted
				expected if the canopy vegetation was removed for any future development.		
Lophoictinia isura	Square-tailed Kite	V		Ranges along coastal and subcoastal areas from south-western to northern Australia, Queensland, NSW and Victoria. In NSW, scattered records of the species throughout the state indicate that the species is a regular resident in the north, north-east and along the major west-flowing river systems. It is a summer breeding migrant to the south-east, including the NSW south coast, arriving in September and leaving by March. Occupies large hunting ranges of more than 100km^2. Preference for timbered watercourses for hunting and nesting, where nest is constructed in a tree fork or horizontal limb. Unlikely to inhabit this site with lack of resources present and a significant impact on the species is not expected if the canopy vegetation was removed for any future development with the surrounding forested areas.	None	None
Melanodryas cucullata cucullata	South-eastern Hooded Robin	V	E	Only one Atlas record of the species from Illawong Nature Reserve in 1974 which was likely a vagrant bird. Prefers open wooded areas with mosaic habitat, especially requires grassy understorey for foraging. Habitat on the site is not suitable for the species.	None	None
Neophema chrysogaster	Orange-bellied Parrot	CE	CE, M	Forages within 5kms of the coast in heathlands. Habitat not present.	None	None
Neophema chrysostoma	Blue-winged Parrot	V		PMST predicted. The Blue-winged Parrot inhabits a range of habitats from coastal, sub-coastal and inland areas, through to semi-arid zones. They tend to favour grasslands and grassy woodlands and are often found near wetlands both near the coast and in semi-arid zones. The species can also be seen in altered environments such as airfields, golf-courses and paddocks. Pairs or small parties of blue-winged parrots forage mainly near or on the ground for seeds of a wide range of native and introduced grasses, herbs and shrubs. Blue-winged parrots breed in Tasmania, coastal south-eastern South Australia and southern Victoria. Unlikely to occur on this site.	None	None
Ninox strenua	Powerful Owl	V		Powerful Owls are associated with a wide range of wet and dry forest types with a high density of prey, such as arboreal mammals, large birds	None	None

Scientific name	Common name	TSC Act	EPBC Act	Habitat assessment	Likelihood of occurrence	Impacts predicted
				and flying foxes (Environment Australia 2000, Debus & Chafer 1994). Large trees with hollows at least 0.5m deep are required for shelter and breeding (Environment Australia 2000). In NSW typically roost under darker canopies close to drainage lines. No breeding habitat on this lot and foraging poor, with only 1 HBT known in surrounding very open environment. No impact expected if vegetation removed for future development.		
Pandion cristatus	Eastern Osprey	V		Requires large water bodies and often found close to the coast. Roosts in large stags or dead crowns of trees close to the ocean. Piscivore diet. No suitable habitat at this site.	None	None
Petroica boodang	Scarlet Robin	V		The Scarlet Robin lives predominantly in dry eucalypt forests and woodlands with an open grassy understorey with few scattered shrubs, and a high level of fallen timber as structure that is important to its hunting style. Occasionally occurs in mallee or wet forest communities, or in wetlands and tea-tree swamps. Nests are built in the fork of tree usually more than 2 metres above the ground often in a dead branch in a live tree, or in a dead tree or shrub. Disperses to more open habitats in Autumn and winter. No suitable habitat with the urban surrounds and lack of ground structure required.	None	None
Pycnoptilus floccosus	Pilotbird		V	Sedentary, insectivorous bird of temperate wet sclerophyll forests and occasionally temperate rainforest. Requires dense undergrowth with abundant debris where they forage in brisk movements through leaf litter for insects etc. No suitable habitat with the urban surrounds and lack of ground habitat.	None	None
Rostratula australis	Australian Painted Snipe	E	E	Requires permanent freshwater with fringing vegetation. No suitable habitat on the site and limited in the immediate locality. No impact is expected.	None	None
Stagonopleura guttata	Diamond Firetail	V	V	PMST predicted. Found in grassy eucalypt woodlands, open forests, mallee, Natural Temperate Grassland, and in secondary grassland derived from other communities. Often found in riparian areas and sometimes in lightly wooded farmland where they forage on the ground. Birds roost in dense shrubs or in smaller nests built especially for roosting. Appears to	None	None

Scientific name	Common name	TSC Act	EPBC Act	Habitat assessment	Likelihood of occurrence	Impacts predicted
				be sedentary, though some populations move locally, especially those in the south. Usually encountered in flocks of between 5 to 40 birds, occasionally more. Breeds between August and January. Nests are globular structures built either in the shrubby understorey, or higher up, especially under hawk's or raven's nests. No suitable habitat.		
Tyto novaehollandiae	Masked Owl	V		Species with large home range (c.1000Ha) that encompasses a wide variety of forest types for foraging. Requires moist heavily vegetated gullies for roosting and breeding. Breeding is in large hollows or sometimes caves. No suitable breeding habitat. Foraging habitat considered low with lack of HBTs and connectivity across the locality. No impact expected if vegetation removed for future development.	None	None
Tyto tenebricosa	Sooty Owl	V		Preferential habitat of rainforest or denser wet sclerophyll areas. Requires large hollows for breeding, often in deep gullies. As for Masked Owl, foraging habitat considered low with lack of HBTs and connectivity across the locality. No impact expected if vegetation removed for future development.	None	None
MAMMALS						
Cercartetus nanus	Eastern Pygmy-possum	V		Will utilise a variety of forest types but prefers heath or open woodlands. Forages for nectar and insects in a variety of eucalypt and upper storey flora such as Banksia. Will use Ringtail dreys, old stumps or hollows for nesting. The usual home-range of an individual is c. 0.35 to 0.68 hectares. They may occupy small patches of vegetation in fragmented landscapes and although the species prefers habitat with a rich shrub understory, they are known to occur in grassy woodlands and the presence of Eucalypts alone is sufficient to support populations in low densities. Habitat considered marginally suitable due to presence of eucalypts, however, small area, lack of flora species diversity and surrounding human induced impacts (roads, domestic pets and clearings) make it highly unlikely that the species could survive on this lot.	Unlikely	Unlikely
Chalinolobus dwyeri	Large-eared Pied Bat	V	V	Roosts in caves (near their entrances), crevices in cliffs, old mine workings and in the disused, bottle-shaped mud nests of the Fairy Martin	None	None

Scientific name	Common name	TSC Act	EPBC Act	Habitat assessment	Likelihood of occurrence	Impacts predicted
				(*Petrochelidon ariel*), frequenting low to mid-elevation dry open forest and woodland close to these features. No suitable habitat on site.		
Dasyurus maculatus	Spotted-tailed Quoll	V	E	Species with large home range. Forages extensively in many forest types but requires fallen timber, caves or large hollows for denning over these areas. No suitable denning habitat and the urban nature of the surrounding area make it less likely this species would occur even though it is known from urban or peri urban areas. In these instances, the Spotted-tailed Quoll is usually predating on chickens. With the level of urban impact in the locality, a significant impact on the species is not expected if the canopy vegetation was removed for any future development.	None	None
Falsistrellus tasmaniensis	Eastern False Pipistrelle	V		Tree roosting microbat usually found in moister forests. Roosts predominantly in hollows, but also caves, old buildings and under loose bark on larger trees. Large home range (c>100ha) and changes roost site very frequently. Blackbutts and the adjacent HBT considered potential roosts. May forage over the Lot and in surrounding urban area.	Potential	Potential
Isoodon obesulus obesulus	Southern Brown Bandicoot (eastern)	E	E	PMST predicted. Predominantly found in heath or forests with a large sedge component in understorey. No suitable habitat on the site.	None	None
Miniopterus orianae oceanensis	Large Bent-winged Bat	V		Has been known to utilise buildings as roosts but prefers caves etc. Forages in forested areas. No suitable roosting habitat. May forage over the Lot and in patches surrounding but unlikely to be impacted from any future potential vegetation removal.	Potential	Unlikely
Micronomus norfolkensis	Eastern Coastal Freetailed-bat	V		Occurs in dry sclerophyll forest, woodland, swamp forests and mangrove forests east of the Great Dividing Range. Roosts mainly in tree hollows but will also roost under bark or in man-made structures. Blackbutts and the adjacent HBT considered potential roosts. May forage over the Lot and in surrounding urban area.	Potential	Potential
Petauroides volans	Greater Glider	E	E	Arboreal species that feeds exclusively on eucalypt leaves, buds, flowers and mistletoe. Shelters during the day in larger tree hollows and will use up to 18 hollows in their home range, of c.1-4ha to which they show strong fidelity. The disjointed canopy connectivity in the area around the site make it highly unlikely this species would occur.	None	None

Scientific name	Common name	TSC Act	EPBC Act	Habitat assessment	Likelihood of occurrence	Impacts predicted
Petaurus australis	Yellow-bellied Glider	V	V	Numerous Atlas records for the Broulee area as close as Heath and Train Streets. Species with a large home range of c.35ha that lives in small family groups. Forages for nectar in canopy, and specific trees are targeted for tapping of sap also. Noticeable marks incised onto these sap trees of which none were seen on trees on this site. Can glide large distances of up to 160m. With only one HBT noted for the area and the wide canopy disconnect especially to the west and north, it is considered highly unlikely the species would use the site or that it provides substantial habitat.	Unlikely	Unlikely
Phascogale tapoatafa	Brush-tailed Phascogale	V		One Atlas record from 2015 from Carroll College grounds. Small, cryptic species that can utilise a variety of forests, but prefers dry sclerophyll forests with good ground cover and grasses. Requires small hollows for denning, preferentially in trees with a <80cms DBH (Van der Ree & Bennett 2001). Changes hollows often. The home range of a single individual in areas with a paucity of hollows is c40-100ha. The one HBT adjacent does not contain suitable hollows for the species. Combined with the urban nature of the area, it is considered unlikely the species would occur.	Unlikely	Unlikely
Phascolarctos cinereus	Koala	E	E	PMST predicted. Lack of connecting habitat is a barrier to the species which is not recorded in a 10km radius of the site and contains no noted suitable feed trees.	None	None
Potorous tridactylus	Long-nosed Potoroo	V	V	PMST predicted. Found in a variety of forests with mosaic understorey of open and dense cover for foraging and denning. No suitable habitat on this site.	None	None
Pseudomys novaehollandiae	New Holland Mouse		V	PMST predicted. Prefers open heathlands, woodlands and forests with a heathland understorey and vegetated sand dunes preferably areas recovering from fire where seed producing flora is diverse. No suitable habitat.	None	None
Pteropus poliocephalus	Grey-headed Flying-fox	V	V	Flowering eucalypts present on the site represent potential foraging habitat. No habitat for roosting camp with nearest being Swamp Oak Forest in the Illawong Nature Reserve area. A significant impact on the	None	None

Scientific name	Common name	TSC Act	EPBC Act	Habitat assessment	Likelihood of occurrence	Impacts predicted
				species is not expected if the canopy vegetation was removed for any future development.		
Saccolaimus flaviventris	Yellow-bellied Sheathtail-bat	V		One Atlas record. Cryptic, summer-migrant to the south coast. Wide distribution and can be found in almost every habitat type from wet and dry sclerophyll forest, to open woodland, Acacia shrubland and mallee. The species predominantly roosts in larger hollows of older trees, but has been known from buildings and sometimes mammal burrows at ground level. Flies above canopy for foraging. With the level of clearing in the locality it is less likely the species uses the site, however with adjacent HBT considered suitable roosting it is considered in AoS.	Potential	Potential
Scoteanax rueppellii	Greater Broad-nosed Bat	V		Prefers tall, wet forests and also preferentially forages along water courses. Recorded along Candlagan Creek in Broulee area. Will utilise open forests but often not far from denser vegetation. Roosts mainly in hollows, dead branches, sometimes buildings. Whilst the HBT may be suitable roosting, the vegetation on the site and larger open areas makes it highly unlikely the species would occur.	Unlikely	Unlikely
Sminthopsis leucopus	White-footed Dunnart	V		The White-footed Dunnart occurs in Tasmania and along the Victorian and southern NSW coast. The Shoalhaven area is the species' northern-most limit. Found in a range of different habitats across its distribution, including coastal dune vegetation, coastal forest, tussock grassland and sedgeland, heathland, woodland and forest, the White-footed Dunnart favours vegetation communities with an open understorey structure (contrasting with populations in Victoria which apparently prefer dense shrub and ground layers). It is patchily distributed across these habitats and, where present, typically occurs at low densities. Adult females usually have small, discrete home ranges, approximately 80 metres in length. Adult males have overlapping home ranges, approximately 100 metres in length, but are capable of making regular exploratory movements of up to 1 km. Shelter in bark nests in hollows, rock crevices, under timber- fallen and standing, burrows in the ground, piles of logging debris, in the 'skirts' of grass trees (Xanthorrhoea spp.) and cycads (Macrozamia spp.). The species is known from the Broulee area though	Unlikely	Unlikely

Scientific name	Common name	TSC Act	EPBC Act	Habitat assessment	Likelihood of occurrence	Impacts predicted
				did not flag in Atlas searches. With the level of urban disturbance surrounding this site and the limited habitats available to the species, it is considered highly unlikely the White-footed Dunnart would occur on the Lot.		
EPBC LISTED MIGRATORY SPECIES						
Migratory terrestrial species						
Cuculus optatus	Oriental Cuckoo		M	No breeding habitat in Australia. Found in monsoonal rainforest, vine thickets, wet sclerophyll forest or open Casuarina, Acacia or Eucalyptus woodlands. Frequently at edges or ecotones between habitat types. Under Commonwealth guidelines for referral (2015) a significant impact is only expected when a proposal will affect substantial important habitat or an ecologically significant proportion of the population. For the Oriental Cuckoo this is 1000 individuals. This reclassification proposal and the potential loss of vegetation on the lot would not impact on the species.		None
Monarcha melanopsis	Black-faced Monarch		M	Wet forest specialist, found mainly in rainforest and wet sclerophyll forest, especially in sheltered gullies and slopes with a dense understorey of ferns and/or shrubs. Under Commonwealth guidelines for referral (2015) a significant impact is only expected when a proposal will affect substantial important habitat or an ecologically significant proportion of the population. For the Black-faced Monarch this is 460 individuals. This reclassification proposal and the potential loss of vegetation on the lot would not impact on the species.		None
Myiagra cyanoleuca	Satin Flycatcher		M	Summer breeding migrant to south coast so uncommon in area. They are particularly common in tall wet sclerophyll forest, often in gullies or along water courses. In woodlands they prefer open, grassy woodland types. During migration, habitat preferences expand, with the species recorded in most wooded habitats except rainforests. Under Commonwealth guidelines for referral (2015) a significant impact is only expected when a proposal will affect substantial important habitat or an ecologically significant proportion of the population. For the Satin Flycatcher this is		None

Scientific name	Common name	TSC Act	EPBC Act	Habitat assessment	Likelihood of occurrence	Impacts predicted
				1700 individuals. This reclassification proposal and the potential loss of vegetation on the lot would not impact on the species.		
Rhipidura rufifrons	Rufous Fantail		M	Prefers wetter forested habitat but also known from riparian or mangrove vegetation and open forests during migration. Under Commonwealth guidelines for referral (2015) a significant impact is only expected when a proposal will affect substantial important habitat or an ecologically significant proportion of the population. For the Rufous Fantail this is 4800 individuals. This reclassification proposal and the potential loss of vegetation on the lot would not impact on the species.		None
Symposiachrus trivirgatus	Spectacled Monarch		M	Dense vegetation, mainly in rainforest but also in moist forest or wet sclerophyll and occasionally in other dense vegetation such as mangroves, drier forest and woodlands. Under Commonwealth guidelines for referral (2015) a significant impact is only expected when a proposal will affect substantial important habitat or an ecologically significant proportion of the population. For the Spectacled Monarch this is 650 individuals. This reclassification proposal and the potential loss of vegetation on the lot would not impact on the species.		
Migratory marine bird/other species (list attached in Appendix B)			M	Marine species have come up in the EPBC Act species search due to the site occurring in the vicinity of marine habitat. However, the site does not provide preferred or suitable nesting, breeding or foraging habitat for such species.		None
Migratory wetlands bird species (list attached in Appendix D – EPBC Act search)			M	The work site does not represent preferred or suitable nesting, breeding or foraging habitat for such species. Suitable habitat does occur in the locality but would not be affected by the proposal.		None

APPENDIX B- 5 PART TEST (BC ACT LISTED ENTITIES)

Under section 7.3 of the BC Act, five factors are to be considered by consent authorities when determining if a proposed development or activity 'is likely to have a significant effect on the threatened species, populations or ecological communities, or their habitats' when considering a development proposal or development application. Should a significant impact be found, a Species Impact Statement (SIS) is required. Whilst no specific development is proposed for either if these sites under a planning proposal, this report assesses a worst case scenario of total vegetation loss at each lot for any future proposed development.

As such, AoS in line with the BC Act were undertaken for the following threatened species and are set out below:

SOUTH DURRAS

1. *Daphoenositta chrysoptera* (Varied Sitella)
2. *Cercartetus nanus* (Eastern Pygmy Possum)
3. *Petauroides volans* (Greater Glider)
4. *Petaurus australis* (Yellow-bellied Glider)
5. *Sminthopsis leucopus* (White-footed Dunnart)

BROULEE

1. Bangalay Sand Forest of the Sydney Basin and South East Corner bioregions
2. *Callocephalon fimbriatum* (Gang-gang Cockatoo)
3. *Glossopsitta pusilla* (Little Lorikeet)
4. *Falsistrellus tasmaniensis* (Eastern false Pipstrelle)
5. *Micronomus norfolkensis* (Eastern Coastal Freetailed Bat)
6. *Saccolaimus flaviventris* (Yellow-bellied Sheathtail-bat

SOUTH DURRAS

1. Varied Sitella

The Varied Sittella is a small highly social bird that inhabits most of mainland Australia except deserts and open grasslands. On the coast the Varied Sitella is considered mainly sedentary, whilst inland small groups are nomadic. The species requires eucalypt forests and woodlands, especially those containing rough-barked species and mature smooth-barked gums with dead branches, mallee and Acacia woodland where it forages high in treetops for insects. Small "clans" or pairs occupy a territory of between 13-20ha, though it is noted these are "weakly" defended (Noske 1998). Nesting occurs in a cup-shaped nest of plant fibres and cobwebs built in an upright tree fork high in a living tree, with the same tree/fork often re-used in successive years. Approximately 19% of the species' distribution occurs on NSW National Parks and Wildlife Service estates with suitable habitat (OEH, 2023c). According to OEH (2023c), the Varied Sittella is threatened by the following:

- The sedentary nature of the Varied Sittella makes cleared land a potential barrier to movement.
- The Varied Sittella is adversely affected by the dominance of Noisy Miners in woodland patches.
- Threats include habitat degradation through small-scale clearing for fencelines and road verges, rural tree decline, loss of paddock trees and connectivity, 'tidying up' on farms, and firewood collection.
- Infestation of habitat by invasive weeds.
- Inappropriate fire regimes.
- Climate change impacts including reduction in resources due to drought.
- Overgrazing by stock impacting on leaf litter and shrub layer.

Many of these threats are related to shrinking and or simplification of habitat patches which, along with the movement barriers caused by larger clearings, lessens the viability of populations.

(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,

Eight Atlas records for the species in a 10km radius occurred from 1985 to 2010; all are within Murramarang National Park. The extensive surveys done by Craven & Daly (2021) did not identifiy the Varied Sitella in the NP or larger forested areas within their survey area.As the species is known to be adversely affected by cleared land, which acts as a barrier to movement, dispersal and breeding success, it is highly likely the Varied Sitella is already affected by historical development within the South Durras village. As even narrow clearings, such as roads and fencelines are noted as threats that can destabilize a population, again it is likely this is already in effect in the South Durras area and that Lot 84 DP 259212 is marginal habitat. Limited habitat occurs on the site to provide foraging and breeding for a flock, again with APZ activities removing structural elements that may have provided breeding (mid storey vegetation and dead branches in living trees). In regards to (a), with the proximity of larger more contiguous patches of woodland habitat favoured by the species, the loss of 1251m^2 in an already modified environment would not adversely affect the life cycle of the species such that a viable local population of the species was likely to be placed at risk of extinction.

(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,

No TEC was identified for Lot 84 DP 294212. No impact on any TEC is expected.

(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.

(i) The proposed reclassification will not remove vegetation. However, potential future development of the site would require assessment of the vegetation under any building and Planning for Bushfire Regulations 2019. This would likely see 1251m^2 of canopy and ground vegetation altered or removed.

(ii) The proposed development/activity will not isolate or fragment the subject areas of habitat from other areas of habitat beyond those that already exist.

(iii) The habitat at the site is in a disturbed condition, with existing threatening processes already in operation. It is considered that the habitat at Lot 84 DP 259212 is marginal for the Varied Sitella. There will be no impact on the long-term survival of Varied Sitella in the locality from any future clearing of the site.

(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).

There are no declared areas of outstanding biodiversity value in the locality (OEH 2023c)**.**

(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.

Potential future clearing constitutes the following key threatening processes (KTP), listed under Schedule 4 of the BC Act (OEH 2020):
Clearing of native vegetation. Whilst clearing of small areas under 2Ha is described as a potential significant impact on biological diversity under the KTP, the removal of habitat at South Durras is not considered to:

- result in loss of local populations of individual species,
- increase fragmentation in the locality,
- expand dryland salinity or riparian zone degradation,
- substantially Increase greenhouse gas emissions,
- increase habitat for invasive species bar humans,
- leaf litter on the site is already impacted from APZ management activities, or
- disrupt ecological functions of PCTs or change soil biota in the locality.

2. Eastern Pygmy Possum

The Eastern Pygmy Possum is a small marsupial with a prehensile tail that is reliant on nectar and pollen collected from banksias, eucalypts and bottlebrushes, along with soft fruits when flowers are unavailable. The Eastern Pygmy-possum is found from southern Queensland to eastern South Australia and in Tasmania. In NSW it extends from the coast inland as far as the Pilliga, Dubbo, Parkes and Wagga Wagga on the western slopes. The species is found in a broad range of habitats from rainforest in north-eastern NSW through to sclerophyll (including Box-Ironbark) forest and woodland to heath. Woodlands and heath appear to be preferred in southern NSW and the presence of a suitable range of foraging species is a deciding factor in the presence of the species at a site ((Tulloch & Dickman 2006). Individuals utilise several nests over a home range of c.0.68 hectares for males and c.0.35 hectares for females. They may occupy small patches of vegetation in fragmented landscapes and although the species prefers habitat with a rich shrub understory, they are known to occur in grassy woodlands and the presence of Eucalypts alone is sufficient to support populations in low densities (OEH, 2023a). Individuals are mainly solitary though some communal nests are recorded.

The following threats are noted for the species:

- Loss and fragmentation habitat through land-clearing for agriculture, forestry and urban development.
- Changed fire regimes that affect the abundance of flowering proteaceous and myrtaceous shrubs, particularly banksias.
- Declining shrub diversity in forests and woodlands due to overgrazing by stock and rabbits.
- Predation from cats and foxes.
- Loss of nest sites due to removal of firewood.
- Mortality on roads through habitat and movement areas.
- Predation from dogs.
- Insufficient understanding of distribution and/or abundance.

Two Atlas records are known for the species in 2014 and 2018, both from North Durras.

(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,

Lot 84 DP 259212 provides highly limited habitat for the species being only 0.1251Ha and bordered by roads, houses and other breaks in habitat connectivity. The Eastern Pygmy Possum is not noted to glide relying on its tail to help it swing between larger trees, and therefore substantial breaks in mid and canopy storey vegetation would affect the ability of the species to remain as a viable local population. Roads form a c.12m ground opening across Banyandah St and Village Rd and c.8-10m in canopy that would highly likely affect the movement of the Eastern Pygmy Possum. Many of the noted threats are already in existence in the South Durras area with the lot surrounded by urban development and the presence of domestic cats and dogs noted. The site is also the subject of APZ clearing activities that would remove ground denning habitat and potential food resources, and is a pedestrian walkway. All these factors would impact on the ability of the Eastern Pygmy Possum to remain on the site or use it as part of a home range of a viable local population. Therefore, whilst any future development application in relation to the lot would require further assessment for the species, in regards to (a) it is unlikely that the removal of the vegetation on the site would adversely affect the life cycle of the species such that a viable local population of the species is likely to be placed at risk of extinction.

(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,

No TEC was identified for Lot 84 DP 294212. No impact on any TEC is expected.

(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.

(i) Potential future development of the site would require assessment of the vegetation under planning instruments such as Planning for Bushfire Protection 2019. This may see 1251m^2 of vegetation altered or removed.

(ii) This potential clearing would remove the habitat but would not isolate or fragment the surrounding vegetation further than the fragmentation already present in the locality.

(iii) The habitat on Lot 84 DP 259212 is disturbed from APZ activities with existing threatening processes already in operation (modification of vegetation/human impacts/domestic pets). It is considered that the habitat at Lot 84 DP 259212 is marginal for the Eastern Pygmy Possum. There will be no impact on the long-term survival of the species in the locality from any future clearing of the site.

(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).

There are no declared areas of outstanding biodiversity value in the locality (OEH 2023c)**.**

(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.

Potential future clearing constitutes the following key threatening processes (KTP), listed under Schedule 4 of the BC Act (OEH 2020):
Clearing of native vegetation. Whilst clearing of small areas under 2Ha is described as a potential significant impact on biological diversity under the KTP, the removal of habitat at South Durras is not considered to:

- result in loss of local populations of individual species,
- increase fragmentation in the locality,
- expand dryland salinity or riparian zone degradation,
- substantially Increase greenhouse gas emissions,
- increase habitat for invasive species bar humans,
- leaf litter on the site is already impacted from APZ management activities, or
- disrupt ecological functions of PCTs or change soil biota in the locality.

3. Greater Glider

The Greater Glider is a usually solitary arboreal mammal with a preference for larger hollows on older trees that they require for denning/breeding. Up to 18 hollows are used in a home range of an individual. Vegetation types favoured by the species are old growth, or moist forests. Home range is 2-4 ha, though this can be up to 16ha in poorer quality forest types. Males move over larger areas than females. Young are born March to June, and remain pouched for four months, gaining independence at about nine months of age (Jan-March of the following year). Greater Gliders can glide up to 100m in a single glide where required. The species is extremely sensitive to:

- fire disturbance.
- Fragmentation (due to small home ranges and an inability to disperse over large open tracts of land).
- Predation from forest owls
- Barbed wire entanglement.
- Competition with larger parrots for hollows.

(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,

Lot 84 DP 259212 does not provide essential habitat features for a Greater Glider, with no denning habitat on the site. Hollow-bearing trees do occur in neighbouring lots though none could be assessed for this report for suitability for the species. It is likely that Murramarang NP area contains ample suitable denning, though Craven and Daly (2021) only identified three occurrences of the Greater Glider in extensive surveys in 2020-2021 suggesting the fire disturbance from 2019-2020 has affected the population in the locality.

Any future clearing of the vegetation on this site would remove foraging and connectivity for the species from Village Rd to vegetation on the eastern side of Banyandah St. This is likely the home range of an individual Glider. Whilst disruptive, the loss in connectivity from clearing of 1251m^2 would not stop an individual or the species moving through the village, with other canopy pathways on surrounding lots, nor within the locality as larger, more intact forested areas to the south and west, including what is considered an important habitat on crown land to the north of Durras Drive (Craven & Daly 2021), is still available. Therefore, with consideration of (a), the potential loss of vegetation on the lot would not have an adverse effect on the life cycle of the Greater Glider such that a viable local population of the species is likely to be placed at risk of extinction.

(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,

No TEC was identified for Lot 84 DP 294212. No impact on any TEC is expected.

(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.

(i) Potential future development of the site would require assessment of the vegetation under planning instruments such as *Planning for Bushfire Protection* 2019. This may see 1251m^2 of canopy and ground vegetation altered or removed.

(ii) This potential clearing would remove the habitat but would not isolate or fragment the surrounding vegetation further than the fragmentation already present in the locality.

(iii) The habitat on Lot 84 DP 259212 is disturbed from APZ activities with existing threatening processes already in operation (modification of vegetation/human impacts/domestic pets). As no denning/breeding habitat occurs on the lot and ample foraging resources occur in the locality, there will be no impact on the long-term survival of the Greater Glider (southern) should vegetation be removed.

(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).

There are no declared areas of outstanding biodiversity value in the locality (OEH 2023c)**.**

(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.

Potential future clearing constitutes the following key threatening processes (KTP), listed under Schedule 4 of the BC Act (OEH 2020):
Clearing of native vegetation. Whilst clearing of small areas under 2Ha is described as a potential significant impact on biological diversity under the KTP, the removal of habitat at South Durras is not considered to:

- result in loss of local populations of individual species,
- increase fragmentation in the locality,
- expand dryland salinity or riparian zone degradation,
- substantially Increase greenhouse gas emissions,
- increase habitat for invasive species bar humans,
- leaf litter on the site is already impacted from APZ management activities, or
- disrupt ecological functions of PCTs or change soil biota in the locality.

4. Yellow-bellied Glider

The Yellow-bellied Glider has a wide distribution along the east coast and adjacent ranges from north Queensland to western Victoria (Menkhorst and Knight 2001). However, its occurrence within this range is patchy and population density is generally very low and often based on availability of a range of plant exudates and proteins they can utilise. This includes sap, manna (a substance formed by exudation of sap at the site of insect damage on branchlets and foliage of eucalypts and angophoras) and nectar/pollen of eucalypt flowers, honeydew (excretions of certain sap-sucking insects), and protein by foraging for invertebrates mostly under the peeling bark of smooth-barked eucalypts.

Because Yellow-bellied Gliders exploit food resources which are largely ephemeral in nature, they require large home ranges and are extremely mobile. Goldingay (1989) found that seasonally (summer) they spend the entire night out of their dens and, in this time, they spend 90% of the time foraging. They are known to be capable of glides of more than 100 metres in length (Goldingay and Possingham 1995). At times when other food resources are limited, they can be heavily dependent on eucalypt sap, which is licked from incisions which they make in the bark of selected trees (Eyre and Goldingay 2005).

Kavanagh (1987) found that gliders selectively foraged in larger trees of more than 80 cm DBH. Only when foraging for insects under bark did they utilise smaller (<40 cm diameter) trees. This author has seen numerous sap trees in the 30-40cms DBH range in a variety of eucalypt species. Large trees though also provide hollows that the species relies on for day shelter and for breeding.

According to OEH (2023c), the Yellow-bellied Glider is threatened by the following:

- Loss and fragmentation of habitat.
- Loss of hollow-bearing trees.
- Loss of feed trees.
- Barbed wire entanglement is also an identified threat to the species.

There are two main habitat requirements for this species, large old trees containing hollows to provide den sites, and a sufficient diversity of eucalypt species to provide them with the range of food resources they require throughout the year. Lot 84 DP 2592121 provided no denning habitat but does have a diversity of eucalypt species for foraging of the species.

(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,

As per the Greater Glider, Lot 84 DP 259212 does not provide essential habitat features for a family of Yellow-bellied Gliders, being only 1251m^2 in size and with no denning habitat on the site. The vegetation within the village provides good foraging resources for the Yellow-bellied Glider, though much of this is at risk as it is within private landholdings. That on Lot 84 DP 259212 is also potential foraging and any future clearing would remove this and an easy connection for the species between Village Rd and the eastern side of Banyandah St. However, this loss in connectivity would not stop the species moving through the village, with other canopy pathways on surrounding lots. Within the locality the larger, more intact forested areas to the south and west provide strong foraging and movement areas and also linkages into South Durras village vegetation. Craven and Daly noted a known movement corridor from Murramarang NP south of Murramarang Crescent into trees within lots along Village Drive. Considered in the light of that available within Murramarang NP, foraging availability in the village is minor however, and denning habitat is most likely less well represented to the point the village would not provide a core range for a family group.

Therefore, in regards to (a) the potential loss of the vegetation on the lot, whilst disruptive, would not 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.

(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,

No TEC was identified for Lot 84 DP 294212. No impact on any TEC is expected.

(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.

(i) Potential future development of the site would require assessment of the vegetation under planning instruments such as *Planning for Bushfire Protection* 2019. This may see 1251m^2 of canopy and ground vegetation altered or removed.

(ii) This potential clearing would remove the habitat but would not isolate or fragment the surrounding vegetation further than the fragmentation already present in the locality.

(iii) The habitat on Lot 84 DP 259212 is disturbed from APZ activities with existing threatening processes already in operation (modification of vegetation/human impacts/domestic pets). As no denning/breeding habitat occurs on the lot and ample foraging resources occur in the locality, there will be no impact on the long-term survival of the Yellow-bellied Glider should vegetation be removed.

(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).

There are no declared areas of outstanding biodiversity value in the locality (OEH 2023c)**.**

(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.

Potential future clearing constitutes the following key threatening processes (KTP), listed under Schedule 4 of the BC Act (OEH 2020):
Clearing of native vegetation. Whilst clearing of small areas under 2Ha is described as a potential significant impact on biological diversity under the KTP, the removal of habitat at South Durras is not considered to:

- result in loss of local populations of individual species,
- increase fragmentation in the locality,
- expand dryland salinity or riparian zone degradation,
- substantially Increase greenhouse gas emissions,
- increase habitat for invasive species bar humans,
- leaf litter on the site is already impacted from APZ management activities, or
- disrupt ecological functions of PCTs or change soil biota in the locality.

5. White-footed Dunnart

Mouse-like marsupial carnivore that occurs in Tasmania and along the Victorian and southern NSW coast. The Shoalhaven area is the species' northern-most limit. It has not been recorded west of the coastal escarpment with the western-most record being from Coolangubra State Forest, approximately 10 km south-east of Bombala. The species is found in a range of habitats, including coastal dune vegetation, coastal forest, tussock grassland and sedgeland, heathland, woodland and forest but prefers disturbed or open understorey structure (contrasting with populations in Victoria which apparently prefer dense shrub and ground layers). It is patchily distributed across these habitats and, where present, typically occurs at low densities.

Home range and movement patterns of this species vary according to sex. Adult females usually have small, discrete home ranges, approximately 80 metres in length. Adult males have overlapping home ranges, approximately 100 metres in length, but are capable of making regular exploratory movements of up to 1 km.

White-footed Dunnarts appear to have only one short breeding season during their lifetime. In NSW and Victoria, mating occurs in late July and August. From August to September, up to ten young are born, each about 3 mm long. At two months, the young detach from the mothers' teats and are suckled in the nest for about a month before dispersing.

The White-footed Dunnart is an opportunistic carnivore that feeds on a variety of ground-dwelling invertebrates and, occasionally, small lizards.

They shelter in bark nests in hollows under fallen or standing timber, burrows in the ground, piles of logging debris, in the 'skirts' of grass trees Xanthorrhoea spp. and cycads Macrozamia spp. and rock crevices.

Identified threats to the species include (OEH, 2023c):

- Loss and fragmentation of habitat resulting from land clearing for residential and agricultural developments.
- Modification and disturbance of habitat in coastal forest and foredune complex vegetation by camping and other recreational activities.
- Predation by foxes and cats.
- Collection of firewood from areas of habitat, including standing dead timber and logs on the ground.
- Fire regimes that result in continual absence of cover or thick regeneration may be deleterious.
- Habitat disturbance that results in the development of high density regrowth over substantial areas.

(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,

Lot 84 DP 259212 provides limited habitat for the species being bordered by roads, houses and other breaks in habitat connectivity that would affect the dispersal of individuals and the viability of a population on the lot. Roads form a c.12m ground opening across Banyandah St and Village Rd that would highly likely affect the movement of the White-footed Dunnart. Many of the noted threats to the species are already in existence in the South Durras area with the lot surrounded by urban development, the presence of domestic cats and dogs noted and the APZ clearing activities that would remove ground denning habitat and potential food resources. The site is also a pedestrian walkway that would disturb the species. All these factors would impact on the ability of the White-footed Dunnart to remain on the site or use it as part of a home range of a viable local population. Therefore, in regards to (a), whilst any future development application in relation to the lot would require further assessment for the species, it is unlikely that the removal of the vegetation on the site would adversely affect the life cycle of the species such that a viable local population of the species is likely to be placed at risk of extinction.

(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,

No TEC was identified for Lot 84 DP 294212. No impact on any TEC is expected.

(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.

(i) Potential future development of the site would require assessment of the vegetation under planning instruments such as Planning for Bushfire Protection 2019. This may see 1251m^2 of canopy and ground vegetation altered or removed.

(ii) This potential clearing would remove the habitat but would not isolate or fragment the surrounding vegetation further than the fragmentation already present in the locality.

(iii) The habitat on Lot 84 DP 259212 is disturbed from APZ activities with existing threatening processes already in operation (modification of vegetation/human impacts/domestic pets). It is considered the habitat is not significant to the long-term survival of the White-footed Dunnart in the locality.

(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).

There are no declared areas of outstanding biodiversity value in the locality (OEH 2023c)**.**

(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.

Potential future clearing constitutes the following key threatening processes (KTP), listed under Schedule 4 of the BC Act (OEH 2020):
Clearing of native vegetation. Whilst clearing of small areas under 2Ha is described as a potential significant impact on biological diversity under the KTP, the removal of habitat at South Durras is not considered to:

- result in loss of local populations of individual species,
- increase fragmentation in the locality,
- expand dryland salinity or riparian zone degradation,
- substantially Increase greenhouse gas emissions,
- increase habitat for invasive species bar humans,

- leaf litter on the site is already impacted from APZ management activities, or
- disrupt ecological functions of PCTs or change soil biota in the locality.

BROULEE

1. Bangalay Sand Forest

(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,
N/A

(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,

(i) Potential future clearing of vegetation at Lot 74 DP 776212, Broulee could see the removal of c. 479m^2 of vegetation that is a highly disturbed remnant of the EEC *Bangalay Sand Forest of the Sydney Basin and South East Corner Bioregions*. The vegetation on the lot is isolated from other more intact patches of the EEC and equates to 0.006% of the known occurrence of the EEC in a 1.5km radius. Within the Broulee area the PCT 3638 is extensive, with the nearby Broulee Nature Reserve to the south of Broulee an area of c.300ha of predominately this PCT.

(ii) Any future loss of the vegetation on Lot 74 DP 776212 would not adversely modify the composition of the ecological community such that its local occurrence would be placed at risk of extinction. The EEC on the site is isolated from other stands by urban development and roads. On the Lot it is highly modified with exotic flora species infiltration and a lack of native flora diversity.

(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.

(i) The proposed reclassification will not remove vegetation. However, potential future development of the site would require assessment of the vegetation under planning instruments such as Planning for Bushfire Protection 2019. This may see 479m^2 of vegetation altered or removed.

(ii) Any future activity could not further isolate or fragment the lot from other areas of the EEC.

(iii) The EEC on Lot 74 DP 776212 is already in a highly disturbed condition, with existing threatening processes already in operation (weeds, human encroachment) and not considered important for the long-term survival of the ecological community in the locality.

(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).

There are no declared areas of outstanding biodiversity value in the locality (OEH 2023c)**.**

(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.

Potential future clearing constitutes the following key threatening processes (KTP), listed under Schedule 4 of the BC Act (OEH 2020):

Clearing of native vegetation. Due to the small area of the lot and the level of exotic and non-endemic native flora species already present on the site, any future clearing is not considered to constitute in an increase in the impact of this KTP.

2. Gang-gang Cockatoo

Gang-gang Cockatoo occurs in NSW, Victoria, far south-east of South Australia and northern Tasmania (OEH 2023a). In NSW, the species is regularly recorded from the south-east corner to the Hunter area and inland to the Central Tablelands, South-west Slopes (OEH 2023a). Gang-gang Cockatoo have a strong affinity to open forest and woodlands with an acacia understory (NSWSC 2008). They are a highly mobile species and are considered a partial or altitudinal migrant with individuals known to breed in moist highland forests and move to more open habitats at lower elevations during winter (NSWSC 2008).

Gang-gang Cockatoo occur in pairs, family groups and small flocks. Fidelity to nesting locations is considered strong (NSWSC 2008) and breeding aggregations are known where suitable nesting hollows are within a few hundred metres of each other (DAWE 2022). Therefore, the species favours old growth forest and woodland with these attributes for nesting and roosting (OEH 2023a). These are often near water also (Beruldsen 1980 cited in DAWE 2022). Nests are located in hollows that are 7cm in diameter or larger and at least 3m above the ground in eucalypts (OEH 2023a).

The Gang-gang Cockatoo is threatened by the following (OEH 2023a):

- Loss of key breeding and foraging habitat from intensive wildfire events and inappropriate hazard reduction burns
- Loss and degradation of breeding and foraging habitat from rural and urban development
- Loss of breeding and foraging habitat from forestry management practices
- Climate change impacts to habitat suitability and distribution
- Psittacine circovirus disease (PCD)
- Lack of knowledge of locations of key breeding habitat and breeding ecology and success
- Infestation of habitat by invasive weeds.
- Aggressive exclusion from forest and woodland habitat by over abundant Noisy Miners.

The Gang-gang Cockatoo is well recorded in the Broulee area with one record of a successful breeding within Bangalay Sand Forest to the rear of the village, but quite close to houses, in the summer of 2022. This area has since been cleared for residential development. No previous breeding for the species was known in the Broulee area. It may have been that Broulee provided greater food security in the form of gardens and unburnt forest for a breeding attempt than sites in forest still recovering from the 2020 Currowan fires.

(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,

Whilst the proposed reclassification may see the future removal of c.479m^2 of suitable foraging habitat for this species, this equates to three Blackbutts and a very small fraction of that available in the locality. Suitable breeding sites exist in the Broulee Nature Reserve to the south and in forested areas east and west of George Bass Drive with more extensive canopy cover should the species continue to use the Broulee area for breeding. The loss of vegetation on Lot 74 DP 776541 would leave the adjacent HBT in isolation. Whilst this HBT provides one suitable hollow for the species (another is inhabited by exotic bees) it is considered less likely the Gang Gang would use the HBT for nesting with the limited surrounding canopy. In regards to (a), the loss of a small amount of foraging habitat on the life cycle this species, and the isolation of one potential nesting tree, is not considered likely to adversely affect the Gang-gang Cockatoo to the extent that a viable local population would be placed at risk of extinction.

(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,

Addressed above.

(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.

(i) The proposed reclassification will not remove vegetation. However, potential future development of the site would require assessment of the vegetation under any building and Planning for Bushfire Regulations 2019. This would likely see 479m^2 of mixed native-exotic vegetation altered or removed.

(ii) The proposed development/activity will not isolate or fragment the subject area from other areas of habitat beyond that which already exists.

iii) The habitat at Lot 74 DP 776541 is already in a highly disturbed condition, with existing threatening processes already in operation (modification of vegetation/human impacts/domestic pets). It is considered the habitat is not significant to the long-term survival of the Gang-gang Cockatoo in the locality.

(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).

There are no declared areas of outstanding biodiversity value in the locality (OEH 2023c)**.**

(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.

Potential future clearing constitutes the following key threatening processes (KTP), listed under Schedule 4 of the BC Act (OEH 2020):

Clearing of native vegetation. Due to the small area of the lot and the level of exotic and non-endemic native flora species already present on the site, any future clearing is not considered to constitute in an increase in the impact of this KTP.

3. Little Lorikeet

The Little Lorikeet is a gregarious and nomadic species, following food sources being flowering eucalypts/angophoras, melaleucas or mistletoes. Utilises a variety of habitats but riparian areas are targeted for richer fertility providing higher foraging resources. Breeding occurs from May to September, with very small hollows (c.3cms) anywhere from 2 to 15m utilised (OEH 2023a).

Threats to the species include (OEH 2023a):

- Extensive clearing of woodlands, especially those with older eucalypts, for agriculture, roadworks and fence construction, continues to destroy habitat and it will be decades before revegetated areas supply adequate forage sites.
- The loss of old hollow bearing trees has reduced nest sites, and increased competition with other native and exotic species that need large hollows with small entrances to avoid predation.
- Felling of hollow trees for firewood collection or other human demands increases this competition.
- Competition with the introduced Honeybee for both nectar and hollows exacerbates these resource limitations.
- Infestation of habitat by invasive weeds.
- Inappropriate fire regimes.
- Aggressive exclusion from forest and woodland habitat by over abundant Noisy Miners.
- Climate change impacts including reduction in resources due to drought.
- Degradation of woodland habitat and vegetation structure due to overgrazing.

(c) 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,

Whilst the proposed reclassification may see the future removal of c.479m^2 of suitable foraging habitat for this species, this equates to three Blackbutts and a very small fraction of that available in the locality. Suitable breeding sites exist in the Broulee Nature Reserve to the south and in forested areas west of George Bass Drive, and along Candlagan Creek and Tomaga River, whilst none occur on this site. The one suitable hollow for the species seen in the HBT adjacent was inhabited by exotic bees. The loss of a small amount of foraging habitat on the life cycle this species, such that a viable local population would be placed at risk of extinction, is not considered likely from any potential future clearing.

(d) in the case of an endangered ecological community or critically endangered ecological community, whether the proposed development or activity:

(iii) 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

(iv) 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,

Addressed above.

(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.

(i) The proposed reclassification will not remove vegetation. However, potential future development of the site would require assessment of the vegetation under any building and Planning for Bushfire Regulations 2019. This would likely see 479m^2 of mixed native and exotic vegetation altered or removed.

(ii) The proposed development/activity will not isolate or fragment the subject areas of habitat from other areas of habitat beyond those that already exist.

iii) The habitat at Lot 74 DP 776541 is already in a highly disturbed condition, with existing threatening processes already in operation (modification of vegetation/human impacts/domestic pets). It is considered the habitat is not significant to the long-term survival of the Little Lorikeet in the locality.

(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).

There are no declared areas of outstanding biodiversity value in the locality (OEH 2023c)**.**

(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.

Potential future clearing constitutes the following key threatening processes (KTP), listed under Schedule 4 of the BC Act (OEH 2020):

Clearing of native vegetation. Due to the small area of the lot and the level of exotic and non-endemic native flora species already present on the site, any future clearing is not considered to constitute in an increase in the impact of this KTP.

4-6. Forest Bats (Eastern False Pipistrelle, Eastern Coastal Freetail-Bat and Yellow-bellied Sheathtail-bat)

These microbat species are all considered forest dependent species that may utilize human made structures or loose bark as roosting in some instances (Churchill 2008; OEH 2023a). Habitat essential to lifecycles include forest (foraging habitat) that contains HBT's (roost and breeding sites) and/or suitable buildings and trees that shed thick bark that may be used for shelter on occasions. The site and the locality include one known HBT that could be utilised by these species.

OEH (2023a) identifies the following threats to these species:

- Disturbance to roosting and summer breeding sites.
- Foraging habitats are being cleared for residential and agricultural developments, including clearing by residents within rural subdivisions.
- Loss of hollow-bearing trees; clearing and fragmentation of forest and woodland habitat.
- Pesticides and herbicides may reduce the availability of insects, or result in the accumulation of toxic residues in individuals' fat stores.
- Loss or disturbance of roosting sites
- Clearing adjacent to foraging areas.
- Reduction in stream water quality affecting food resources.
- Loss of foraging habitat.
- Loss of HBT's.
- Application of pesticides in or adjacent to foraging areas.
- Artificial light sources spilling onto foraging and/or roosting habitat
- Large scale wild fire or hazard reduction burns on foraging and/or roosting habitat.

Based on the threats, clearing of known or potential foraging habitat is of relevance when considering the impacts of any future development of the site. Whilst no clearing is proposed for the reclassification, and some of Lot 74 DP 776212 will remain as operational land for the ESC sewer line that runs through the site, the sale of the land or incorporation into surrounding lots may see the vegetation open to removal under other planning instruments such as Asset Protection rules.

(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,

Microchiropteran bats are generally regarded as highly mobile fauna, extending their foraging ranges over tens of kilometres from their roosting sites and changing roosts within an area frequently to avoid predation, parasites, and changes in microclimate (Evans 2009; Pavey 1998; Pavey and Burwell 2004; Pennay and Freeman 2005). In addition, many urban microbats prefer hollows or bark within structurally diverse vegetation, and not within open cleared spaces (Threlfall et al 2013) such as that around the HBT in the adjacent Crown Lands reserve. Artificial lighting can affect some microbat species also, with others benefiting from feeding near lighting such as street lamps or at sporting ovals. The Eastern Coastal Freetail-bat was found in a 2013 study (Law et al) to prefer sparsely vegetated riparian areas rather than urban dense, well-lit sites.

The site provides some foraging for microbats, though it is limited in size and it is likely that bats are using wide ranging suitable vegetation, including Candlagan Creek. If future clearing of the vegetation on Lot 74 DP 776541 occurred, it would be unlikely to affect the life cycle of the any of these microbats such that a viable local population of the species is likely to be placed at risk of extinction.

(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,

Addressed above.

(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.

(i) The proposed reclassification will not remove vegetation. However, potential future development of the site would require assessment of the vegetation under any building and Planning for Bushfire Regulations 2019. This would likely see 479m^2 of canopy and ground vegetation altered or removed.

(ii) The proposed development/activity will not isolate or fragment the subject area from other areas of habitat beyond that which already exists.

iii) The habitat at Lot 74 DP 776541 is already in a highly disturbed condition, with existing threatening processes already in operation (modification of vegetation/human impacts/domestic pets). It is considered the habitat is not significant to the long-term survival of these three microbat species in the locality.

(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).

There are no declared areas of outstanding biodiversity value in the locality (OEH 2023c)**.**

(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.

Potential future clearing constitutes the following key threatening processes (KTP), listed under Schedule 4 of the BC Act (OEH 2020):

Clearing of native vegetation. Due to the small area of the lot and the level of exotic and non-endemic native flora species already present on the site, any future clearing is not considered to constitute in an increase in the impact of this KTP.

APPENDIX C- SIGNIFICANT IMPACT ASSESSMENT (EPBC ACT)

This section provides an assessment of the potential significance of impacts from the proposed activity on Matters of National Environmental Significance (MNES). The EPBC Act Significant Impact Guidelines 1.1 (DEWHA, 2013) set out 'Significant Impact Criteria' that are to be used to assist in determining whether a proposal is likely to have a significant impact on matters of national environmental significance. MNES listed under the EPBC Act include:

- listed threatened species and ecological communities
- listed migratory species
- Wetlands of International Importance
- The Commonwealth marine environment
- World Heritage properties
- National Heritage places
- nuclear actions
- Great Barrier Reef
- a water resource, in relation to coal seam gas development and large coal mining development.

An action will require federal approval if the action has, will have, or is likely to have a significant impact on a species listed in any of the following categories:

- extinct in the wild
- critically endangered
- endangered
- vulnerable

An action is likely to have a significant impact if there is a real chance or possibility that it will:

- lead to a long-term decrease in the size of a population

- reduce the area of occupancy of the species
- fragment an existing population into two or more populations
- adversely affect habitat critical to the survival of a species
- disrupt the breeding cycle of a population
- modify, destroy, remove, isolate or decrease the availability or quality of habitat to the extent that the species is likely to decline
- result in invasive species that are harmful to a critically endangered or endangered species becoming established in the endangered or critically endangered species' habitat
- introduce disease that may cause the species to decline, or
- interfere with the recovery of the species.

As such, Significant Impact Assessments in line with the EPBC Act were undertaken for the following Matters of NES:

1. *Petaurus australis australis* (Yellow-bellied Glider)-Vulnerable
2. *Petauroides volans* (Greater Glider)-Endangered
3. *Callocephalon fimbriatum* (Gang-gang Cockatoo)-Endangered

1. Yellow-bellied Glider

An action is likely to have a significant impact on the species if there is a real chance or possibility that it will:

a) lead to a long-term decrease in the size of a population

The potential clearing of the site would not decrease the size of a population. The habitat present on Lot 84 DP 259212 provides foraging only, and at 1251m^2 is unlikely to provide substantial food resources for a population.

b) reduce the area of occupancy of an important population

The proposed action will not remove or reduce the area of occupancy of the Yellow-bellied Glider within the South Durras area.

c) fragment an existing important population into two or more populations

The proposal will not create a barrier or fragment habitat available to the Yellow-bellied Glider so that any existing population is fragmented into two or more populations.

d) adversely affect habitat critical to the survival of a species

The EPBC Act conservation advice for the Yellow-bellied Glider identifies habitat critical to the survival of the species as areas containing the following attributes (noting that geographic areas containing habitat critical to survival needs to be defined by forest type on a regional basis):

• large contiguous areas of floristically diverse eucalypt forest, which are dominated by winter-flowering and smooth-barked eucalypts, including mature living hollow-bearing trees and sap trees;

Within the locality. Lot 84 DP 259212 is a small section of eucalypt forest within a developed area with no HBTs.

• areas identified as refuges under future climate change scenarios;

None identified for South Durras.

• short or long-term post-fire refuges (i.e., unburnt habitat within or adjacent to recently burnt landscapes) that allow the species to persist, recover and recolonise burnt areas;

The site could provide a minimal area for post-fire refugia should surrounding areas be burnt. However, the habitats on the site would not sustain a population of, nor an individual Yellow-bellied Glider in such an occurrence.

• habitat corridors required to facilitate dispersal of the subspecies between fragmented habitat patches and/or that enable recolonization or movement away from threats. Yellow-bellied gliders (south-eastern) have a glide ratio (horizontal distance/height dropped) of around 2.0, and corridors spanning gaps larger than the distance gliders are likely to be able to travel should be considered critical to the survival. There is not enough evidence to define the canopy and width characteristics of appropriate corridors. In the absence of such information, a precautionary approach should be taken to maximise dispersal by considering all habitat corridors in the species' range to be habitat critical to the survival; and

The site provides a corridor for Yellow-bellied Gliders from vegetation to the rear of Village Dr and over Banyandah St. However gliding distances in vegetation throughout the South Durras area was not considered to form a barrier to the movement of the species that is known to glide greater than 100m if required.

• areas in which some trees have evidence of use for sap extraction by yellow-bellied glider (south-eastern).

No sap extraction activity seen on trees in this site.

No Critical Habitat as defined under section 207A of the EPBC Act has been identified or included in the Register of Critical Habitat for the Yellow-bellied Glider.

e) disrupt the breeding cycle of an important population

No breeding habitat occurs on the site nor was seen in the area surrounding. The potential loss of 1251m^2 of foraging habitat would not disrupt the breeding cycle of an important population.

f) modify, destroy, remove or isolate or decrease the availability or quality of habitat to the extent that the species is likely to decline

Any future development on the lot may see the removal of 1251m^2 of foraging habitat for the species. This small area, in the context of the surrounding 12,374Ha Murramarang National Park, is unlikely to affect the degree or quality of habitat to the extent that the species is likely to decline.

g) result in invasive species that are harmful to a vulnerable species becoming established in the vulnerable species' habitat

Any proposed clearing is unlikely to exacerbate the current level of invasive species threat operating within the locality to the point that they become harmful to the Yellow-bellied Glider.

h) introduce disease that may cause the species to decline, or

The proposed action is unlikely to introduce a disease that causes the Yellow-bellied Glider to decline.

i) interfere substantially with the recovery of the species

There is no adopted or made Recovery Plan for this species. A range of conservation and recovery actions are outlined in the EPBC Act Conservation Advice. It is not likely that any future proposed clearing of 1251m^2 would interfere substantially with the recovery of the species.

2. Greater Glider (Endangered)

An action is likely to have a significant impact on the species if there is a real chance or possibility that it will:

a) lead to a long-term decrease in the size of a population

The potential clearing of the site would not decrease the size of a population. The habitat present on Lot 84 DP 259212 provides foraging only, and at 1251m^2 is unlikely to provide substantial food resources for a population.

b) reduce the area of occupancy of an important population

The proposed action will not remove or reduce the area of occupancy of the Greater Glider within the South Durras area. The habitat on the site would form only a fraction of that required for a single individual.

c) fragment an existing important population into two or more populations

The proposal will not create a barrier or fragment habitat available to the Greater Glider so that any existing population is fragmented into two or more populations.

d) adversely affect habitat critical to the survival of a species

The EPBC Act conservation advice for the Greater Glider identifies habitat critical to survival of the species as (noting that geographic areas containing habitat critical to survival needs to be defined by forest type on a regional basis):

• large contiguous areas of eucalypt forest, which contain mature hollow-bearing trees and a diverse range of the species' preferred food species in a particular region; and

Within the locality however, Lot 84 DP 259212 does not contain HBTs for denning habitat.

• smaller or fragmented habitat patches connected to larger patches of habitat, that can facilitate dispersal of the species and/or that enable recolonization; and

The site provides a corridor for Greater Gliders from vegetation to the rear of Village Dr and over Banyandah St. However gliding distances in vegetation throughout the South Durras area was not considered to form a barrier to the movement of the species that is known to glide up to 100m if required.

• cool microclimate forest/woodland areas (e.g. protected gullies, sheltered high elevation areas, coastal lowland areas, southern slopes); and

The site is not identifiable as a microclimate area.

• areas identified as refuges under future climate changes scenarios; and

None identified for South Durras

• short-term or long-term post-fire refuges (i.e. unburnt habitat within or adjacent to recently burnt landscapes) that allow the species to persist, recover and recolonize burnt areas.

The site could provide a minimal area for post-fire refugia should surrounding areas be burnt. However, the habitats on the site would not sustain a population of, nor an individual Greater Glider in such an occurrence.

No Critical Habitat as defined under section 207A of the EPBC Act has been identified or included in the Register of Critical Habitat for the Greater Glider.

e) disrupt the breeding cycle of an important population

No breeding habitat occurs on the site nor was seen in the area surrounding. The potential loss of 1251m^2 of foraging habitat would not disrupt the breeding cycle of an important population.

f) modify, destroy, remove or isolate or decrease the availability or quality of habitat to the extent that the species is likely to decline

Any future development on the lot may see the removal of 1251m2 of foraging habitat for the species. This small area, in the context of the surrounding 12,374Ha Murramarang National Park, is unlikely to affect the degree or quality of habitat to the extent that the species is likely to decline.

g) result in invasive species that are harmful to a vulnerable species becoming established in the vulnerable species' habitat

Any proposed clearing is unlikely to exacerbate the current level of invasive species threat operating within the locality to the point that they become harmful to the Greater Glider.

h) introduce disease that may cause the species to decline, or

The proposed action is unlikely to introduce a disease that causes the Greater Glider to decline.

i) interfere substantially with the recovery of the species

There is no adopted or made Recovery Plan for this species. A range of conservation and recovery actions are outlined in the EPBC Act Conservation Advice. It is not likely that any future proposed clearing of 1251m^2 would interfere substantially with the recovery of the species.

3. Gang-gang Cockatoo

An action is likely to have a significant impact on the species if there is a real chance or possibility that it will:

a) lead to a long-term decrease in the size of a population

The potential clearing of the site would not decrease the size of a population. The habitat present on Lot 74 DP 776541 provides limited foraging only, and at 479m^2 is unlikely to provide substantial food resources for a population. The HBT adjacent provides two suitable hollows, one of which is inhabited by exotic bees. The HBT is not proposed for any impact from the reclassification.

b) reduce the area of occupancy of an important population

The proposed action will not remove or reduce the area of occupancy of the Gang-gang within the Broulee area.

c) fragment an existing important population into two or more populations

The proposal will not create a barrier or fragment habitat available to the Gang-gang Cockatoo so that any existing population is fragmented into two or more populations. The species is highly mobile and would require a greater area of native vegetation than that available within the Broulee village.

d) adversely affect habitat critical to the survival of a species

Habitat critical to the survival of the Gang-gang Cockatoo is identified in the Commonwealth conservation advice as all foraging habitat during both the breeding and non-breeding season, excluding exotic feeding grounds such as ornamental trees, shrubs, and hedges within urban and suburban areas. Stands of trees within or adjacent to known breeding areas, that are likely to become hollow-bearing in future years, are also key components of this species' habitat. However, no Critical Habitat as defined under section 207A of the EPBC Act has been identified or included in the Register of Critical Habitat for the Gang-gang Cockatoo.

Lot 74 DP 776541 provides limited habitat for the species in the form of three Blackbutt trees for foraging.

e) disrupt the breeding cycle of an important population

No breeding habitat occurs on the site nor was seen in the area surrounding. The potential loss of 479m^2 of foraging habitat would not disrupt the breeding cycle of an important population.

f) modify, destroy, remove or isolate or decrease the availability or quality of habitat to the extent that the species is likely to decline

Any future development on the lot may see the removal of 479m^2 of foraging habitat for the species.

g) result in invasive species that are harmful to a vulnerable species becoming established in the vulnerable species' habitat

Any proposed clearing is unlikely to exacerbate the current level of invasive species threat operating within the locality to the point that they become harmful to the Gang-gang Cockatoo.

h) introduce disease that may cause the species to decline, or

The proposed action is unlikely to introduce a disease that causes the Gang-gang Cockatoo to decline.

i) interfere substantially with the recovery of the species

There is no adopted or made Recovery Plan for this species. A range of conservation and recovery actions are outlined in the EPBC Act Conservation Advice. It is not likely that any future proposed clearing of 479m^2 would interfere substantially with the recovery of the species.