Ecological Assessment Report

At

Port Stephens Council Lands

Lot 68 DP 248229 No. 4 Payton Street, Raymond Terrace

Lot 721 DP 1033896 No. 101 Kindlebark Drive, Medowie

Lot 17 DP 805074 No. 154 Rocky Point Road, Fingal Bay

PORT STEPHENS LGA

NSW

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Project Name	Ecological Assessment Report at Port Stephens Council Lands, Lot 68 DP 248229 No. 4 Payton Street, Raymond Terrace, Lot 721 DP 1033896 No. 101 Kindlebark Drive, Medowie, and Lot 17 DP 805074 No. 154 Rocky Point Road, Fingal Bay, PORT STEPHENS LGA NSW	
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Summary

Flora, fauna and habitat studies have been undertaken for part of a planning proposal that seeks to classify eight parcels of Port Stephens Council lands from Community to Operational.
The lands include:

- 1B Jessica Close, Raymond Terrace;
- 4 Payton Street, Raymond Terrace;
- 20 Benjamin Lee Drive, Raymond Terrace;
- 27 Campbell Ave, Anna Bay;
- 101 Kindlebark Drive, Medowie;
- 124 Benjamin Lee Drive, Raymond Terrace (southern portion);
- 154 Rocky Point Road, Fingal Bay; and
- A-1 Mount Hall Road, Raymond Terrace.

The planning proposal will also rezone four of the properties to R2 Low Density Residential.
These lands include:

- 1B Jessica Close, Raymond Terrace;
- 4 Payton Street, Raymond Terrace;
- 20 Benjamin Lee Drive, Raymond Terrace; and
- 27 Campbell Ave, Anna Bay.

This ecological assessment has been undertaken for three of the eight parcels of land.
The three lands assessed within this ecological assessment include:

- 4 Payton St, Raymond Terrace;
- 101 Kindlebark Dr, Medowie; and
- 154 Rocky Point Road, Fingal Bay.

The following building envelope sizes have been proposed for each of the three assessed parcels of land:

- 4 Payton Street, Raymond Terrace - approximate size of the building envelope measure is 545.75m2;
- 101 Kindlebark Drive, Medowie – approximate building envelope measures an area of 269.14m2;
- 154 Rocky Point Road, Fingal Bay - approximate building envelope measures an area of Building envelope 170m2.

Vegetation was found to be in varying quality within all subject lands. 101 Kindlebark Drive, Medowie contained the largest and most connected structurally intact forest. Common canopy species included *Angophora costata* (Smooth-barked Apple), *Corymbia gummifera* (Red Bloodwood) and *Eucalyptus capitelata* (Brown Stringybark). 4 Payton Street, Raymond Terrace was composed of maintained, introduced groundcovers and 4 large remnant specimens of *Eucalyptus tereticornis* (Forest Red Gum). The subject site 154 Rocky Point Road, Fingal Bay contained maintained introduced groundcovers with planted trees.

Although PCT 3433 is associated with the Endangered Ecological Community - Lower Hunter Spotted Gum Ironbark Forest in the Sydney Basin and NSW North Coast Bioregions, the Native vegetation within the Subject Land at 4 Payton Street, Raymond Terrace was not consistent with this Threatened Ecological Community (TEC). The vegetation within the subject land did not contain the diagnostic canopy, shrub or groundcover species for this TEC. Therefore, the presence of 4 specimens of *E. tereticornis* is not sufficient to align native vegetation within the subject land with the Lower Hunter Spotted Gum Ironbark Forest in the Sydney Basin and NSW North Coast Bioregions.

No threatened flora species were recorded within the survey area during fieldwork. Of the addressed flora species assessed, the subject lands were found to contain suitable habitat for threatened orchid species. The proposal may result in an incremental loss of marginal habitat for these threatened flora species; however, it is considered not likely that the proposal would significantly affect the life cycle of any of these threatened flora species or place any viable local populations of at risk of extinction.

Under the Port Stephens CKPoM the proposal will result in the following:

- Removal of up to 0.01ha of Preferred Koala Habitat from 4 Payton Street, Raymond Terrace
- Removal of 0.05ha of 50m Buffer over mainly cleared land from 4 Payton Street, Raymond Terrace;
- Removal of up to 0.001ha of Supplementary Koala Habitat from 154 Rocky Point Road, Fingal Bay

No areas of habitat are likely to become significantly fragmented or isolated from other areas of habitat as a result of the proposed actions. A number of recommendations including the retention of Preferred Koala Food Trees wherever possible, planting of compensatory Koala Feed Trees and allowing the safe movement of Koalas have been given to help reduce the impact of the proposal on the Koala (Section 8.0). Taking the recommendations into consideration, it is less likely that the proposal will disrupt the life cycle of the Koala such that local extinction would occur.

No other threatened fauna species were recorded during fieldwork. Of the remaining addressed threatened fauna species the subject lands were considered to contain suitable habitat for woodland bird species, highly mobile mammal species, Grey-headed Flying Fox and microchiropteran species. The proposal will result in a small incremental reduction habitat for the above species. Given the small impact it is unlikely that the proposal will have a significant impact on these threatened fauna species such that a local extinction would occur.

The proposal will result in the following direct and potential impacts/losses:

- Removal of one specimen and likely two additional specimens of *Eucalyptus tereticornis* (Forest Red Gum) from 4 Payton Street, Raymond Terrace;
- Removal of one specimen and likely two additional specimens of Hollow-bearing Trees from 4 Payton Street, Raymond Terrace;
- Removal of likely 3 specimens of *Eucalyptus pilularis* (Blackbutt) from 154 Rocky Point Road, Fingal Bay;
- Likely management of 0.15ha of PCT 3582 Hunter Coast Lowland Apple-Bloodwood Forest for bushfire purposes from 101 Kindlebark Drive, Medowie.
- Removal of up to 0.01ha of Preferred Koala Habitat from 4 Payton Street, Raymond Terrace
- Removal of 0.05ha of 50m Buffer over mainly cleared land from 4 Payton Street, Raymond Terrace;
- Removal of up to 0.001ha of Supplementary Koala Habitat from 154 Rocky Point Road, Fingal Bay;
- Removal of Managed exotic groundcovers from all subject lands;
- Removal of habitat for a number of the addressed threatened species.

Considerations have been made to the Commonwealth Environment Protection and Biodiversity Conservation (EPBC) Act (1999). Considering the relatively small impact on habitat in the locality it is unlikely that any of the nationally addressed threatened species or any of the listed migratory species would be significantly affected by the proposal.

In conclusion, the proposal will result in a small incremental reduction of habitat for threatened species; within the Port Stephens LGA. Given the mitigation measures the proposal is unlikely to disrupt the life cycle of any addressed threatened species, endangered population or endangered ecological community such that local extinction would occur.

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APPENDIX A - FLORA SPECIES LIST

Acronyms and Abbreviations used in this report

AOBV	Area of outstanding Biodiversity Value
BAAS	Biodiversity Assessors Accreditation System
BAM	Biodiversity Assessment Method
BAMC	Biodiversity Assessment Method Calculator
BAR	Biodiversity Assessment Report
BC Act	Biodiversity Conservation Act 2016
BDAR	Biodiversity Development Assessment Report
BOAMS	Biodiversity Offsets and Agreement Management System
BOPC	Biodiversity Offsets Payment Calculator
BOS	Biodiversity Offset Scheme
BOSET	Biodiversity Offsets Scheme Entry Tool
DCCEEW	Department of Climate Change, Energy, the Environment and Water
DPE	Department of Planning and Environment (NSW)
EEC	Endangered Ecological Community
EPBC Act	Environmental Protection & Biodiversity Conservation Act 1999
EP&A Act	Environmental Planning & Assessment Act 1979
IBRA	Interim Biogeographic Regionalisation for Australia
LGA	Local Government Area
LLS Act	Local Land Services Act 2013
NES	Matters of National Significance under the EPBC Act
NPW Act	National Parks & Wildlife Act 1974
OEH	Office of Environment & Heritage (now DPE)
PCT	Plant Community Type
PMST	Protected Matters Search Tool
SAII	Serious and Irreversible Impacts
SEPP	State Environmental Planning Policy
TEC	Threatened Ecological Community

1.0 INTRODUCTION

Flora, fauna and habitat studies have been undertaken for part of a planning proposal that seeks to classify eight parcels of Port Stephens Council lands from Community to Operational.

The lands include:

- 1B Jessica Close, Raymond Terrace;
- 4 Payton Street, Raymond Terrace;
- 20 Benjamin Lee Drive, Raymond Terrace;
- 27 Campbell Ave, Anna Bay;
- 101 Kindlebark Drive, Medowie;
- 124 Benjamin Lee Drive, Raymond Terrace (southern portion);
- 154 Rocky Point Road, Fingal Bay; and
- A-1 Mount Hall Road, Raymond Terrace.

The planning proposal will also rezone four of the properties to R2 Low Density Residential.

These lands include:

- 1B Jessica Close, Raymond Terrace;
- 4 Payton Street, Raymond Terrace;
- 20 Benjamin Lee Drive, Raymond Terrace; and
- 27 Campbell Ave, Anna Bay.

This ecological assessment has been undertaken for three of the eight parcels of land.

The three lands assessed within this ecological assessment include:

- 4 Payton St, Raymond Terrace;
- 101 Kindlebark Dr, Medowie; and
- 154 Rocky Point Road, Fingal Bay.

The following building envelope sizes have been proposed for each of the three assessed parcels of land:

- 4 Payton Street, Raymond Terrace - approximate size of the building envelope measure is 545.75m2;
- 101 Kindlebark Drive, Medowie – approximate building envelope measures an area of 269.14m2;
- 154 Rocky Point Road, Fingal Bay - approximate building envelope measures an area of Building envelope 170m2.

All lands are within the Port Stephens Local Government Area (LGA), NSW.

The investigations were in accordance with the requirements of the *Environmental Planning and Assessment Amendment Act 2017* (EP&A Act 2017), the *Biodiversity Conservation Act 2016* (BC Act

2016) and the *Commonwealth Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act 1999). The results are presented here in the form of an Ecological Assessment.

1.1 THE SUBJECT LAND AND STUDY AREA

The subject land consisted of 3 parcels of land within the Port Stephens LGA, including:

- Lot 68 DP 248229 No. 4 Payton Street, Raymond Terrace;
- Lot 721 DP 1033896 No. 101 Kindlebark Drive, Medowie; and
- Lot 17 DP 805074 No. 154 Rocky Point Road, Fingal Bay.

Lot 68 DP 248229 No. 4 Payton Street, Raymond Terrace

The triangular shaped 0.17ha lot was bounded by Payton Street to the south, residential lots to the east and west and Vogele Pl Reserve to the north. The subject land is zoned as RE1: Public Recreation. The majority of the subject land was maintained introduced grassland with 4 remnant specimens of *Eucalyptus tereticornis* (Forest Red Gum).

The study area included the entire subject land. A location map and aerial photo of the subject land are shown in Figures 1.1 and 1.4.

Lot 721 DP 1033896 No. 101 Kindlebark Drive, Medowie

The rectangular shaped 0.15ha lot was bounded by Kindlebark Drive to the north, residential lots to the east and west and remnant vegetation zoned as RE1: Public Recreation in the south. The subject land is zoned as R2: Low Density Residential. The northern portion of the subject land consisted of maintained introduced groundcovers. The southern portion of the subject land was covered in native vegetation, which is connected to a larger area of retained vegetation.

The study area included the entire subject land. A location map and aerial photo of the subject land are shown in Figures 1.2 and 1.5.

Lot 17 DP 805074 No. 154 Rocky Point Road, Fingal Bay

The narrow triangular shaped 0.03ha lot was bounded by Rocky Point Road and residential lots to the east, a powerline easement and residential lots to the north and Tomaree National Park to the west and south. The subject land is zoned as R2: Low Density Residential. The majority of the subject land was covered in maintained groundcovers and planted small trees. To the immediate north within the powerline easement was a remnant specimen of *Eucalyptus pilularis* (Blackbutt).

The study area included the entire subject land. A location map and aerial photo of the subject land are shown in Figures 1.3 and 1.6.

1.2 THE PROPOSAL

It is proposed that as part of a planning proposal, eight parcels of Port Stephens Council lands will be reclassified from Community to Operational and where required, rezone the properties to R2 Low Density Residential.

The lands include:

- 1B Jessica Close, Raymond Terrace;
- 4 Payton Street, Raymond Terrace;
- 20 Benjamin Lee Drive, Raymond Terrace;
- 27 Campbell Ave, Anna Bay;
- 101 Kindlebark Drive, Medowie;
- 124 Benjamin Lee Drive, Raymond Terrace (southern portion);
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The three lands assessed within this ecological assessment include:

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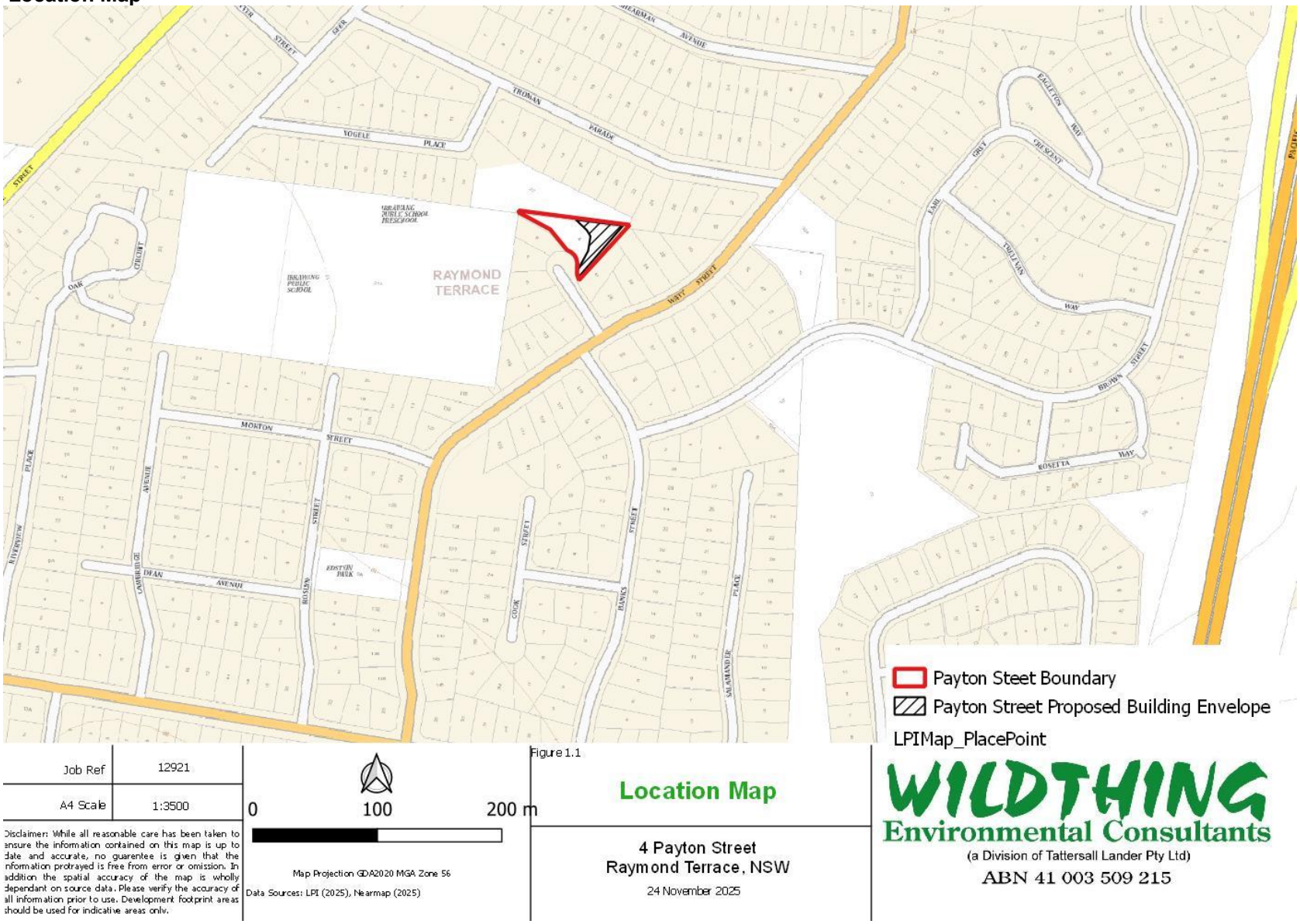
The following building envelope sizes have been proposed for each of the three assessed parcels of land:

- 4 Payton Street, Raymond Terrace - approximate size of the building envelope measure is 545.75m2;
- 101 Kindlebark Drive, Medowie – approximate building envelope measures an area of 269.14m2;
- 154 Rocky Point Road, Fingal Bay - approximate building envelope measures an area of Building envelope 170m2.

It is anticipated that future development within the lands arising from the planning proposal would be single dwelling or dual occupy developments – consistent with the adjoining lands.

The approximate building envelopes of the three assessed parcels of lands associated with the planning proposal are shown in Figures 1.4 - 1.6.

Figure 1.1 Location Map



Disclaimer: While all reasonable care has been taken to ensure the information contained on this map is up to date and accurate, no guarantee is given that the information protrayed is free from error or omission. In addition the spatial accuracy of the map is wholly dependant on source data. Please verify the accuracy of all information prior to use. Development footprint areas should be used for indicative areas only.

Figure 1.2 Location Map - Medowie

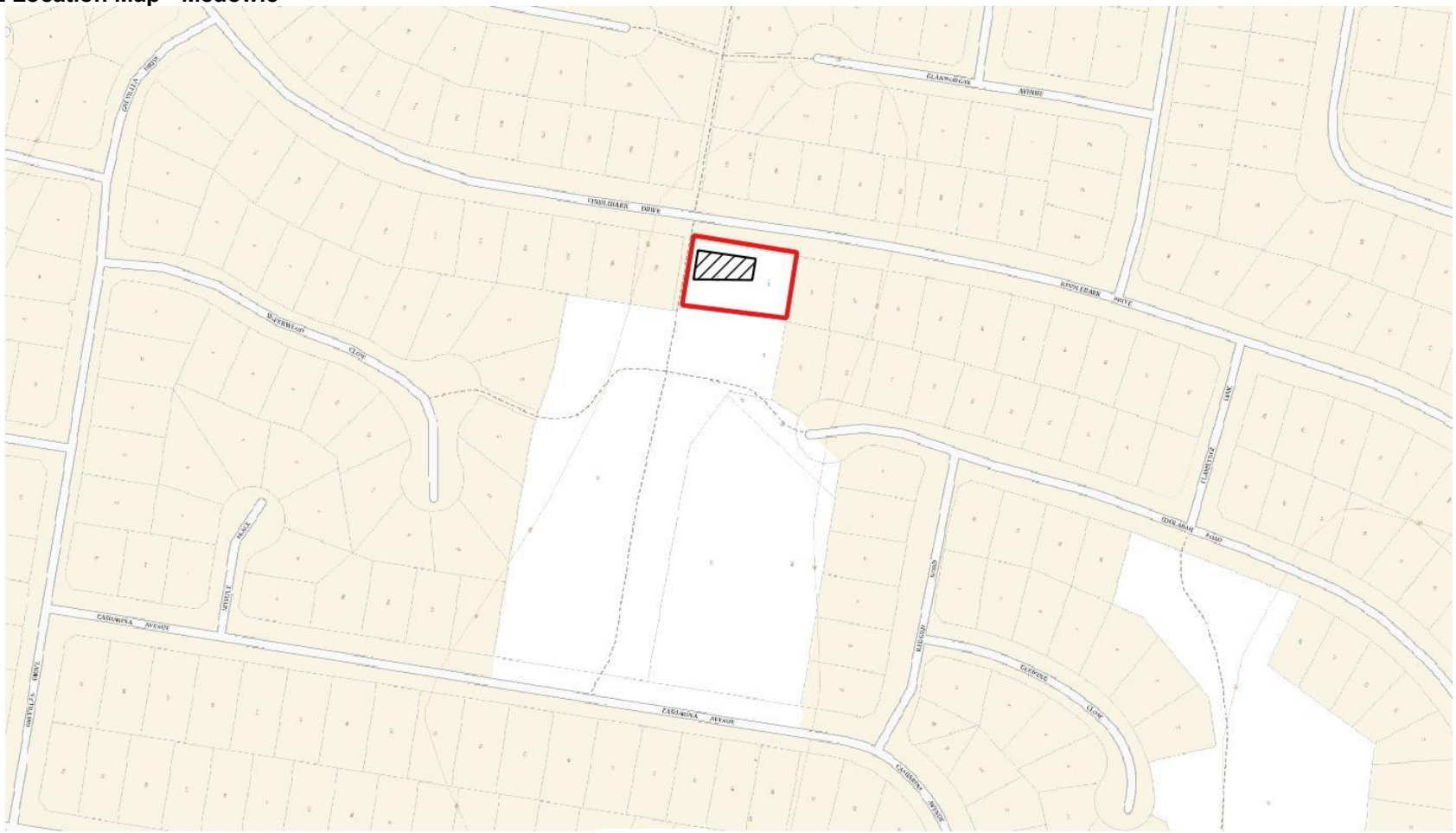


Figure 1.3 Location Map - Fingal Bay

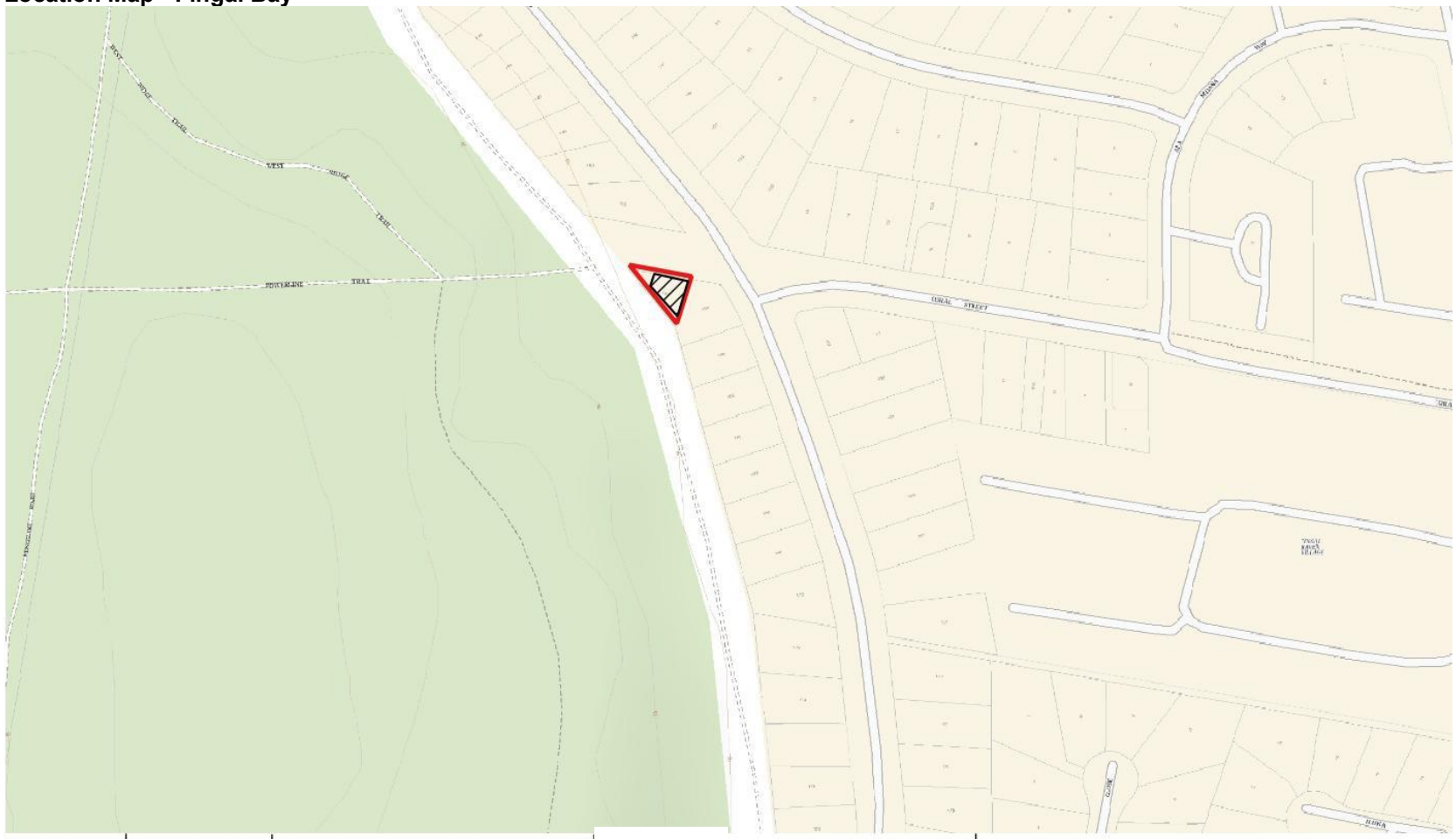


Figure 1.4 Aerial Image of Subject Land and proposed building envelope - 4 Payton Street, Raymond Terrace

Figure 1.5 Aerial Image of Subject Land and proposed building envelope - 101 Kindlebark Drive, Medowie

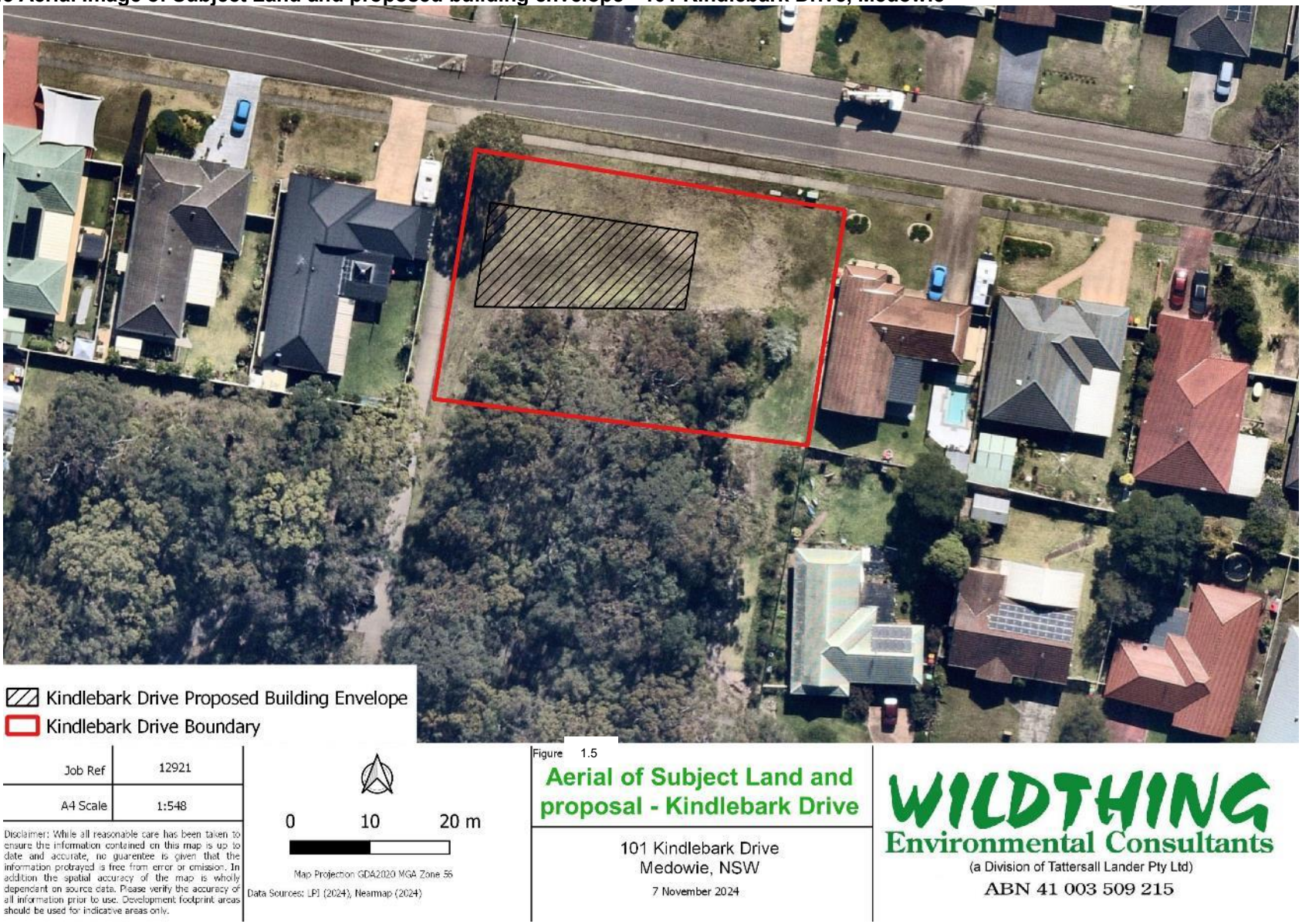
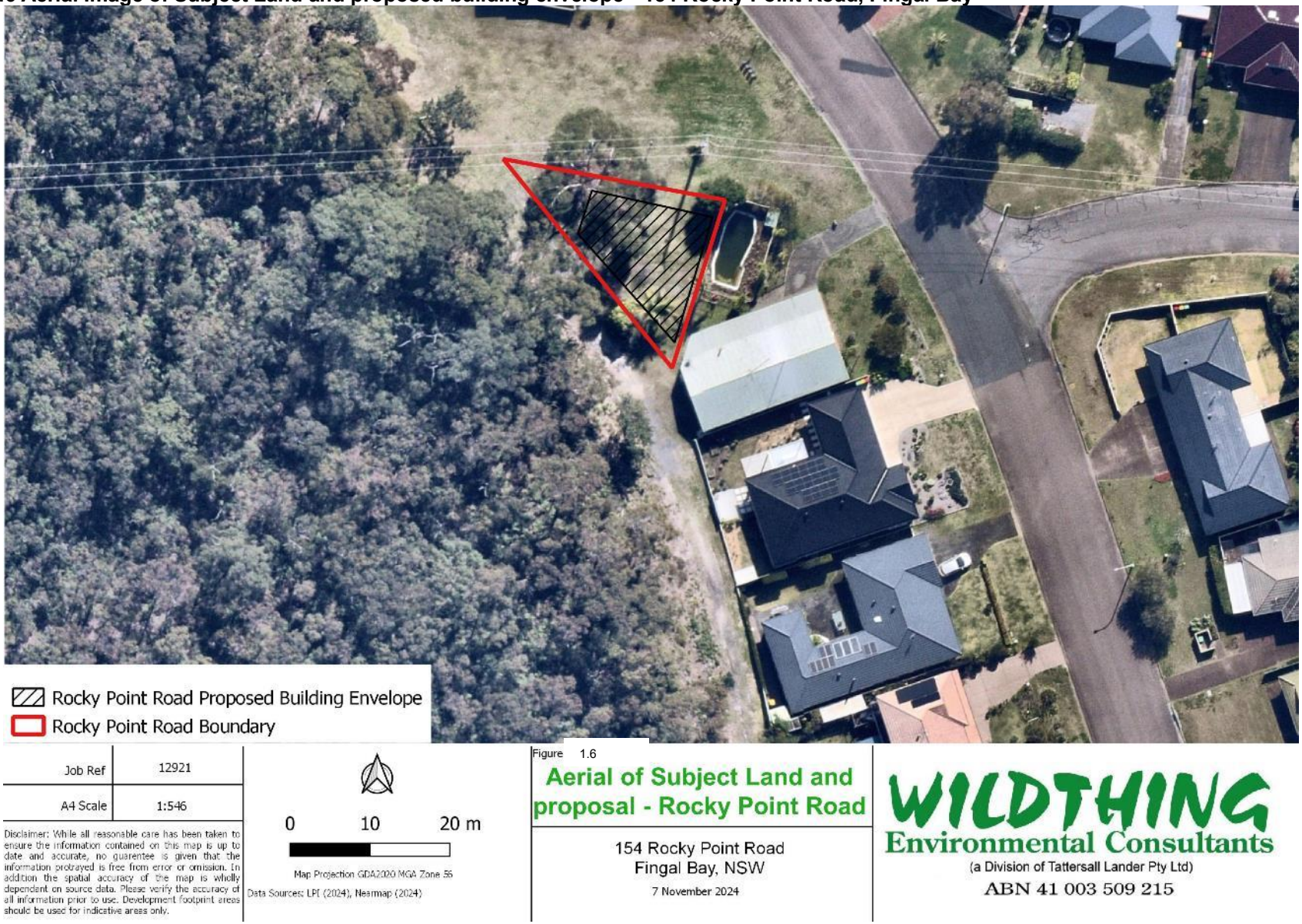


Figure 1.6 Aerial Image of Subject Land and proposed building envelope - 154 Rocky Point Road, Fingal Bay



2.0 SUBJECT LAND CONTEXT

The subject lands were located within the following Interim Biogeographical Regionalisation of Australia (IBRA Bioregion) gazetted by the Minister:

Sydney Basin IBRA Region

- 4 Payton Street, Raymond Terrace
- 101 Kindlebark Drive, Medowie

NSW North Coast IBRA Region

- 154 Rocky Point Road, Fingal Bay

The subject lands were located within the following Interim Biogeographical Regionalisation of Australia (IBRA subregion) gazetted by the Minister:

Hunter IBRA Subioregion

- 4 Payton Street, Raymond Terrace
- 101 Kindlebark Drive, Medowie

Karuah Manning IBRA Subregion

- 154 Rocky Point Road, Fingal Bay

All subject lands are located within the Port Stephens Council Local Government Area (LGA).

2.1 HYDROGEOGRAPHY

There were no prescribed streams or dams located within any of the subject lands.

2.2 TOPOGRAPHY AND SOILS

The subject lands are located within the following BioNet Landscapes (Mitchell Landscape):

Newcastle Coastal Ramp

- 4 Payton Street, Raymond Terrace
- 101 Kindlebark Drive, Medowie

Sydney-Newcastle Barriers and Beaches

- 154 Rocky Point Road, Fingal Bay

The subject lands contained the following Soil Landscapes (DPIE 2020):

- Lot 68 DP 248229 No. 4 Payton Street, Raymond Terrace - Bolwarra Heights (bhx) Soil Landscape
- Lot 721 DP 1033896 No. 101 Kindlebark Drive, Medowie - Medowie (mey) Soil Landscape

- Lot 17 DP 805074 No. 154 Rocky Point Road, Fingal Bay - Shoal Bay variant a (sbza) Soil Landscape. Any future access road would be located within Shoal Bay variant c (sbzc) Soil Landscape.

2.3 VEGETATION

Vegetation was found to be in varying quality within all subject lands. 101 Kindlebark Drive, Medowie contained the largest and most connected structurally intact forest. Common canopy species included *Angophora costata* (Smooth-barked Apple), *Corymbia gummifera* (Red Bloodwood) and *Eucalyptus capitellata* (Brown Stringybark). 4 Payton Street, Raymond Terrace was composed of maintained, introduced groundcovers and 4 large remnant specimens of *Eucalyptus tereticornis* (Forest Red Gum). The subject site 154 Rocky Point Road, Fingal Bay contained maintained introduced groundcovers with planted trees.

3.0 LEGISLATIVE CONTEXT

The following sections detail the legislative frameworks relevant to this report.

3.1 NSW ENVIRONMENTAL PLANNING AND ASSESSMENT AMENDMENT ACT 2017

The assessment of development applications in NSW is regulated under Part 4 or Part 5 of the EP&A Act. Part 1 Section 1.7 of the EP&A Act links proponents to Part 7 of the BC Act for the operation of the EP&A Act in connection with potential impacts to the terrestrial environment. The EP&A Act is also supported by other statutory environmental planning instruments, including State Environmental Planning Policies (SEPPs).

3.2 NSW BIODIVERSITY CONSERVATION ACT 2016

The purpose of the BC Act is "to establish a pathway to avoid, minimise and offset the impacts of proposed development and land use change on biodiversity and to establish a scientific method for assessing the likely impacts on biodiversity values of proposed development and land use change, for calculating measures to offset those impacts and for assessing improvements in biodiversity values".

In accordance with the BC Act, the Biodiversity Assessment Method (BAM) and entry into the Biodiversity Offsets Scheme (BOS) is applicable to certain development activities based on specific Preparation of a Biodiversity Development Assessment Report (BDAR) is required for a development application that meets any of the following criteria detailed in Table 3.1.

As the proposed development was not found to comply within any of the criteria it was determined that a BDAR and entry into the BOS threshold would not be applicable for this development. Thus, the survey methodology detailed in the following sections have been undertaken in accordance with the requirements for a standard Assessment of Significance.

The BC Act also imposes various obligations on determining authorities in relation to impacts on biodiversity values that are serious and irreversible. For applications for development consent under Part 4 of the EP&A Act these obligations generally require a decision-maker to refuse to grant development consent. In order to provide clarity regarding what could be considered a serious and irreversible impact a guidance document has been released (NSW Gov 2017) which identifies the species and ecological communities (SAII entities) that are likely to be the subject of serious and irreversible impacts. No candidate SAII entities were found to be present within the subject land thus no obligation for development refusal would be applicable to this proposed development from relevant regulatory bodies.

Table 3.1: Criteria for entry into the Biodiversity Offsets Scheme in relation to the proposed development.

CRITERIA FOR ENTRY INTO THE BIODIVERSITY OFFSETS SCHEME (BOS)	SECTION CRITERIA ADDRESSED	ASSESSMENT OF CRITERIA
Part 4 development activities deemed to be 'State Significant' under the NSW Environmental Planning and Assessment Act 1979 (NSW EP&A Act)		The proposal is not recognised as State Significant
Development activities that have the potential to impact Areas of Outstanding Biodiversity Value (AOBV) as listed under Part 3 of the BC Act.	Section 7.0	No declared areas of outstanding biodiversity value were located within or in proximity to the site.
Development activities that have the potential to cause a significant impact on a threatened species, population or ecological community, listed under Schedules 1 and 2 of the BC Act, as determined by application of a five-part-test of significance in accordance with Section 7.3 of the BC Act;	Section 7.0	The five-part test found no significant impact on threatened species, populations or ecological communities listed under Schedules 1 and 2 of the BC Act.
Development activities that have the potential to impact areas mapped as having 'high biodiversity value' as indicated by the NSW Biodiversity Values Map (BV Map);	Section 3.0 Figure 3.1.	The NSW Biodiversity Values Map was consulted on the 17 September 2024 and again on 7 November 2024. As of this date it was determined that there were no areas of mapped 'Biodiversity Values' within the proposed building envelopes of each subject land. Consequently, the proposed development would not exceed the biodiversity offsets scheme threshold in regard to Section 7.2(b) of the BC Act.
Development activities that involve clearing of native vegetation that exceeds the Biodiversity Offset Scheme thresholds (BOS thresholds) as determined by the NSW BC regulation.	Section 6.0	The clearing threshold for the subject lands is 0.25ha. The impact to native vegetation will be well under 1ha. Consequently, the proposed development would not exceed the biodiversity offsets scheme threshold regarding Section 7.2(b) of the BC Act.

3.3 STATE ENVIRONMENTAL PLANNING POLICY (BIODIVERSITY AND CONSERVATION) 2021

The State Environmental Planning Policy (Biodiversity and Conservation) 2021 (Biodiversity and Conservation SEPP) consolidates transfers and repeals provisions of the following 11 SEPPs (or deemed SEPPs):

1. SEPP (Vegetation in Non-Rural Areas) 2017 (Vegetation SEPP)
2. SEPP (Koala Habitat Protection) 2020 (Koala SEPP 2020)
3. SEPP (Koala Habitat Protection) 2021 (Koala SEPP 2021)
4. Murray Regional Environmental Plan No 2—Riverine Land (Murray REP)
5. SEPP No 19—Bushland in Urban Areas (SEPP 19)
6. SEPP No 50—Canal Estate Development (SEPP 50)
7. SEPP (Sydney Drinking Water Catchment) 2011 (Sydney Drinking Water SEPP)
8. Sydney Regional Environmental Plan No 20 – Hawkesbury – Nepean River (No 2 – 1997) (Hawkesbury–Nepean River SREP)
9. Sydney Regional Environmental Plan (Sydney Harbour Catchment) 2005 (Sydney Harbour Catchment SREP)
10. Greater Metropolitan Regional Environmental Plan No 2 – Georges River Catchment (Georges River REP)
11. Willandra Lakes Regional Environmental Plan No 1 – World Heritage Property (Willandra Lakes REP).

Each consolidated SEPP now makes up a chapter in the SEPP (Biodiversity and Conservation) 2021. The subject land is located within the Port Stephens Council and is assessed under the Port Stephens Comprehensive Koala Plan of Management (CKPoM).

3.4 PORT STEPHENS COMPREHENSIVE KOALA PLAN OF MANAGEMENT (CKPOM)

As Port Stephens Council has an approved Koala Plan of Management Chapter 3 is addressed by considering the Port Stephens Comprehensive Koala Plan of Management. The Port Stephens Comprehensive Koala Plan of Management (CKPoM) has been prepared for the Port Stephens LGA in accordance with State Environment Planning Policy (SEPP) 44 - 'Koala Habitat Protection'. The aim of the CKPoM is to encourage the proper conservation and management of areas of natural vegetation that provide habitat for Koalas, to ensure permanent free-living populations over their present range and to reverse the current trend of population decline. An assessment under the Port Stephens CKPoM has been undertaken in Section 8.0 of the report.

3.5 STATE ENVIRONMENTAL PLANNING POLICY (RESILIENCE AND HAZARDS) 2021

The State Environmental Planning Policy (Resilience and Hazards) 2021 (Resilience and Hazards SEPP) consolidates and repeals the provisions of the following 3 SEPPs:

1. SEPP (Coastal Management) 2018 (Coastal Management SEPP)
2. SEPP 33 – Hazardous and Offensive Development (SEPP 33)
3. SEPP 55 – Remediation of Land (SEPP 55)

Each consolidated SEPP now makes up a chapter in the SEPP (Resilience and Hazards) 2021. The following Chapters are relevant to this report:

- Chapter 2 Coastal Management.

3.6 CHAPTER 2 COASTAL MANAGEMENT

The aim of this Chapter is to promote an integrated and co-ordinated approach to land use planning in the coastal zone in a manner consistent with the objects of the Coastal Management Act 2016, including the management objectives for each coastal management area, by:

- managing development in the coastal zone and protecting the environmental assets of the coast, and
- establishing a framework for land use planning to guide decision-making in the coastal zone, and
- mapping the 4 coastal management areas that comprise the NSW coastal zone for the purpose of the definitions in the Coastal Management Act 2016.

This Chapter identifies four coastal management areas that comprise the coastal zone. These are:

- the coastal wetlands and littoral rainforests area,
- the coastal vulnerability area,
- the coastal environment area, and
- the coastal use area.

No addressed subject land contained Chapter 2 mapped areas and therefore has not been addressed further in this report.

3.7 BIOSECURITY ACT 2015

The NSW Biosecurity Act 2015 provides regulatory controls and powers to manage priority weeds in NSW. For weed management this Act divides NSW into regions based on combined LGAs and priority weeds for a region are listed. Some weeds are managed at a state level as they form part of a broader containment strategy. The legislation compliments listed Weeds of National Significance (WoNS).

3.8 COMMONWEALTH ENVIRONMENT PROTECTION AND BIODIVERSITY CONSERVATION ACT 1999

The purpose of the EPBC Act is to ensure that actions likely to cause a significant impact on Matters of National Environmental Significance (MNES) undergo a process of assessment. Under the EPBC Act, an action includes a project, undertaking, development or activity that may impact MNES. An action that 'has, will have or is likely to have a significant impact on a MNES' is deemed to be a 'controlled action' and may not be undertaken without prior approval from the commonwealth minister for the Department of Climate Change, Energy, the Environment and Water (DCCEEW).

MNES categories listed under the EPBC Act are:

- World heritage properties;
- National heritage places;
- Wetlands of international importance (Ramsar wetlands);

- Threatened species and ecological communities (Section 18 and 18A);
- Migratory species;
- Commonwealth marine areas;
- Nuclear actions (including uranium mining); and
- A water resource, in relation to coal seam gas development and large coal mining development.

Initially MNES protected under the EPBC Act are assessed in accordance with the Significant Impact Guidelines 1.1 - Matters of National Environmental Significance (DoE 2013). This is performed to determine if there is likelihood for an action to have a significant impact on MNES. An action will require referral to, and may require the approval of, the commonwealth minister for the Environment (in addition to any local or state government consent or approval) if that action will have, or is likely to have, a significant impact on the environment or on a MNES.

3.9 LICENSING

Fieldwork undertaken by Wildthing Environmental Consultants was carried out under NPWS Scientific Investigation Licence SL100345 and under Animal Care and Ethics Approval: Animal Research Authority Issue by the Department of Primary Industries (Trim File No. 13/251) for Fauna Survey for Biodiversity and Impact Assessment.

4.0 METHODOLOGY

4.1 DESKTOP ASSESSMENT

A site-specific literature and database review was undertaken prior to conducting the field surveys and the preparation of this report. A list of the resources reviewed, the date they were accessed and the spatial extent of the search conducted, where relevant, is provided in Table 4.1.

Table 4.1: Desktop Resources

RESOURCE	LAST ACCESS DATE	SPATIAL EXTENT
Biodiversity Values and Landscape Maps		
BioNet Atlas of NSW Wildlife (BioNet) (DCCEEW 2024a)	1 November 2024	10x10km radius of subject land
Commonwealth Protected Matters Search Tool (PMST) (DCCEEW 2024e)	1 November 2024	10x10km radius of subject land
NSW Biodiversity Values Map (DCCEEW 2024b)	1 November 2024	Entire subject land
SIX Maps -Base Map - LPI 1:25,000 digital topographic databases (DTDB) (LPI 2022) -Cadastral data LPI digital cadastral database (DCDB) (LPI 2024)	1 November 2024	Entire subject land
NSW Government SEED Mapping (NSW Government 2024)	1 November 2024	Entire subject land
BioNet NSW (Mitchell) Landscapes – Version 3.1 (OEH 2016a)	1 November 2024	Entire subject land
NSW Interim Biogeographic Regions of Australia (IBRA region and sub-regions) – Version 7 (DAWE 2016).	1 November 2024	Entire subject land
Threatened Species and Vegetation Databases		
Commonwealth species profiles and threats database (SPRAT) (DCCEEW 2024f)	1 November 2024	-
DPE Profiles of threatened species, population, and ecological communities (DCCEEW 2024c)	1 November 2024	-
DPE BioNet vegetation classification database (DCCEEW 2024d)	1 November 2024	-
Plans		
Port Stephens Council ACQ-0004	October 2024	Study area

4.2 FIELD ASSESSMENT

Fieldwork was undertaken in October and November 2024. A summary of the time spent on site during fieldwork and the prevailing weather conditions at the time is contained in Table 4.2.

Table 4.2: Survey Dates, Times and Weather Conditions

DATE	SITE	TIME	SURVEY EFFORT (PERSON HOURS)	ACTIVITY	WEATHER
Thursday 31/10/2024	101 Kindlebark Drive, Medowie	1000 – 1045	2h 15min (3 persons)	General site inspection Vegetation survey Diurnal fauna survey Tree survey Incidental observations	1/8 High Cloud, 27.2°C, 31% relative humidity, Wind 7.4km//hr W
Thursday 31/10/2024	154 Rocky Point Road, Fingal Bay	1320 - 1340	1h (3 persons)	General site inspection Vegetation survey Diurnal fauna survey Tree survey Incidental observations	5/8 High Cloud, 26.3°C, 45% relative humidity, Wind 8.9km/hr SE
Tuesday 05/11/2024	4 Payton Close, Raymond Terrace	0900 - 0940	0h 40min (1 person)	General site inspection Vegetation survey Diurnal fauna survey Tree survey Incidental observations	7/8 Cloud, 21.6°C, 76% relative humidity, Wind 25.9km/h SE

A detailed methodology for the surveys listed within Table 4.2 above have been described in the following Sections 4.2.1 – 4.2.5:

4.2.1 VEGETATION ASSESSMENT

The initial determination of the basic vegetation community boundaries was undertaken through the review of an orthophoto covering the subject lands. Following this, a detailed ground survey was conducted in accordance with the Department of Environment and Conservation's (NSW) Threatened Biodiversity Survey and Assessment Guidelines – Working Draft (Department of Environment and Conservation, 2004). Due to the high disturbance within each subject land, no vegetation plots or quadrats were undertaken. Flora searches were undertaken in the manner described by Cropper (1993) as the 'Random Meander Technique'. This involved walking in a random manner throughout the entire subject lands, particularly within the proposed building envelopes. A list of all flora species identified on site has been provided in Appendix A.

4.2.2 GENERAL HABITAT FOR NATIVE SPECIES

From the vegetation appraisal, diurnal fauna surveys and a general inspection of each subject land and surrounding areas, a subjective assessment of the general habitat value of each subject land was made. Considered in this assessment were:

- occurrence of that habitat type in the general vicinity;
- degree of disturbance and degradation;
- area occupied by that habitat on site;
- continuity with similar habitat adjacent to the site, or connection with similar habitat off site by way of corridors; and

- structural and floral diversity.

4.2.3 HABITAT FOR SIGNIFICANT SPECIES

The subject land area for each subject land was evaluated as potential habitat for each of the threatened species reported on the BioNet (DCCEEW, 2024a) and PMST (DCCEEW, 2024e) databases from within 10km of the site. This evaluation was based on home range, feeding, roosting, breeding, movement patterns and corridor requirements for fauna and hydrology, soil types, aspect and structural formation for flora species. The list of threatened species recorded within these databases is provided within Table 4.3 and an assessment of the likelihood of occurrence of these threatened species within each subject land is provided in Table 5.3.

4.2.4 SIGNIFICANT TREE SURVEY

During the fieldwork, a survey was undertaken to identify significant trees within the subject lands. The survey involved identifying any hollow-bearing trees, trees containing nests and Koala Food Trees present. Hollow-bearing trees are a habitat resource utilised by a variety of native avifaunal and mammalian species. This resource is usually a limiting factor in the occurrence of hollow-dependent species on a site, due to the time taken for hollows to form in trees. It must be noted that observations made from ground level may fail to record a small number of hollows that are obscured. Some entrances may also not lead to a cavity. The internal dimensions of the hollows are also impossible in many cases to determine from the ground.

4.2.5 DIURNAL FAUNA SURVEY

Opportunistic sightings of species and secondary indications (scats, scratches, diggings, tracks etc.) of resident fauna were noted and included:

- dedicated searches for avifauna;
- dedicated searches for herpetofauna;
- checks for obvious nests of raptors;
- checking trees (particularly smooth-barked species) for scratches consistent with arboreal mammals.

4.3 SIGNIFICANT SPECIES

The following threatened species listed in Table 4.3 have been recorded on the BioNet (DCCEEW, 2024a) and PMST (DCCEEW, 2024e) Databases as occurring within 10km of the subject land. Species marked with an asterisk (*) are listed on the DCCEEW Database as having habitat likely to occur within 10km of the subject land. Pelagic species were not included in the list due to the absence of habitat.

Table 4.3: Threatened species, endangered populations and ecological communities considered.

Scientific Name	Common Name	BC Act 2016	EPBC Act 1999	Recorded at Site from Database		
Flora Species				4 Payton Street, Raymond Terrace	101 Kindlebark Drive, Medowie	154 Rocky Point Road, Fingal Bay
Flora						
Caladenia tessellata	Thick-lipped Spider-orchid	E1	V	X*		
Corybas dowlingii	Red Helmet Orchid	E1		X	X	X
Cryptostylis hunteriana	Leafless Tongue Orchid	V	V	X*	X*	X
Diuris arenaria	Sand Doubletail	E1		X	X	X
Diuris praecox	Rough Doubletail	V			X	X
**Prasophyllum* sp. *Wybong*	A Leek Orchid		CE	X*		
Pterostylis chaetophora	Tall Rustyhood	V	V	X	X	
**Rhizanthella slateri*	Eastern Underground Orchid	V	E	X*	X*	X*
Arthraxon hispidus	Hairy-joint Grass	V	V	X*	X*	X*
**Dichanthium setosum*	Bluegrass	V	V	X*		
Cynanchum elegans	White-flowered Wax Plant	E1	E	X		
**Rutidosis heterogama*	Heath Wrinklewort	V	V	X*		
Tetratheca juncea	Black-eyed Susan	V	V	X*	X	X
Prostanthera densa	Villous Mint-bush	V	V			X
Pultenaea maritima	Coast Headland Pea	V			X*	X
Angophora inopina	Charmhaven Apple	V	V	X*	X	X
Eucalyptus camfieldii	Camfield's Stringybark	V	V	X	X	X*
Eucalyptus glaucina	Slaty Red Gum	V	V		X	
Eucalyptus parramattensis subsp. *decadens*	Drooping Red Gum	V	V	X	X	X
Melaleuca groveana	Grove's Paperbark	V				X
Melaleuca biconvexa	Biconvex Paperbark	V	V	X*	X	X*
Rhodamnia rubescens	Scrub Turpentine	E4A	CE	X	X	X*
Rhodomyrtus psidioides	Native Guava	E4A	CE	X	X	X
Syzygium paniculatum	Magenta Lilly Pilly	E1	V	X*	X	X
Senecio spathulatus	Coast Groundsel	E1			X	X
Euphrasia arguta		E4A	CE	X	X*	X*
Lindernia alsinoides	Noah's False Chickweed	E1		X		
Persicaria elatior	Tall Knotweed	V	V	X	X	X

Scientific Name	Common Name	BC Act 2016	EPBC Act 1999	Recorded at Site from Database		
Flora Species				4 Payton Street, Raymond Terrace	101 Kindlebark Drive, Medowie	154 Rocky Point Road, Fingal Bay
Callistemon linearifolius	Netted Bottle Brush	V		X	X	X
Grevillea parviflora subsp. *parviflora*	Small-flowered Grevillea	V	V	X	X	X
Commersonia prostrata	Dwarf Kerrawang	E1	E	X	X	
Chamaesyce psammogeton	Sand Spurge	E1				X
Asperula asthenes	Trailing Woodruff	V	V	X	X*	X
Thesium australe	Austral Toadflax	V	V	X*	X*	X*
Zannichellia palustris		E1		X		
Maundia triglochinoides		V		X	X	
Insects						
Petalura gigantea	Giant Dragonfly	E1				X
Amphibians						
Crinia tinnula	Wallum Froglet	V		X	X	X
Litoria aurea	Green and Golden Bell Frog	E1	V	X	X*	X*
Mixophyes balbus	Stuttering Frog	E1	V	X*	X*	
Uperoleia mahonyi	Mahony's Toadlet	E1	E	X	X	X
Reptiles						
Hoplocephalus stephensii	Stephens' Banded Snake	V			X	X
Saltuarius moritzi	New England Leaf-tailed Gecko		V	X*	X*	X*
Birds						
Oxyura australis	Blue-billed Duck	V		X	X	
Stictonetta naevosa	Freckled Duck	V		X	X	
Anseranas semipalmata	Magpie Goose	V		X		
Haematopus fuliginosus	Sooty Oystercatcher	V		X	X	X
Haematopus longirostris	Pied Oystercatcher	E1		X	X	X
Actitis hypoleucos	Common Sandpiper		M	X	X	X
Calidris acuminata	Sharp-tailed Sandpiper		M	X	X	X*
Calidris ferruginea	Curlew Sandpiper	E1	CE & M	X	X	X
Calidris melanotos	Pectoral Sandpiper		M	X		X
Gallinago hardwickii	Latham's Snipe		M	X	X	X
Numenius madagascariensis	Eastern Curlew		CE & M	X	X	X
Tringa nebularia	Common Greenshank		M	X	X	X

Scientific Name	Common Name	BC Act 2016	EPBC Act 1999	Recorded at Site from Database		
Flora Species				4 Payton Street, Raymond Terrace	101 Kindlebark Drive, Medowie	154 Rocky Point Road, Fingal Bay
Charadrius mongolus	Lesser Sand-plover	V		X	X	X
Charadrius leschenaultii	Greater Sand-plover	V	V & M	X*	X*	X
Pluvialis fulva	Pacific Golden Plover		V	X	X	X
Pluvialis squatarola	Grey Plover		V	X	X	X
Rostratula australis	Australian Painted Snipe	E1	E	X	X*	X
Cuculus optatus	Oriental Cuckoo		M	X		
Botaurus poiciloptilus	Australian Bittern	E1	E	X	X	X
Ixobrychus flavicollis	Black Bittern	V		X	X	X
Ephippiorhynchus asiaticus	Black-necked Stork	E1		X	X	X
Burhinus grallarius	Bush Stone-curlew	E1		X	X	X
Esacus magnirostris	Beach Stone-curlew	E4A				X
Apus pacificus	Fork-tailed Swift		M	X	X	X
Irediparra gallinacea	Comb-crested Jacana	V		X	X	
Onychoprion fuscata	Sooty Tern	v				X
Sternula albifrons	Little Tern	E1		X	X	X
**Sternula nereis nereis*	Australian Fairy Tern		V	X*	X*	X*
Calyptorhynchus lathami lathami	South-eastern Glossy Black-Cockatoo	V	V	X	X	X
Callocephalon fimbriatum	Gang Gang Cockatoo	V	E	X*	X*	X
Lathamus discolor	Swift Parrot	E1	CE	X	X	X
**Neophema chrysostoma*	Blue-winged Parrot		V	X*	X*	X*
Neophema pulchella	Turquoise Parrot	V		X	X	
Glossopsitta pusilla	Little Lorikeet	V		X	X	X
Hirundapus caudacutus	White-throated Needletail	V	V & M	X	X	X
Artamus cyanopterus cyanopterus	Dusky Woodswallow	V		X	X	X
Ptilinopus magnificus	Wompoo Fruit-Dove	V		X	X	X
Ptilinopus regina	Rose-crowned Fruit-Dove	V		X	X	X
Ptilinopus superbus	Superb Fruit-Dove	V		X		X
Turnix maculosus	Red-backed Button-quail	V		X	X	
**Monarcha melanopsis*	Black-faced Monarch		M	X*	X*	X*

Scientific Name	Common Name	BC Act 2016	EPBC Act 1999	Recorded at Site from Database		
Flora Species				4 Payton Street, Raymond Terrace	101 Kindlebark Drive, Medowie	154 Rocky Point Road, Fingal Bay
**Symposiachrus trivirgatus as Monarcha trivirgatus*	Spectacled Monarch		M	X*	X*	X*
Pycnoptilus floccosus	Pilotbird		V	X*	X*	X*
Epthianura albifrons	White-fronted Chat	V		X	X	X
**Melanodryas cucullata cucullata*	Hooded Robin	V		X	X	X*
Petroica boodang	Scarlet Robin	V		X	X	X
Petroica phoenicea	Flame Robin	V		X	X	
**Myiagra cyanoleuca*	Satin Flycatcher		M	X*	X*	X*
**Rhipidura rufifrons*	Rufous Fantail		M	X*	X*	X*
Climacteris picumnus victoriae	Brown Treecreeper	V	V	X	X	X*
Stagonopleura guttata	Diamond Firetail	V	V	X	X*	X
Motacilla flava	Yellow Wagtail		M	X		
Pomatostomus temporalis subsp. *temporalis*	Grey-crowned Babbler	V		X	X	
Chthonicola sagittata	Speckled Warbler	V		X	X	
Anthochaera phrygia	Regent Honeyeater	E4A	CE	X	X	X*
Grantiella picta	Painted Honeyeater	V	V	X*	X*	X*
Melithreptus gularis gularis	Black-chinned Honeyeater (eastern subspecies)	V		X	X	
Daphoenositta chrysoptera	Varied Sittella	V		X	X	X
Circus assimilis	Spotted Harrier	V		X	X	
Pandion cristatus	Eastern Osprey	V	M	X	X	X
Lophoictinia isura	Square-tailed Kite	V		X	X	X
Erythrotriorchis radiatus	Red Goshawk	E4A	V	X*	X*	X*
Hieraaetus morphnoides	Little Eagle	V		X	X	X
Haliaeetus leucogaster	White-bellied Sea Eagle	V	M	X	X	X
**Falco hypoleucos*	Grey Falcon	E1	V	X*	X*	X*
Falco subniger	Black Falcon	V		X		
Ninox strenua	Powerful Owl	V		X	X	X
Ninox connivens	Barking Owl	V		X		X
Tyto longimembris	Eastern Grass Owl	V		X	X	X
Tyto novaehollandiae	Masked Owl	V		X	X	X

Scientific Name	Common Name	BC Act 2016	EPBC Act 1999	Recorded at Site from Database		
Flora Species				4 Payton Street, Raymond Terrace	101 Kindlebark Drive, Medowie	154 Rocky Point Road, Fingal Bay
Tyto tenebricosa	Sooty Owl	V			X	
Mammals						
Dasyurus maculatus maculatus	Spotted-tailed Quoll	V	E	X	X	X
Phascogale tapoatafa	Brush-tailed Phascogale	V		X	X	X
Phascolarctos cinereus	Koala	E1	E	X*	X	X
Macropus parma	Parma Wallaby	V	V	X*	X*	X*
Potorous tridactylus tridactylus	Long-nosed Potoroo	V	V	X	X	X
Cercartetus nanus	Eastern Pygmy-possum	V		X	X	X
Petaurus australis	Yellow-bellied Glider	V	V	X	X	X*
Petaurus norfolcensis	Squirrel Glider	V		X	X	X
Petauroides volans	Greater Glider	E1	E	X	X	X*
Pseudomys gracilicaudatus	Eastern Chestnut Mouse	V				X
Pseudomys novaehollandiae	New Holland Mouse		V	X	X	X
Pteropus poliocephalus	Grey-headed Flying-fox	V	V	X	X	X
Falsistrellus tasmaniensis	Eastern False Pipistrelle	V		X	X	X
Saccolaimus flaviventris	Yellow-bellied Sheathtail-bat	V		X	X	X
Micronomus norfolkensis	Eastern Coastal Free-tailed Bat	V		X	X	X
Miniopterus australis	Little Bentwing-bat	V		X	X	X
Miniopterus orianae oceanensis	Large Bentwing-bat	V			X	X
Myotis macropus	Southern Myotis	V		X	X	X
Nyctophilus corbeni	Corben's Long-eared Bat			X		
Scoteanax rueppellii	Greater Broad-nosed Bat	V		X	X	X
Vespadelus troughtoni	Eastern Cave Bat	V		X	X	X
Chalinolobus dwyeri	Large-eared Pied Bat	V	V	X	X	X
Populations						
Eucalyptus camaldulensis population in the Hunter Catchment		E2		X	X	
Emu population in the New South Wales North Coast Bioregion and Port Stephens local government area		E2		X	X	X
Endangered Ecological Communities						
Central Hunter Grey Box—Ironbark Woodland in the New South Wales North Coast and Sydney Basin Bioregions		E3		X	X	

Scientific Name / Common Name Flora Species	BC Act 2016	EPBC Act 1999	Recorded at Site from Database		
			4 Payton Street, Raymond Terrace	101 Kindlebark Drive, Medowie	154 Rocky Point Road, Fingal Bay
Central Hunter Ironbark—Spotted Gum—Grey Box Forest in the New South Wales North Coast and Sydney Basin Bioregions	E3		X	X	
Central Hunter Valley eucalypt forest and woodland		CE	X	X*	
Coastal Saltmarsh in the New South Wales North Coast, Sydney Basin and South East Corner Bioregions	E3		X	X	X
Coastal Swamp Oak (Casuarina glauca) Forest of New South Wales and South East Queensland ecological community		E	X	X*	X
Coastal Swamp Sclerophyll Forest of New South Wales and South East Queensland		E	X	X*	X
Freshwater Wetlands on Coastal Floodplains of the New South Wales North Coast, Sydney Basin and South East Corner Bioregions	E3		X	X	X
Hunter Floodplain Red Gum Woodland in the NSW North Coast and Sydney Basin Bioregions	E3		X	X	
Hunter Lowland Redgum Forest in the Sydney Basin and New South Wales North Coast Bioregions	E3		X	X	X
Hunter Valley Footslopes Slaty Gum Woodland in the Sydney Basin Bioregion	V2		X		
Hunter Valley Vine Thicket in the NSW North Coast and Sydney Basin Bioregions	E3		X		
Hunter Valley Weeping Myall Woodland in the Sydney Basin Bioregion	E4B		X	X	
Kurri Sand Swamp Woodland in the Sydney Basin Bioregion	E3		X	X	
Kurri sand swamp woodland of the Sydney Basin bioregion		E	X		
Littoral Rainforest in the New South Wales North Coast, Sydney Basin and South East Corner Bioregions	E3		X	X	X
Littoral Rainforest and Coastal Vine Thickets of Eastern Australia		CE			X*
Lower Hunter Spotted Gum Ironbark Forest in the Sydney Basin and NSW North Coast Bioregions	E3		X	X	X
Lower Hunter Valley Dry Rainforest in the Sydney Basin and NSW North Coast Bioregions	V2		X	X	X
Lowland Rainforest in the NSW North Coast and Sydney Basin Bioregions	E3		X	X	X
Lowland Rainforest on Floodplain in the New South Wales North Coast Bioregion	E3		X	X	X
Lowland Rainforest of Subtropical Australia		CE	X*	X*	X
Quorrobolong Scribbly Gum Woodland in the Sydney Basin Bioregion	E3		X	X	

Scientific Name / Common Name Flora Species	BC Act 2016	EPBC Act 1999	Recorded at Site from Database		
			4 Payton Street, Raymond Terrace	101 Kindlebark Drive, Medowie	154 Rocky Point Road, Fingal Bay
River-flat eucalypt forest on coastal floodplains of southern New South Wales and eastern Victoria		CE	X	X*	
River-Flat Eucalypt Forest on Coastal Floodplains of the New South Wales North Coast, Sydney Basin and South East Corner Bioregions	E3		X	X	X
Subtropical Coastal Floodplain Forest of the New South Wales North Coast Bioregion	E3		X	X	X
Subtropical eucalypt floodplain forest and woodland of the New South Wales North Coast and South East Queensland bioregions		E	X*	X*	X
Swamp Oak Floodplain Forest of the New South Wales North Coast, Sydney Basin and South East Corner Bioregions	E3		X	X	X
Swamp Sclerophyll Forest on Coastal Floodplains of the New South Wales North Coast, Sydney Basin and South East Corner Bioregions	E3		X	X	X
Sydney Freshwater Wetlands in the Sydney Basin Bioregion	E3		X	X	
Themeda grassland on seacliffs and coastal headlands in the NSW North Coast, Sydney Basin and South East Corner Bioregions	E3		X	X	X
Warkworth Sands Woodland in the Sydney Basin Bioregion	E3		X	X	
White Box - Yellow Box - Blakely's Red Gum Grassy Woodland and Derived Native Grassland in the NSW North Coast, New England Tableland, Nandewar, Brigalow Belt South, Sydney Basin, South Eastern Highlands, NSW South Western Slopes, South East Corner and	E4B		X	X	

E1/E=Endangered Species E2=Endangered Population E3=Endangered Ecological Community
V=Vulnerable Species V2= Vulnerable Ecological Community E4A/E4B/CE=Critically Endangered M=Migratory Species

5.0 RESULTS

5.1 FLORA ASSEMBLAGES

The vegetation of the study areas was stratified where possible by assigning the vegetation to Plant Community Types (PCTs) detailed in the NSW Vegetation Information System (VIS) classification database.

The following PCTs were present within the subject lands:

- Highly modified PCT 3433 - Hunter Coast Foothills Spotted Gum-Ironbark Grassy Forest (4 Payton Street, Raymond Terrace) (0.03ha) (Figure 5.1);
- PCT 3582 - Hunter Coast Lowland Apple-Bloodwood Forest (101 Kindlebark Drive, Medowie) (0.04ha) (Figure 5.2);
- Highly modified PCT 3802 Lower North Sandplain Wallum Heath (154 Rocky Point Road, Final Bay) (0.001ha) (Figure 5.3);
- Maintained Exotic Ground Covers (All Subject Lands) (Figures 5.1-5.3).

A description of each vegetation type present within each of the subject lands is provided below. A vegetation map of the study areas is shown in Figure 5.1-5.5. Photos of the vegetation within the study areas are shown in Plates 5.1 - 5.21. A full list of the flora species recorded during fieldwork is listed in Appendix A.

5.1.1 LOT 68 DP 248229 NO. 4 PAYTON STREET, RAYMOND TERRACE

The subject land consisted of 4 large remanent *Eucalyptus tereticornis* (Forest Red Gum) specimens and maintained exotic groundcovers (Plates 5.1-5.4). The remnant specimens of *E. tereticornis* are consistent with PCT 3433 Hunter Coast Foothills Spotted Gum-Ironbark Grassy Forest when considering nearby vegetation, however there were no other native species present. Evidence of lawn and garden clipping dumping was present within the subject land and proposed building envelope (Plate 5.5). There were also tracks consistent with dirt bike activity within the site (Plate 5.6).

Species composition

Canopy species

Four large remanent *Eucalyptus tereticornis* (Forest Red Gum) specimens.

Midstorey and shrub layer

Absent

Groundcovers

Plantago lanceolata (Lambs Tongue), *Taraxacum officinale* (Dandelion), *Axonopus affinis* (Narrowleaf Carpet Grass), *Senecio madagascariensis* (Fireweed), *Bidens pilosa* (Cobblers Pegs), *Lolium perenne* (Rye Grass), *Cenchrus clandestinum* (Kikuyu), *Stenotaphrum secundatum* (Buffalo Grass), *Nothoscordum gracile* (Onion weed), *Capillipedium spicigerum* (Scented Top), *Hypochaeris radicata* (Catsear), *Oxalis* sp., and *Trifolium repens* (White clover).

Plate 5.1: Proposed building envelope within 4 Payton Street, Raymond Terrace

Plate 5.2: *E. tereticornis* located within the subject site.

Plate 5.3: Proposed building envelope facing southwest.

Plate 5.4: The subject land facing west.

Plate 5.5: Evidence of garden and lawn clipping dumping within the subject land.

Plate 5.6: Evidence of dirt bike activity within the subject land.

5.1.2 LOT 721 DP 1033896 NO. 101 KINDLEBARK DRIVE, MEDOWIE

Vegetation within the north of the subject land consisted of largely exotic low groundcover then transitioned into structurally intact vegetation consistent with PCT 3582 - Hunter Coast Lowland Apple-Bloodwood Forest (Plates 5.7-5.10). There were a number of planted specimens within the subject land with old plant protection noted around a number of specimens. Edge effects were also noted around the perimeter of the PCT3582 vegetation. The proposed building envelope only consisted of introduced groundcovers.

Species composition

Canopy species

Angophora costata (Smooth-barked Apple), *Corymbia gummifera* (Red Bloodwood) *Eucalyptus globoidea* (White Stringybark), *Eucalyptus capitellata* (Brown Stringybark), *Eucalyptus racemosa* (Narrow-leaved scribbly gum)

Midstorey and shrub layer

Pittosporum undulatum (Sweet Pittosporum), *Persoonia levis* (Broad-leaved Geebung), *Daviesia ulicifolia* (Gorse Bitter-pea), *Glochidion ferdinandi* (Cheese Tree), *Pteridium esculentum* (Bracken Fern), *Lepidosperma laterale, Grevillea* sp. *Agapanthus* sp. were observed on the edge of the north-eastern extent of PCT 3582 occurring within the subject land.

Groundcovers

Thysanotus tuberosus (Common Fringe Lily), *Lomandra multiflora* (Many-flowered Mat Rush), *Entolasia stricta, Microlaena stipoides var. stipoides* (Weeping Meadow Grass) *Cynodon dactylon* (Couch Grass), *Centella asiatica*, *Lobelia purpurascens* (Whiteroot), *Dichondra repens* (Kidney Weed), *Glycine clandestina, Hardenbergia violaceae* (Happy Wanderer),

In the north of the subject land groundcovers consisted of *Plantago lanceolata* (Lambs Tongue), *Stenotaphrum secundatum* (Buffalo Grass), *Nothoscordum gracile* (Onion weed), *Hypochaeris radicata* (Catsear), *Oxalis* sp.,*Trifolium repens* (White clover), *Paspalum dilatatum* (Paspalum), *Briza maxima, Briza minor, Verbena bonariensis* (Verbena),

Plate 5.7: Proposed building envelope within subject land facing west.

Plate 5.8: Subject land facing west with PCT 3582 in the left.

Plate 5.9: Subject land facing south.

Plate 5.10: PCT 3582 within the subject land facing north.

5.1.3 LOT 17 DP 805074 NO. 154 ROCKY POINT ROAD, FINGAL BAY

Vegetation throughout the subject land consisted of largely exotic low groundcover with three specimens of *Eucalyptus pilularis* (Blackbutt) in the west of the subject land and exotic planted trees (Plates 5.11-5.14). The 3 specimens of *Eucalyptus pilularis* (Blackbutt) were smaller specimens and were located adjacent to a larger specimen of the same species. All specimens of *E. pilularis* were located under/within the easement of overhead powerlines and had been subject to regular maintenance/pruning. At least one specimen of *E. pilularis* will likely require removal due to the angle of the tree. These specimens are likely remnant and regenerating specimens associated with PCT 3802 Lower North Sandplain Wallum Heath adjacent to the subject land.

Species composition

Canopy species

Three specimens of *Eucalyptus pilularis* (Blackbutt), *Mangifera indica* (Mango Tree), *Prunus persica* (Peach Tree), *Malus domestica* (Apple Tree), Palm tree.

Midstorey and shrub layer

Absent

Groundcovers

Plantago lanceolata (Lambs Tongue), *Cenchrus clandestinum* (Kikuyu), *Stenotaphrum secundatum* (Buffalo Grass), *Nothoscordum gracile* (Onion weed), *Capillipedium spicigerum* (Scented Top), *Hypochaeris radicata* (Catsear), *Oxalis* sp., and *Trifolium repens* (White clover).

Plate 5.11: Subject land facing southeast.

Plate 5.12: Subject land east standing on the southern boundary.

Plate 5.13: Entrance to the Subject land facing south.

Plate 5.14: Likely road access from Rocky Point Road to the subject land.

Figure 5.1 Vegetation and significant trees surveyed within the subject land - 4 Payton Street, Raymond Terrace

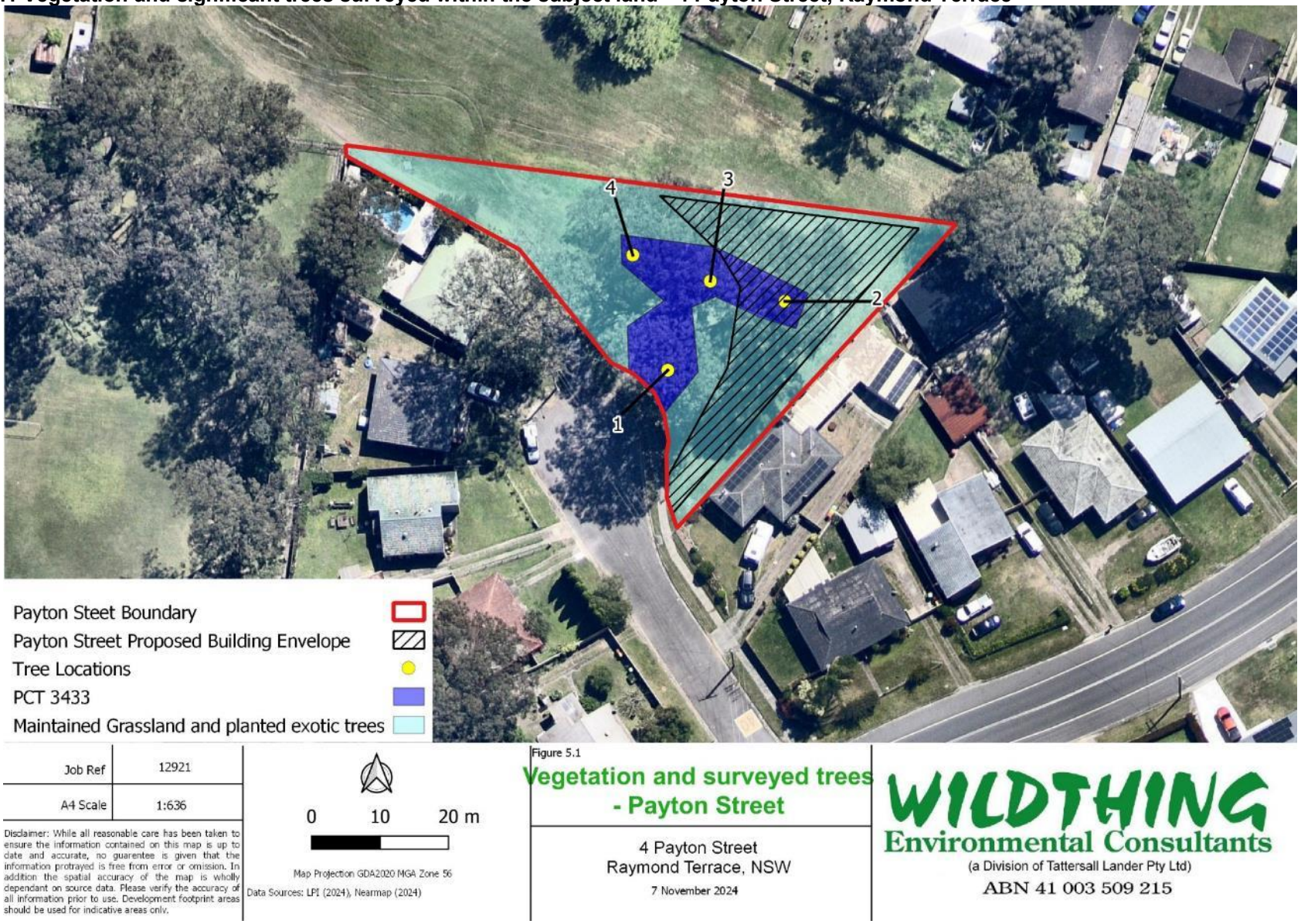


Figure 5.2 Vegetation and significant trees surveyed within the subject land - 101 Kindlebark Drive, Medowie

Figure 5.3 Vegetation and significant trees surveyed within the subject land - 154 Rocky Point Road, Fingal Bay

5.1.4 THREATENED ECOLOGICAL COMMUNITIES

Thirty-two threatened ecological communities (TECs) have been recorded within the region according to both the BioNet (DCCEEW, 2024) and PMST databases, results of the database search conducted for TECs are shown within Table 4.3.

Although PCT 3433 is associated with the Endangered Ecological Community - Lower Hunter Spotted Gum Ironbark Forest in the Sydney Basin and NSW North Coast Bioregions, the Native vegetation within the Subject Land at 4 Payton Street, Raymond Terrace was not consistent with this Threatened Ecological Community (TEC). The vegetation within the subject land did not contain the diagnostic canopy, shrub or groundcover species for this TEC. Therefore, the presence of 4 specimens of *E. tereticornis* is not sufficient to align native vegetation within the subject land with the Lower Hunter Spotted Gum Ironbark Forest in the Sydney Basin and NSW North Coast Bioregions.

5.1.5 ENDANGERED POPULATIONS

No endangered populations or were recorded within the subject land.

5.1.6 THREATENED AND RARE FLORA SPECIES

Thirty-six threatened plant species have been recorded within 10km of all subject lands according to the BioNet database (DCCEEW, 2024) or are considered to have suitable habitat on the PMST database. The results of the database search conducted for threatened flora species is shown within Table 4.3.

Of the addressed threatened fauna species, the most likely species to be present within the subject lands were *Pterostylis chaetophora*; *Diuris praecox* and *Diuris arenaria.* None of these species were observed within the site despite targeted searches. No suitable habitat is considered to be available for the remaining species. The impact of the proposal on threatened flora species has been addressed in Section 7.0 of this report.

5.1.7 PRIORITY WEEDS AND WEEDS OF STATE AND NATIONAL SIGNIFICANCE

One priority weed species listed under the Biosecurity Act 2015 was identified on site and are listed below in Table 5.1. The sites are located within the Hunter Regional Weed Committee (HRWC).

Table 5.1: Priority Weed species found within the subject land.

WEED SPECIES	SUBJECT LAND	LEGAL REQUIREMENTS	ADDITIONAL SIGNIFICANCE
Senecio madagascariensis Fireweed	4 Payton Street, Raymond Terrace	General Biosecurity Duty Regional Recommended Measure	N

T – Listed as a Threatening Process under the NSW BC Act 2016.
N –Weed of National Significance.

***Priorities under the Biosecurity Act 2015**

General Biosecurity Duty - any person dealing with plant matter must take measures to prevent, minimise or eliminate the biosecurity risk (as far as is reasonably practicable).

Prohibition on dealings - Must not be imported into the State or sold.

Regional Recommended Measure - Land managers mitigate the risk of the plant being introduced to their land. Land managers reduce impacts from the plant on priority assets. Land managers prevent spread from their land where feasible. The plant or parts of the plant are not traded, carried, grown or released into the environment.

Prohibited Matter - A person who deals with prohibited matter or a carrier of prohibited matter is guilty of an offence. A person who becomes aware of or suspects the presence of prohibited matter must immediately notify the Department of Primary Industries

It is recommended that priority and other invasive weeds are controlled as part of routine asset maintenance.

5.2 HABITAT APPRASIAL

5.2.1 HABITAT DESCRIPTION AND DISTRIBUTION IN THE VICINITY

The vegetation and landforms present within the subject lands offer potential habitat for a number of native species. The broad habitat types within the subject lands consisted of Dry Sclerophyll Open Forest/Woodland and maintained grassland w. A detailed description of the habitat value of each broad habitat type has been provided below.

Dry Sclerophyll Open Forest/Woodland Habitat

Dry Sclerophyll Open Forest/Woodland would provide suitable habitat opportunities for a variety of species. Frugivorous, nectivorous, granivorous and insectivorous birds and microchiropteran bat species would all find potential foraging resources within this complex. Hollow-bearing trees within 101 Kindlebark Drive, Medowie and 4 Payton Street, Raymond Terrace would provide nesting and roosting sites for a variety of avifauna and other hollow dependant species such as arboreal mammals and tree-roosting bats. Hunting opportunities exist for birds of prey, given that the variable tree coverage and understorey vegetation has created a myriad of ecotones and habitat densities. Such habitat is suitable for terrestrial species including small and medium sized mammals, macropods, reptiles and potentially for some frog species adapted to drier areas. One preferred species of Koala feed tree listed under the Port Stephens CKPoM, *Eucalyptus tereticornis* (Forest Red Gum) was recorded within 4 Payton Street, Raymond Terrace.

Maintained Grassland Habitat

Maintained Grassland was primarily composed of low maintained groundcovers in all subject lands. Such habitat provides a limited habitat for a number of avifauna species, including predominantly terrestrial species preferring open spaces, seed eating birds and several birds of prey, which may hunt over this area in search of potential prey species. Macropods may utilise such areas whilst grazing. Some species of bats may also

forage over this cleared area for insects. The scarcity of trees and shrubs within the habitat type often limits the value of such areas for many species, particularly some reptiles, small mammals and birds which are vulnerable to vehicle strike predation in open spaces.

5.2.2 TREE SURVEY

A total of 16 significant trees were recorded within the subject lands. Of these trees, 4 were *Eucalyptus tereticornis* (Forest Red Gum), a Koala Food Tree under the Port Stephens CKPoM, located at 4 Payton Street, Raymond Terrace. No Koala scats were located at the base of these trees. One of these trees is located within the proposed building envelope and two may have their structural root zone impacted by future development. All three trees are hollow-bearing trees. The tree located within the proposed building envelope contained nesting Rainbow Lorikeets (Plate 5.22).

It is recommended that tree removal be avoided wherever possible. Details of each of the 16 significant trees including height, diameter at breast height (DBH), coordinates and fauna habitat attributes such as hollows are contained Table 5.2. The location of the 16 trees are shown in Figures 5.1-5.5. Photos of significant trees are located in Plates 5.22 - 5.27.

Plate 5.22: Rainbow Lorikeets nesting within Tree No. 2 at 4 Payton Street, Raymond Terrace

Plate 5.23: Lower hollows within Tree No. 2 at 4 Payton Street, Raymond Terrace

Plate 5.24: Hollow at base within Tree No. 10 at 101 Kindlebark Drive, Medowie

Plate 5.25: Hollow within Tree No. 12 at 101 Kindlebark Drive, Medowie

Plate 5.26: Tree Nos. 13-15 Blackbutts to the left of the plate located within 154 Rocky Point Road, Fingal Bay

Plate 5.27: Nest located within Tree No. 16 at 154 Rocky Point Road, Fingal Bay

Significant Tree Data Key for Table B1.

- ***DBH** – Diameter at Breast Height. Tree trunk diameter measured at breast height (1.4 meters above ground level).
- ***Tree Height** –(m)
- **Coordinates** - **GDA – 2020, MGA 56**
- **Habitat/Hollows** –

  Class 1 – very large sized hollow openings (i.e., >20cm) suitable for species such as Owls

  Class 2 – large sized hollow openings (i.e., 15-20cm) suitable for species such as Owls and Possums

  Class 3 – medium sized hollow-openings (i.e., 5-15cm) suitable for species such as Gliders and Possums

  Class 4 – small sized hollow openings (i.e., <5cm) suitable for species such as microchiropteran bats.

  Spout - Hollow opening towards sky offering little protection from the weather

  Arboreal Termite Nest – provides potential nesting opportunities for hollow-dependent birds, such as kingfishers and kookaburras

Table 5.2: Details of significant trees within the subject lands.

Tree No.	Species	Easting GDA94	Northing GDA94	DBH (m)	Height (m)	Habitat				Comments	Removal Required?
						Class 1	Class 2	Class 3	Class 4		
1	*Eucalyptus tereticornis* (Forest Red Gum)	383737	6374802	1.17	22					Fine scratches	Retain if possible
2	*E. tereticornis*	383755	6374818	1.10	20			3		Rainbow lorikeets observed nesting in hollow. Additional hollows located on a lower limb that had previously been removed.	**Yes**
3	*E. tereticornis*	383744	6374811	1.12, 0.26	22			1			Retain if possible
4	*E. tereticornis*	383732	6374819	1.30	22						No
5	*Casuarina cunninghamiana* River Oak	383153	6374715	0.48, 0.12, 0.19	14						No
6	*C. cunninghamiana*	383159	6374720	0.63, 0.45, 0.41	13						No
7	*Ficus elastica* (Rubber Fig)	383163	6374702	~2m	11						No
8	*F. elastica*	383164	6374695	0.35	11						No
9	*Jacaranda mimosifolia*	383168	6374686	0.19	12						No
10	*Eucalyptus capitellata* (Brown Stringybark)	394582	6377381	0.45	15			1		Opening at base	No
11	*E. capitellata*	394590	6377370	0.39	15					Stick nest consistent with Magpie Lark	No
12	*Eucalyptus racemosa*	394591	6377390	0.38	14			1		Opening in trunk	No
13	*Eucalyptus pilularis* (Blackbutt)	421573	6376350	0.18	10						**Yes**
14	*E. pilularis*	421574	6376351	0.19	10						**Yes**
15	*E. pilularis*	421571	6376351	0.18	10						**Yes**
16	*Mangifera indica* (Mango Tree)	421581	6376336	multistem	3						**Yes**

5.3 HABITAT FOR SIGNIFICANT SPECIES

An assessment of habitat attributes on site has been undertaken for the significant species listed in Table 4.3. The results of the assessment using definitions shown in Table 5.3 are displayed in Table 5.4. Threatened species identified in this assessment as having potential habitat available on site have been considered further in Section 7.0 of this report.

Table 5.3: Definitions of likelihood of occurrence criteria.

Likelihood of Occurrence	Threatened Fauna	Threatened Flora
Unlikely	Suitable habitat is absent from the subject land and/or the subject land is outside of the species known distribution	
Low	• The species has not been recorded in the locality (10km) within the last five years; and/or • Although suitable habitat is present in the subject land the suitable habitat is in a highly modified, limited or degraded state; and/or • This species may be an occasional visitor, but habitat similar or of higher quality is widely distributed in the local area.	• The species has not been recorded in the locality (10km) within the last five years, and/or • Although suitable habitat is present in the subject land the suitable habitat is in a highly modified or degraded state
Moderate	• The species has been recorded in the locality (10km) within the last five years; and/or • It is unlikely to be dependent on habitat within the subject land (i.e., for breeding or important life cycle periods) or to maintain a permanent resident population. However, the species may seasonally, opportunistically or occasionally use resources within the subject land; and/or • Although suitable habitat is present in the subject land the suitable habitat is in a moderately modified, limited or degraded state This category includes fauna species that were targeted by seasonal surveys and were not recorded, wide ranging species which may fly-over' the site, regardless of the habitat types present and generalist species with non-specific habitat requirements	• The species has been recorded in the locality (10km) within the last five years; and/or. • Although potential habitat is present in the subject land the suitable habitat is in a moderately modified or degraded state. This category includes flora species that were targeted by seasonal surveys and were not recorded.
High	• The species has been recorded in the locality (10km) within the last five years; and/or • It is highly likely that the species inhabits the subject land and is dependent on identified suitable habitat (i.e., for breeding or important life cycle periods) and is likely to maintain a resident population. This includes species that are known to visit the subject land during regular seasonal movements or migration.	• The species has been recorded in the locality (10km) within the last five years; and/or • It is highly likely to inhabit the subject land and is dependent on identified suitable habitat.
Known	The species was observed in the subject land during the current survey and/or was recorded during a survey conducted on the site during the last 5 years.	

Table 5.4: Habitat Assessment for Significant Species (Oceanic fauna have been removed from assessment).

SPECIES	STATUS			HABITAT DESCRIPTION AND LOCALLY KNOWN POPULATIONS	LIKELIHOOD OF OCCURRENCE WITHIN THE SUBJECT LAND		
	BC Act 2016	EPBC Act 1999	SAII		4 Payton Street, Raymond Terrace	101 Kindlebark Drive, Medowie	154 Rocky Point Road, Fingal Bay
Flora							
Caladenia tessellata Thick-lipped Spider-orchid	E1	V	Yes	Generally found in grassy sclerophyll woodland on clay loam or sandy soils, though the population near Braidwood is in low woodland with stony soil. Is known from the Sydney area (old records), Wyong, Ulladulla and Braidwood in NSW.	**Unlikely** Suitable habitat was unlikely to be present within the site. No known records within the vicinity of the site.	**N/A**	**N/A**
Corybas dowlingii Red Helmet Orchid	E1		No	Corybas dowlingii is restricted to the central coast and Hunter regions of New South Wales where it is currently known from the Port Stephens, Bulahdelah, Lake Macquarie and Freemans Waterhole areas. It is known from the local government areas of Cessnock, Great Lakes, Lake Macquarie and Port Stephens. More recently the species has been recorded from the Wauchope and Port Macquarie areas. Sheltered areas such as gullies and southerly slopes in tall open forest on well-drained gravelly soil at elevations of 10-200 m; though the species has been recorded from sandy soils in swamp forest areas (e.g., Medowie, Anna Bay, Wauchope and Port Macquarie).	**Unlikely** The site lacks common flora associations. No known nearby records.	**Low** Marginal suitable habitat was present.	**Unlikely** The site lacks common flora associations.
Cryptostylis hunteriana Leafless Tongue Orchid	V	V	No	Grows in swamp-heath on sandy soils, chiefly in coastal districts, south from the Gibraltar Range. It is known historically from several localities on the NSW south coast and has been observed in recent years at many sites between Batemans Bay and Nowra (although it is uncommon at all sites). Also recorded at Munmorah State Conservation Area, Nelson Bay, Wyee, Washpool National Park, Nowendoc State Forest, Ku-Ring-Gai Chase National Park and Ben Boyd National Park.	**Unlikely** Suitable habitat was unlikely to be present within the site. No known records within the vicinity of the site.	**Unlikely** Suitable habitat was unlikely to be present within the site. No known records within the vicinity of the site.	**Unlikely** Suitable habitat was not present due to the highly disturbed nature of the site.

SPECIES	STATUS			HABITAT DESCRIPTION AND LOCALLY KNOWN POPULATIONS	LIKELIHOOD OF OCCURRENCE WITHIN THE SUBJECT LAND		
	BC Act 2016	EPBC Act 1999	SAII		4 Payton Street, Raymond Terrace	101 Kindlebark Drive, Medowie	154 Rocky Point Road, Fingal Bay
Diuris arenaria Sand Doubletail	E1		Yes	Depicted to exist in a great variety of environments including coastal heath woodlands (Jones 1999), dry sclerophyll forests (Bishop 2000) and open grasslands. Endemic to the Tomaree Peninsula Port Stephens (Jones, 1999, Bishop 2000) where it has a wide distribution. Colonies known to occur in Nelson Bay, Shoal Bay, Anna Bay, Tomaree National Park, Worimi Conservation Lands and Bobs Farm.	**Low** Marginal suitable habitat was present.	**Low** Marginal suitable habitat was present.	**Low** Marginal suitable habitat was present.
Diuris praecox Rough Doubletail	V	V	No	Known from between Bateau Bay and Smiths Lake. Large populations have been recorded within power line easements at Anna Bay, Bobs Farm and Adamstown Heights. Grows on hills and slopes of near-coastal districts in open forests which have a grassy to fairly dense understorey.	**Low** Marginal suitable habitat was present.	**Low** Marginal suitable habitat was present.	**Low** Marginal suitable habitat was present.
Prasophyllum sp. Wybong A Leek Orchid		CE	Yes	Leek orchids are generally found in shrubby and grassy habitats in dry to wet soil (Jones 2006). Known to occur in open eucalypt woodland and grassland.	**Unlikely** Suitable habitat was unlikely to be present within the site. No known records within the vicinity of the site.	**N/A**	**N/A**
Pterostylis chaetophora Tall Rustyhood	V		No	The preferred habitat is seasonally moist, dry sclerophyll forest with a grass and shrub understorey. The most commonly observed habitat is vegetation characterised by grassy open forests or derived native grasslands of Eucalyptus amplifolia and Eucalyptus moluccana on gentle flats, or that are dominated by Corymbia maculata with any of Eucalyptus fibrosa, Eucalyptus siderophloia or Eucalyptus crebra.	**Low** Marginal suitable habitat was present within the subject land.	**Low** Suitable habitat was present within the subject land.	**N/A**
Rhizanthella slateri Eastern Underground Orchid	V	E1	Yes	Occurs from south-east Queensland to south-east NSW. In NSW, currently known from fewer than 10 locations, including near Bulahdelah, the Watagan Mountains, the Blue	**Unlikely** Suitable habitat was unlikely to be present within the site. No	**Unlikely** Suitable habitat was unlikely to be present within	**Unlikely** Suitable habitat was unlikely to be present within the site. No

SPECIES	STATUS			HABITAT DESCRIPTION AND LOCALLY KNOWN POPULATIONS	LIKELIHOOD OF OCCURRENCE WITHIN THE SUBJECT LAND		
	BC Act 2016	EPBC Act 1999	SAII		4 Payton Street, Raymond Terrace	101 Kindlebark Drive, Medowie	154 Rocky Point Road, Fingal Bay
				Mountains, Wiseman's Ferry area, Agnes Banks and near Nowra. Grows in sclerophyll forest in shallow to deep loams.	known records within the vicinity of the site.	the site. No known records within the vicinity of the site.	known records within the vicinity of the site.
Arthraxon hispidus Hairy-joint Grass	V	V	No	Occurs over a wide area in south-east Queensland, and on the northern tablelands and north coast of NSW, but is never common. Also found from Japan to central Eurasia. Moisture and shade-loving grass, found in or on the edges of rainforest and in wet eucalypt forest, often near creeks or swamps.	**Unlikely** Suitable habitat was unlikely to be present within the site. No known records within the vicinity of the site.	**Unlikely** Suitable habitat was unlikely to be present within the site. No known records within the vicinity of the site.	**Unlikely** Suitable habitat was unlikely to be present within the site. No known records within the vicinity of the site.
Dichanthium setosum Bluegrass	V	V	No	Occurs on the New England Tablelands, Northwest Slopes and Plains and the Central Western Slopes of NSW, extending to northern Queensland. Associated with heavy basaltic black soils and red-brown loams with clay subsoil.	**Unlikely** Suitable habitat was unlikely to be present within the site. No known records within the vicinity of the site.	**N/A**	**N/A**
Cynanchum elegans White-flowered Wax Plant	E1	E	No	This species occurs in scattered coastal localities from the QLD-NSW border south to Wollongong. Found in dry, littoral or subtropical rainforest, and occasionally in scrub and woodland from sea level to about 600m ASL.	**Unlikely** No suitable habitat was present.	**N/A**	**N/A**
Rutidosis heterogama Heath Wrinklewort	V	V	No	Grows in heath on sandy soils and moist areas in open forest and has been recorded along disturbed roadsides. Recorded from near Cessnock to Kurri Kurri with an outlying occurrence at Howes Valley. On the Central Coast it is located north from Wyong to Newcastle.	**Low** Marginal suitable habitat was present. No known records within the vicinity of the site.	**N/A**	**N/A**
Tetratheca juncea Black-eyed Susan	V	V	No	Confined to the northern portion of the Sydney Basin bioregion and the southern portion of the North Coast bioregion in the local government areas of Wyong, Lake Macquarie, Newcastle, Port Stephens, Great Lakes and Cessnock. Found in low open	**Unlikely** The site lacks common flora associations. No known nearby records.	**Low** Marginal suitable habitat was present. No known records	**Unlikely** The site lacks common flora associations.

SPECIES	STATUS			HABITAT DESCRIPTION AND LOCALLY KNOWN POPULATIONS	LIKELIHOOD OF OCCURRENCE WITHIN THE SUBJECT LAND		
	BC Act 2016	EPBC Act 1999	SAII		4 Payton Street, Raymond Terrace	101 Kindlebark Drive, Medowie	154 Rocky Point Road, Fingal Bay
				forest/woodland with a mixed shrub understorey and grassy groundcover. However, it has also been recorded in heathland and moist forest.		within the vicinity of the site.	
Prostanthera densa Villous Mint-bush	V	V	No	This species has been recorded from the Currarong area in Jervis Bay, Royal National Park (Marley), Cronulla, Helensburgh and Port Stephens (Nelson Bay). The Sydney and Royal National Park populations were thought possibly extinct, but the species is now known to occur at Bass and Flinders Point in Cronulla. Grows in sclerophyll forest and shrubland, on coastal headlands and near-coastal ranges, on sandstone.	**N/A**	**N/A**	**Low** Marginal suitable habitat was present.
Angophora inopina Charmhaven Apple	V	V	No	Endemic to the Central Coast region of NSW. The known northern limit is near Karuah where a disjunct population occurs; to the south populations extend from Toronto to Charmhaven with the main population occurring between Charmhaven and Morisset. There is an unconfirmed record of the species near Bulahdelah. Approximately 1250 ha of occupied habitat has been mapped in the Wyong–southern Lake Macquarie area. Grows in open woodland with a dense shrub understorey on deep white sandy soils over sandstone.	**Unlikely** No suitable habitat was present.	**Low** Marginal suitable habitat was present.	**Unlikely** No suitable habitat was present.
Eucalyptus camfieldii Camfield's Stringybark	V	V	No	Poor coastal country in shallow sandy soils overlying Hawkesbury sandstone. Coastal heath mostly on exposed sandy ridges. Occurs mostly in small scattered stands near the boundary of tall coastal heaths and low open woodland of the slightly more fertile inland areas.	**Unlikely** The site lacks common flora associations. No known nearby records.	**Unlikely** The site lacks common flora associations.	**Unlikely** The site lacks common flora associations. No known nearby records.
Eucalyptus glaucina Slaty Red Gum	V	V	No	Grows in grassy woodland and dry eucalypt forest, usually on deep, moderately fertile and well-watered soils. This species has only	**N/A**	**Unlikely**	**N/A**

SPECIES	STATUS			HABITAT DESCRIPTION AND LOCALLY KNOWN POPULATIONS	LIKELIHOOD OF OCCURRENCE WITHIN THE SUBJECT LAND		
	BC Act 2016	EPBC Act 1999	SAII		4 Payton Street, Raymond Terrace	101 Kindlebark Drive, Medowie	154 Rocky Point Road, Fingal Bay
				been recorded on the north coast of NSW and in small populations from Taree to Broke and west of Maitland.		The site lacks common flora associations.	
Eucalyptus parramattensis subsp. *decadens* Drooping Red Gum	V	V	No	Generally, occupies deep, low-nutrient sands, often those subject to periodic inundation or where water tables are relatively high. It occurs in dry sclerophyll woodland with dry heath understorey. It also occurs as an emergent in dry or wet heathland. Often where this species occurs, it is a community dominant. In the Kurri Kurri area, *E. parramattensis* subsp. *decadens* is a characteristic species of 'Kurri Sand Swamp Woodland and in the Tomago Sandbeds area, the species is usually associated with the 'Tomago Swamp Woodland'.	**Unlikely** No suitable habitat was present.	**Unlikely** No suitable habitat was present.	**Unlikely** No suitable habitat was present.
Melaleuca groveana Grove's Paperbark	V		No	Widespread, scattered populations in coastal districts north of Yengo National Park to southeast Queensland. Also found as a disjunct population near Torrington on the nothern tablelands. Grove's Paperbark grows in heath and shrubland, often in exposed sites, in low coastal hills, escarpment ranges and tablelands on outcopping granite, rhyolite and sandtone on rocky outcrops and cliffs.	**N/A**	**N/A**	**Unlikely** No suitable habitat was present. No local records.
Melaleuca biconvexa Biconvex Paperbark	V	V	No	Only found in NSW, with scattered and dispersed populations found in the Jervis Bay area in the south and the Gosford-Wyong area in the north. Grows in damp places, often near streams; coastal districts and adjacent tablelands from Jervis Bay north to the Port Macquarie district.	**Unlikely** No suitable habitat was present. No local records.	**Low** Marginal habitat was present.	**Unlikely** No suitable habitat was present. No local records.
Rhodamnia rubescens Scrub Turpentine	E4A		Yes	Occurs in coastal districts north from Batemans Bay in New South Wales, approximately 280 km south of Sydney, to areas inland of Bundaberg in Queensland. Found in littoral, warm temperate and	**Unlikely** No suitable habitat was present. No local records.	**Low** Marginal habitat was present.	**Unlikely** No suitable habitat was present. No local records.

SPECIES	STATUS			HABITAT DESCRIPTION AND LOCALLY KNOWN POPULATIONS	LIKELIHOOD OF OCCURRENCE WITHIN THE SUBJECT LAND		
	BC Act 2016	EPBC Act 1999	SAII		4 Payton Street, Raymond Terrace	101 Kindlebark Drive, Medowie	154 Rocky Point Road, Fingal Bay
				subtropical rainforest and wet sclerophyll forest usually on volcanic and sedimentary soils.			
Rhodomyrtus psidioides Native Guava	E4A		Yes	Occurs from Broken Bay New South Wales to Maryborough in Queensland. Pioneer species found in littoral, warm temperate and subtropical rainforest and wet sclerophyll forest often near creeks and drainage lines.	**Unlikely** No suitable habitat was present.	**Unlikely** No suitable habitat was present.	**Unlikely** No suitable habitat was present.
Syzygium paniculatum Magenta Lilly Pilly	E1	V	No	Occurs in a narrow coastal distribution in rainforests on sandy soils or stabilised coastal dunes from Jervis Bay to Bulahdelah in NSW.	**Unlikely** No suitable habitat was present. No local records.	**Low** Marginal habitat was present.	**Unlikely** No suitable habitat was present. No local records.
Senecio spathulatus Coastal Groundsel	E1		No	Occurs in Nadgee Nature Reserve (Cape Howe) and between Kurnell in Sydney and Myall Lakes National Park (with a possible occurrence at Cudmirrah). Grows on frontal dunes.	**N/A**	**Unlikely** No suitable habitat was present	**Unlikely** No suitable habitat was present
Euphrasia arguta Eyebright	E4A	CE	Yes	Found within the Nundle area reported from eucalypt forest with a mixed grass and shrub understorey; here, plants were most dense in an open disturbed area and along the roadside, indicating the species had regenerated following disturbance.	**Unlikely** No suitable habitat was present.	**Unlikely** No suitable habitat was present. No local records.	**Unlikely** No suitable habitat was present. No local records.
Lindernia alsinoides Noah's False Chickweed	E1		Yes	Recorded in coastal areas from Bulahdelah to Coopernook and with occurrences further north at Shannon Creek west of Coutts Crossing and also at Bungawalbyn. Grows in swamp forests and wetlands along coastal and hinterland creeks.	**Unlikely** No suitable habitat was present.	**N/A**	**N/A**
Persicaria elatior Tall Knotweed	V	V	No	Recorded in south-eastern NSW (Mt Dromedary (an old record), Moruya State Forest near Turlinjah, the Upper Avon River catchment north of Robertsocaleyin, Bermagui, and Picton Lakes. In northern NSW it is known from Raymond Terrace (near Newcastle) and the Grafton area	**Unlikely** No suitable habitat was present.	**Low** Marginal suitable habitat was present	**Unlikely** No suitable habitat was present.

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	BC Act 2016	EPBC Act 1999	SAII		4 Payton Street, Raymond Terrace	101 Kindlebark Drive, Medowie	154 Rocky Point Road, Fingal Bay
				(Cherry Tree and Gibberagee State Forests). Grows in damp places, especially beside streams and lakes. Occasionally in swamp forest or associated with disturbance.			
Callistemon linearifolius Netted Bottle Brush	V		No	Recorded from the Georges River to Hawkesbury River in the Sydney area, and north to the Nelson Bay area of NSW. Grows in dry sclerophyll forest on the coast and adjacent ranges.	**Unlikely** No suitable habitat was present.	**Low** Marginal suitable habitat was present	**Unlikely** No suitable habitat was present.
Grevillea parviflora subsp. *parviflora* Small-flower Grevillea	V	V	No	Grows in sandy or light clay soils usually over thin shales. Occurs in a range of vegetation types from heath and shrubby woodland to open forest and is found over a range of altitudes from flat, low-lying areas to upper slopes and ridge crests. Common canopy species vary greatly with community type but generally are species that favour soils with a strong lateritic influence including *Eucalyptus fibrosa*, *E. parramattensis, Angophora bakeri* and *Eucalyptus sclerophylla*.	**Unlikely** No suitable habitat was present.	**Low** Marginal suitable habitat was present	**Unlikely** No suitable habitat was present.
Commersonia prostrata Dwarf Kerrawang	E1	E	No	Occurs on sandy, sometimes peaty soils in a wide variety of habitats: Snow Gum (*Eucalyptus pauciflora*) Woodland and Ephemeral Wetland floor at Rowes Lagoon; Blue leaved Stringybark (*E. agglomerata*) Open Forest at Tallong; and in Brittle Gum (*E. mannifera*) Low Open Woodland at Penrose; Scribbly Gum (E. *haemostoma*)/ Swamp Mahogany (*E. robusta*) Ecotonal Forest at Tomago.	**Unlikely** No suitable habitat was likely to be present.	**Unlikely** No suitable habitat was likely to be present.	**N/A**
Chamaesyce psammogeton Sand Spurge	E			Sand Spurge is found sparsely along the coast from south of Jervis Bay (at Currarong, Culburra and Seven Mile Beach National Park) to Queensland (and Lord Howe Island). Populations have been recorded in Wamberal Lagoon Nature Reserve, Myall Lakes National	**N/A**	**N/A**	**Unlikely** No suitable habitat was likely to be present.

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				Park, Moonee Beach Nature Reserve and Bundjalung National Park. Grows on fore-dunes, pebbly strandlines and exposed headlands, often with Spinifex (Spinifex sericeus) and Prickly Couch (Zoysia macrantha)			
Asperula asthenes Trailing Woodruff	V	V	No	Occurs in damp sites, often along river banks.	**Unlikely** No suitable habitat was likely to be present.	**Unlikely** No suitable habitat was likely to be present.	**Unlikely** No suitable habitat was likely to be present.
Thesium australe Austral Toadflax	V	V	No	Grows in grassland or woodland, often in damp sites.	**Unlikely** No suitable habitat was likely to be present.	**Low** Marginal suitable habitat was present	**Unlikely** No suitable habitat was likely to be present.
Zannichellia palustris	E1		No	In NSW, known from the lower Hunter and in Sydney Olympic Park. Grows in fresh or slightly saline stationary or slowly flowing water.	**Unlikely** No suitable habitat was likely to be present.	**N/A**	**N/A**
Maundia triglochinoides	V	V		Grows in swamps, lagoons, dams, channels, creeks or shallow freshwater 30 - 60 cm deep on heavy clay, low nutrients.	**Unlikely** No suitable habitat was likely to be present.	**Unlikely** No suitable habitat was likely to be present.	**N/A**
Insects							
Petalura gigantea Giant Dragonfly	E1		No	Live in permanent swamps and bogs with some free water and open vegetation.	**N/A**	**N/A**	**Unlikely** No suitable habitat was likely to be present.
Frogs							
Crinia tinnula Wallum Froglet	V		No	Occurs along the coastal margin from Litabella National Park in south-east Queensland to Kurnell in Sydney. Found in a wide range of habitats, usually associated with acidic swamps on coastal sand plains. They typically occur in sedgelands and wet heathlands. They can also be found along drainage lines within other vegetation	**Unlikely** No suitable habitat was likely to be present.	**Low** Marginal suitable habitat was present	**Unlikely** No suitable habitat was likely to be present.

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				communities and disturbed areas, and occasionally in swamp sclerophyll forests.			
Litoria aurea Green and Golden Bell Frog	E1	V	No	Inhabits swamps, lagoons, streams and ponds as well as dams, drains and storm water basins.	**Unlikely** No suitable habitat was present.	**Unlikely** No suitable habitat was present.	**Unlikely** No suitable habitat was present.
Mixophyes balbus Stuttering Frog	E1	V	Yes	Occurs in wet forest regions of south-eastern Queensland, Eastern NSW and Victoria. In late spring, eggs are deposited among leaf litter on the banks of streams and subsequently are washed into the water during heavy rain.	**Unlikely** No suitable habitat was present.	**Unlikely** No suitable habitat was present.	**Unlikely** No suitable habitat was present.
Uperoleia mahonyi Mahony's Toadlet	E1		No	Current observations indicate Mahony's Toadlet inhabits ephemeral and semi-permanent swamps and swales on the coastal fringe of its range. Known records occur in heath or wallum habitats almost exclusively associated with leached (highly nutrient impoverished) white sand. Commonly associated with acid paperbark swamps, Mahony's Toadlet also is known to occur in wallum heath, swamp mahogany-paperbark swamp forest, heath shrubland and Sydney red gum woodland. Recent studies suggest intact vegetation adjacent to and within water bodies is an important habitat feature for this species.	**Unlikely** No suitable habitat was likely to be present.	**Low** Marginal suitable habitat was present	**Unlikely** No suitable habitat was likely to be present.
Reptiles							
Hoplocephalus stephensii Stephens' Banded Snake	V		No	Rainforest and eucalypt forests and rocky areas up to 950 m in altitude.	**N/A**	**Unlikely** No suitable habitat was likely to be present. No nearby records	**Unlikely** No suitable habitat was likely to be present.
Saltuarius moritzi New England Leaf-tailed Gecko		E	No	The preferred habitats of S. moritzi are closed forests, wet sclerophyll forests, and rocky escarpments, gorges, and outcrops.	**Unlikely** No suitable habitat was likely to be	**Unlikely** No suitable habitat was likely to be present.	**Unlikely** No suitable habitat was likely to be

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					present. No nearby records	No nearby records	present. No nearby records
Birds							
Oxyura australis Blue-billed Duck	V		No	The Blue-billed Duck prefers deep water in large permanent wetlands and swamps with dense aquatic vegetation. The species is completely aquatic, swimming low in the water along the edge of dense cover. It will fly if disturbed, but prefers to dive if approached.	**Unlikely** No suitable habitat was likely to be present.	**Unlikely** No suitable habitat was likely to be present.	**N/A**
Stictonetta naevosa Freckled Duck	V		No	Found primarily in south-eastern and south-western Australia, occurring as a vagrant elsewhere. It breeds in large temporary swamps created by floods in the Bulloo and Lake Eyre basins and the Murray-Darling system. The species may also occur as far as coastal NSW and Victoria during extensive inland droughts.	**Unlikely** No suitable habitat was likely to be present.	**Unlikely** No suitable habitat was likely to be present.	**N/A**
Anseranas semipalmata Magpie Goose	V		No	Relatively common in the Australian northern tropics. Records in central and northern NSW. Vagrants can follow food sources to south-eastern NSW. Mainly found in shallow wetlands (less than 1 m deep) with dense growth of rushes or sedges.	**Unlikely** No suitable habitat was likely to be present.	**N/A**	**N/A**
Haematopus longirostris Pied Oystercatcher	E		No	Favours intertidal flats of inlets and bays, open beaches and sandbanks.	**Unlikely** No suitable habitat was likely to be present.	**Unlikely** No suitable habitat was likely to be present.	**Unlikely** No suitable habitat was likely to be present.
Haematopus longirostris Pied Oystercatcher	E1		No	Favours intertidal flats of inlets and bays, open beaches and sandbanks.	**Unlikely** No suitable habitat was likely to be present.	**Unlikely** No suitable habitat was likely to be present.	**Unlikely** No suitable habitat was likely to be present.
Actitis hypoleucos Common Sandpiper		M	No	Shallow pebbly, muddy or sandy edges of rivers and streams, coastal and inland; dams, lakes, sewage ponds, margins of tidal rivers, waterways in mangroves or saltmarsh; mudflats; rocky or sandy beaches.	**Unlikely** No suitable habitat was likely to be present.	**Unlikely** No suitable habitat was likely to be present.	**Unlikely** No suitable habitat was likely to be present.

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Calidris acuminata Sharp-tailed Sandpiper		M	No	Tidal mudflats, saltmarshes, mangroves; shallow fresh, brackish or saline inland wetlands; sewage ponds and irrigated pastures.	**Unlikely** No suitable habitat was likely to be present.	**Unlikely** No suitable habitat was likely to be present.	**Unlikely** No suitable habitat was likely to be present.
Calidris ferruginea Curlew Sandpiper	E	CE	Yes	Tidal mudflats; saltmarsh; fresh, brackish or saline wetlands; sewage ponds.	**Unlikely** No suitable habitat was likely to be present.	**Unlikely** No suitable habitat was likely to be present.	**Unlikely** No suitable habitat was likely to be present.
Calidris melanotos Pectoral Sandpiper		M	No	The Pectoral Sandpiper prefers shallow fresh to saline wetlands. The species is found at coastal lagoons, estuaries, bays, swamps, lakes, inundated grasslands, saltmarshes, river pools, creeks, floodplains and artificial wetlands.	**Unlikely** No suitable habitat was likely to be present.	**N/A**	**Unlikely** No suitable habitat was likely to be present.
Gallinago hardwickii Latham's Snipe		M	No	Utilises a variety of habitats, such as soft wet ground or shallow water with tussock and other green and dead vegetation, and scrub or open wetland from sea-level to alpine bogs (Pizzey & Knight, 2001).	**Unlikely** No suitable habitat was likely to be present.	**X**	**X**
Numenius madagascariensis Eastern Curlew		CE M	Yes	Estuaries, tidal mudflats, sandspits, saltmarshes, mangroves; occasionally fresh or brackish lakes.	**Unlikely** No suitable habitat was likely to be present.	**Unlikely** No suitable habitat was likely to be present.	**Unlikely** No suitable habitat was likely to be present.
Tringa nebularia Common Greenshank				Inhabits a wide variety of inland permanent and temporary wetlands and sheltered coastal habitats of varying salinity.	**Unlikely** No suitable habitat was likely to be present.	**Unlikely** No suitable habitat was likely to be present.	**Unlikely** No suitable habitat was likely to be present.
Charadrius mongolus Lesser Sand-plover		V,M	No	Habitat in the form of muddy and sandy coastline or waterbodies	**Unlikely** No suitable habitat was present.	**Unlikely** No suitable habitat was present.	**Unlikely** No suitable habitat was present.
Charadrius leschenaultii Greater Sand-plover	V		No	In NSW, the species has been recorded between the northern rivers and the Illawarra, with most records coming from the Clarence and Richmond estuaries. Almost entirely restricted to coastal areas in NSW, occurring mainly on sheltered sandy, shelly or muddy	**Unlikely** No suitable habitat was present.	**Unlikely** No suitable habitat was present.	**Unlikely** No suitable habitat was present.

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				beaches or estuaries with large intertidal mudflats or sandbanks.			
Pluvialis fulva Pacific Golden Plover		M	No	Habitat in the form of muddy and sandy coastline or waterbodies	**Unlikely** No suitable habitat was present.	**Unlikely** No suitable habitat was present.	**Unlikely** No suitable habitat was present.
Pluvialis squatarola Grey Plover		V,M	No	Only occasionally recorded along the coast of NSW. Habitat in the form of muddy and sandy coastline or waterbodies	**Unlikely** No suitable habitat was present.	**Unlikely** No suitable habitat was present.	**Unlikely** No suitable habitat was present.
Rostratula australis Australian Painted snipe	E1	E	No	Margins of swamps and streams, chiefly those covered with low and stunted vegetation.	**Unlikely** No suitable habitat was present.	**Unlikely** No suitable habitat was present.	**Unlikely** No suitable habitat was present.
Cuculus optatus Oriental Cuckoo		M	No	Inhabits a range of forests, typically feeding on insects and larvae.	**Low** Due to the non-specific habitat requirements of this species habitat was considered to be present.	**N/A**	**N/A**
Botaurus poiciloptilus Australasian Bittern	E1	E	No	The Australasian Bittern lives alone or in loose groups and favours permanent fresh waters dominated by sedges, rushes, reeds or cutting grasses (e.g. Phragmites, Scirpus, Eleocharis, Juncus, Typha, Baumea and Gahnia) and feeds on insects, small fish, eels, frogs and other aquatic life, sometimes in rice fields.	**Unlikely** No suitable habitat was present.	**Unlikely** No suitable habitat was present.	**Unlikely** No suitable habitat was present.
Ixobrychus flavicollis Black Bittern	V		No	Inhabits both terrestrial and estuarine wetlands, generally in areas of permanent water and dense vegetation. Where permanent water is present, the species may occur in flooded grassland, forest, woodland, rainforest and mangroves.	**N/A**	**Unlikely** No suitable habitat was present.	**Unlikely** No suitable habitat was present.

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Ephippiorhynchus asiaticus Black-necked Stork	E1		No	Widespread in coastal and subcoastal northern and eastern Australia, as far south as central NSW. Breeding has been recorded as far south as Tomago NSW.	**Unlikely** No suitable habitat was present.	**Unlikely** No suitable habitat was present.	**Unlikely** No suitable habitat was present.
Burhinus grallarius Bush Stone Curlew	E1		No	Inhabits open forests and woodlands with a sparse grassy groundlayer and fallen timber.	**Unlikely** No suitable habitat was present.	**Unlikely** No suitable habitat was present.	**Unlikely** No suitable habitat was present.
Esacus magnirostris Beach Stone-curlew	E4A		Yes	Beach Stone-curlews are found exclusively along the coast, on a wide range of beaches, islands, reefs and in estuaries, and may often be seen at the edges of or near mangroves. They forage in the intertidal zone of beaches and estuaries, on islands, flats, banks and spits of sand, mud, gravel or rock, and among mangroves. Beach Stone-curlews breed above the littoral zone, at the backs of beaches, or on sandbanks and islands, among low vegetation of grass, scattered shrubs or low trees; also among open mangroves.	**N/A**	**N/A**	**Unlikely** No suitable habitat was present.
Apus pacificus Fork-tailed Swift		M	No	Inhabits the airspace over open country from semi deserts to coasts.	**Moderate** Due to the non-specific habitat requirements of this species habitat was considered to be present.	**Moderate** Due to the non-specific habitat requirements of this species habitat was considered to be present.	**Moderate** Due to the non-specific habitat requirements of this species habitat was considered to be present.
Irediparra gallinacea Comb-crested Jacana	V		No	Occurs in northern and eastern Australia, mainly in coastal and subcoastal regions, from the north-eastern Kimberley Division of Western Australia to Cape York Peninsula then south along the east coast to the Hunter region of NSW. Inhabits permanent freshwater wetlands, either still or slow-flowing, with a good surface cover of floating vegetation, especially waterlilies, or fringing and aquatic vegetation.	**Unlikely** No suitable habitat was present.	**Unlikely** No suitable habitat was present.	**N/A**

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Onychoprion fuscata Sooty Tern	V		No	Large flocks can be seen soaring, skimming and dipping but seldom plunging in off shore waters.	**N/A**	**N/A**	**Unlikely** No suitable habitat was present.
Sternula albifrons Little Tern	E1		No	Migrating from eastern Asia, the Little Tern is found on the north, east and south-east Australian coasts. Exclusively coastal, nests in small, scattered colonies in low dunes or on sandy beaches just above high tide mark near estuary mouths or adjacent to coastal lakes and islands.	**Unlikely** No suitable habitat was present.	**Unlikely** No suitable habitat was present.	**Unlikely** No suitable habitat was present.
Sternula nereis Australian Fairy Tern		V	No	Nests on sheltered sandy beaches, spits and banks above the high tide line and below vegetation.	**Unlikely** No suitable habitat was present.	**Unlikely** No suitable habitat was present.	**Unlikely** No suitable habitat was present.
Calyptorhynchus lathami Glossy Black-Cockatoo	V		No	Lowland coastal forests, dense mountain forests, semi-arid woodland and trees bordering watercourses, with (Allo)Casuarina trees for foraging.	**Unlikely** No suitable habitat was present.	**Low** Marginal habitat was present.	**Unlikely** No suitable habitat was present.
Callocephalon fimbriatum Gang Gang Cockatoo	V		No	Tall montane forests and woodlands in mature wet sclerophyll forests. Requires hollows in which to breed between October and January.	**Unlikely** No suitable habitat was present.	**Low** Marginal habitat was present.	**Unlikely** No suitable habitat was present.
Lathamus discolor Swift Parrot	E1	CE M	Yes	Open Forest to Woodland, also street trees and in parks and gardens, winter flowering eucalypts for feeding. This species nests in Tasmania during the summer months.	**Low - Medium** Seasonal foraging habitat was present.	**Low - Medium** Seasonal foraging habitat was present.	**Low** Seasonal foraging habitat was present
Neophema chrysostoma Blue-winged Parrot		V	No	Inhabits a range of habitats from coastal, sub-coastal and inland areas, right through to semi-arid zones. Favours grasslands and grassy woodlands. Often found near wetlands both near the coast and in semi-arid zones. Can also be seen in altered environments such as airfields, golf-courses and paddocks.	**Low** Due to the non-specific habitat requirements of this species habitat was considered to be present.	**Low** Due to the non-specific habitat requirements of this species habitat was considered to be present.	**Low** Due to the non-specific habitat requirements of this species habitat was considered to be present.
Neophema pulchella	V		No	Lives on the edges of Eucalypt woodland adjoining clearings and on timbered ridges and	**Low - Moderate**	**Low - Moderate**	**N/A**

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Turquoise Parrot				creeks in farmland. It has also been recorded utilising roadside verges and orchards. Nests in small hollow branches of Eucalypts.	Foraging habitat was present.	Foraging habitat was present.	
Glossopsitta pusilla Little Lorikeet	V		No	Tall Open Forests, woodlands, orchards, parks and street trees.	**Moderate - High** Foraging habitat was present.	**Moderate - High** Foraging habitat was present.	**Low** Marginal foraging habitat was present.
Hirundapus caudacutus White-throated Needletail		V & M	No	Inhabits the airspace above forests, woodlands, farmlands, plains, lakes, coasts and towns.	**Moderate** Due to the non-specific habitat requirements of this species habitat was considered to be present.	**Moderate** Due to the non-specific habitat requirements of this species habitat was considered to be present.	**Moderate** Due to the non-specific habitat requirements of this species habitat was considered to be present.
Artamus cyanopterus cyanopterus Dusky Woodswallow	V		No	The Dusky Woodswallow is found in open forests and woodlands and may be seen along roadsides and on golf courses.	**Moderate** Foraging and roosting habitat was present.	**Moderate** Foraging and roosting habitat was present	**Moderate** Foraging and roosting habitat was present
Ptilinopus magnificus Wompoo Fruit-Dove	V		No	Occurs along the coast and coastal ranges from the Hunter River in NSW to Cape York Peninsula. It is rare south of Coffs Harbour. Found in, or near rainforest, low elevation moist eucalypt forest and brush box forests.	**Unlikely** No suitable habitat was present.	**Low** Marginal habitat was present.	**Unlikely** No suitable habitat was present.
Ptilinopus superbus Superb Fruit-Dove	V		No	Occurs principally from north-eastern in Queensland to north-eastern NSW. It is much less common further south, where it is largely confined to pockets of suitable habitat as far south as Moruya. Inhabits rainforest and similar closed forests where it forages high in the canopy, eating the fruits of many tree species such as figs and palms. It may also forage in eucalypt or acacia woodland where there are fruit-bearing trees.	**Unlikely** No suitable habitat was present.	**N/A**	**Unlikely** No suitable habitat was present.

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Turnix maculosus Red-backed Button-quail	V		No	In NSW, said to occur in grasslands, heath and crops. Said to prefer sites close to water, especially when breeding. The species has been observed associated with the following grasses (in various vegetation formations): speargrass Heteropogon, Blady Grass Imperata cylindrica, Triodia, Sorghum, and Buffalo Grass Cenchrus ciliaris.	**Low** Marginal habitat was present.	**Low** Marginal habitat was present.	**N/A**
Monarcha melanopsis Black-faced Monarch		M	No	Utilises a range of habitats including rainforests, eucalypt woodlands, coastal scrubs (Pizzey & Knight, 2001).	**Low** Marginal habitat was present.	**Low** Marginal habitat was present.	**Low** Marginal habitat was present.
Symposiachrus trivirgatus as Monarcha trivirgatus Spectacled Monarch		M	No	Wet forests, thickly wooded gullies, waterside vegetation and mangroves.	**Unlikely** Suitable wet forest vegetation was not present on site for this species.	**Unlikely** Suitable wet forest vegetation was not present on site for this species.	**Unlikely** Suitable wet forest vegetation was not present on site for this species.
Pycnoptilus floccosus Pilotbird		V	No	Found in wet forested areas and heathland in eastern Victoria and south-eastern New South Wales	**Unlikely** No suitable habitat was present.	**Low** Marginal habitat was present.	**Unlikely** No suitable habitat was present.
Epthianura albifrons White-fronted Chat	V		No	In NSW, it occurs mostly in the southern half of the state, in damp open habitats along the coast, and near waterways in the western part of the state. Along the coastline, it is found predominantly in saltmarsh vegetation but also in open grasslands and sometimes in low shrubs bordering wetland areas. Gregarious species usually found foraging on bare or grassy ground in wetland areas, singly or in pairs. They are insectivorous, feeding mainly on flies and beetles caught from or close to the ground.	**Unlikely** No suitable habitat was present.	**Unlikely** No suitable habitat was present..	**Unlikely** No suitable habitat was present.
Melanodryas cucullata cucullata	V		No	Eucalypt woodlands, Acacia scrublands, Banksia dominated coastal scrubs and open forests.	**Low** Marginal habitat was present.	**Low** Marginal habitat was present.	**Low** Marginal habitat was present.

SPECIES	STATUS			HABITAT DESCRIPTION AND LOCALLY KNOWN POPULATIONS	LIKELIHOOD OF OCCURRENCE WITHIN THE SUBJECT LAND		
	BC Act 2016	EPBC Act 1999	SAII		4 Payton Street, Raymond Terrace	101 Kindlebark Drive, Medowie	154 Rocky Point Road, Fingal Bay
Hooded Robin (south-eastern form)							
Petroica boodang Scarlet Robin	V		No	Primarily a resident in forests and woodlands, but some adults and young birds disperse to more open habitats after breeding. This species lives in dry eucalypt forests and woodlands. The understorey is usually open and grassy with few scattered shrubs. Habitat usually contains abundant logs and fallen timber and these are important components of its habitat.	**Unlikely** No suitable habitat was present.	**Low** Marginal habitat was present.	**Unlikely** No suitable habitat was present.
Petroica phoenicea Flame Robin	V		No	Breeds in upland tall moist eucalypt forests and woodlands, often on ridges and slopes. The groundlayer of the breeding habitat is dominated by native grasses and the shrub layer may be either sparse or dense.	**Unlikely** **No suitable habitat was present.**	**Low** Marginal habitat was present.	**N/A**
Myiagra cyanoleuca Satin Flycatcher		M	No	Satin Flycatchers inhabit heavily vegetated gullies in eucalypt-dominated forests and taller woodlands, and on migration, occur in coastal forests, woodlands, mangroves and drier woodlands and open forests.	**Low** Marginal habitat was present.	**Low** Marginal habitat was present.	**Low** Marginal habitat was present.
Rhipidura rufifrons Rufous Fantail		M	No	Utilises a range of habitats including rainforests, wet sclerophyll forests, monsoon forests, scrubs, mangroves, watercourses, parks and gardens. During migration this species also utilises farms, street trees and buildings.	**Moderate** Transitory habitat was present.	**Moderate** Transitory habitat was present.	**Moderate** Transitory habitat was present.
Climacteris picumnus victoriae Brown Treecreeper	V	V	No	This species is a medium sized insectivorous bird that occupies Eucalypt woodlands, particularly open woodlands lacking a dense understorey, River Red Gums on watercourses and around lakeshores. It is sedentary and nests in tree hollows within permanent territories.	**Moderate** Foraging habitat was present.	**Moderate** Foraging habitat was present.	**Unlikely** No suitable habitat was present.

SPECIES	STATUS			HABITAT DESCRIPTION AND LOCALLY KNOWN POPULATIONS	LIKELIHOOD OF OCCURRENCE WITHIN THE SUBJECT LAND		
	BC Act 2016	EPBC Act 1999	SAII		4 Payton Street, Raymond Terrace	101 Kindlebark Drive, Medowie	154 Rocky Point Road, Fingal Bay
Stagonopleura guttata Diamond Firetail	V		No	Inhabits areas with a grassy, shrubby understorey including Eucalypt woodlands, forests, Acacia scrubs and mallee.	**Unlikely** No suitable habitat was present.	**Moderate** Foraging habitat was present.	**Low** Marginal habitat was present.
Motacilla flava Yellow Wagtail		M	No	Habitat includes paddocks, and marshes. Open country near swamps, salt marshes, sewerage ponds, grassed surrounds to airfields, bare ground; occasionally on drier inland plains. Rare but regular visitor around the Australian coast, especially the NW coast; Broome to Darwin.	**Low** Due to the non-specific habitat requirements of this species habitat was considered to be present.	**N/A**	**N/A**
Pomatostomus temporalis subsp. *temporalis* Grey-crowned Babbler	V		No	Open forest, woodland, scrubland, farmland and outer suburbs. Prefers woodlands with regenerating trees, tall shrubs, and an intact ground cover of grass and forbs.	**Unlikely** No suitable habitat was present.	**Low** Marginal habitat was present.	**Unlikely** No suitable habitat was present.
Chthonicola sagittata Speckled Warbler	V		No	Speckled Warblers live in a wide range of eucalypt-dominated vegetation that has a grassy understorey, often on rocky ridges or in gullies. It builds a domed nest of grass, bark shreds and moss, lined with fur on the ground.	**Unlikely** No suitable habitat was present.	**Low** Marginal habitat was present.	**N/A**
Anthochaera phrygia Regent Honeyeater	E4A	CE M	Yes	Temperate woodlands and open forest, including forest edges, preferring to forage on large-flowered Eucalypts.	**Low** Seasonal foraging habitat was present.	**Low** Seasonal foraging habitat was present.	**Low** Seasonal foraging habitat was present.
Grantiella picta Painted Honeyeater	V		No	Nomadic, within a range of generally drier forested areas with mistletoes.	**Unlikely** No suitable habitat was present.	**Low** Marginal habitat was present	**Unlikely** No suitable habitat was present.
Melithreptus gularis gularis Black-chinned Honeyeater (eastern subspecies)	V		No	Usually found on the western side of the Great Dividing Range in dry sclerophyll forests and woodlands containing box-ironbark associations and River Red Gum. In the Hunter Valley this species is known to utilise drier	**Low** Marginal habitat was present	**Low** Marginal habitat was present	**Low** Marginal habitat was present

SPECIES	STATUS			HABITAT DESCRIPTION AND LOCALLY KNOWN POPULATIONS	LIKELIHOOD OF OCCURRENCE WITHIN THE SUBJECT LAND		
	BC Act 2016	EPBC Act 1999	SAII		4 Payton Street, Raymond Terrace	101 Kindlebark Drive, Medowie	154 Rocky Point Road, Fingal Bay
				coastal woodlands. Usually found in open woodlands.			
Daphoenositta chrysoptera Varied Sittella	V		No	Open eucalypt woodland/forest, mallee, inland acacia, coastal tea-tree scrubs, golf courses, orchards and parks.	**Low** Marginal habitat was present	**Low** Marginal habitat was present	**N/A**
Circus assimilis Spotted Harrier	V		No	Occurs throughout the Australian mainland, except in densely forested or wooded habitats of the coast, escarpment and ranges, and rarely in Tasmania. Found in grassy open woodland including Acacia and mallee remnants, inland riparian woodland, grassland and shrub steppe. It is found most commonly in native grassland, but also occurs in agricultural land.	**Low** Marginal habitat was present	**Low** Marginal habitat was present	**N/A**
Pandion cristatus Eastern Osprey	V		No	Found right around the Australian coastline. Favour coastal areas, especially the mouths of large rivers, lagoons and lakes. Feeds on fish over open waters.	**Unlikely** No suitable habitat for this species	**Unlikely** No suitable habitat for this species	**Unlikely** No suitable habitat for this species
Lophoictinia isura Square-tailed Kite	V		No	Inhabits open forests and woodlands, particularly those on fertile soils with abundant passerines.	**Unlikely** No suitable habitat for this species	**Low** Nesting habitat is available for this species	**Unlikely** No suitable habitat for this species
Erythrotriorchis radiatus Red Goshawk	E4A	E	Yes	The species is very rare in NSW, extending south to about 30°S, with most records north of this, in the Clarence River Catchment, and a few around the lower Richmond and Tweed Rivers. Formerly, it was at least occasionally reported as far south as Port Stephens. In NSW, preferred habitats include mixed subtropical rainforest, Melaleuca swamp forest and riparian Eucalyptus forest of coastal rivers.	**Unlikely** No suitable habitat for this species	**Unlikely** No suitable habitat for this species	**Unlikely** No suitable habitat for this species
Hieraaetus morphnoides Little Eagle	V		No	Is found throughout the Australian mainland excepting the most densely forested parts of the Dividing Range escarpment. It occurs as a single population throughout NSW. Occupies open eucalypt forest, woodland or open woodland. Sheoak or acacia woodlands and	**Low** Suitable habitat was present.	**Low** Suitable habitat was present.	**Low** Marginal habitat was present

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	BC Act 2016	EPBC Act 1999	SAII		4 Payton Street, Raymond Terrace	101 Kindlebark Drive, Medowie	154 Rocky Point Road, Fingal Bay
				riparian woodlands of interior NSW are also used.			
Haliaeetus leucogaster White-bellied Sea-Eagle	V	M	No	Occupies habitat characterised by the presence of large areas of open water and feeds opportunistically on a variety of fish, birds, reptiles, mammals and crustaceans. The nests are built in a variety of sites including tall trees, bushes, mangroves, cliffs, rocky outcrops, caves, crevices, on the ground or even in artificial structures.	**Low** Marginal suitable habitat for this species	**Low** Marginal suitable habitat for this species	**Low** Marginal habitat was present
Falco hypoleucos Grey Falcon	E1		No	Sparsely distributed in NSW, chiefly throughout the Murray-Darling Basin, with the occasional vagrant east of the Great Dividing Range. Generally restricted to shrubland, grassland and wooded watercourses of arid and semi-arid regions, although it is occasionally found in open woodlands near the coast.	**Unlikely** No suitable habitat for this species	**Unlikely** No suitable habitat for this species	**Unlikely** No suitable habitat for this species
Falco subniger Black Falcon	V		No	Widely, but sparsely, distributed in New South Wales, mostly occurring in inland regions.	**Unlikely** No suitable habitat for this species. No nearby records	**N/A**	**N/A**
Ninox strenua Powerful Owl	V		No	Inhabits a wide range of vegetation types from wet Eucalypt forests with a Rainforest understorey to Dry Open Forests and Woodlands. The species has been recorded utilising disturbed habitats such as exotic pine plantations and large trees in parks and gardens. Powerful Owls nest in a slight depression in the wood-mould on the base of a cavity in a large old tree, sometimes in excess of 25 metres above the ground.	**Unlikely** No suitable habitat for this species. No nearby records	**Low** Hunting habitat was present. No roosting or nesting habitat was present.	**Unlikely** No suitable habitat for this species. No nearby records
Ninox connivens Barking Owl	V		No	Inhabits woodland and open forest, including fragmented remnants and partly cleared farmland. It is flexible in its habitat use, and hunting can extend in to closed forest and more open areas. Sometimes able to successfully breed along timbered watercourses in heavily	**Low** Hunting habitat was present. No roosting or nesting habitat was present.	**N/A**	**Unlikely** No suitable habitat for this species.

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	BC Act 2016	EPBC Act 1999	SAII		4 Payton Street, Raymond Terrace	101 Kindlebark Drive, Medowie	154 Rocky Point Road, Fingal Bay
				cleared habitats (e.g. western NSW) due to the higher density of prey found on these fertile riparian soils.			
Tyto longimembris Eastern Grass Owl	V		No	This species roost and nest on the ground, in crops or in thick grass tussock often associated with swamps.	**Unlikely** No suitable habitat was present.	**Unlikely** No suitable habitat was present.	**Unlikely** No suitable habitat was present.
Tyto novaehollandiae Masked Owl	V		No	Lives in dry eucalypt forests and woodlands from sea level to 1100 m. A forest owl, but often hunts along the edges of forests, including roadsides.	**Low** Hunting habitat was present.	**Low** Hunting habitat was present.	**Low** Hunting habitat was present.
Tyto tenebricosa Sooty Owl	V		Yes	Prefers dense dimly lit forests, inhabiting pockets of rainforest and wet sclerophyll forest mainly in mountainous areas, often in south-east facing gullies.	**N/A**	**Unlikely** No suitable habitat was present.	**N/A**
Mammals							
Dasyurus maculatus ssp. *maculatus* Spotted-tailed Quoll	V	V	No	Inhabits sclerophyll forests, rainforests and coastal woodlands. Nests are made in rock caves and hollow logs or trees, and basking sites are usually found nearby.	**Unlikely** No suitable habitat was present.	**Unlikely** No suitable habitat was present.	**Low** Marginal habitat is available for this species in the vegetated area.
Phascogale tapoatafa Brush-tailed Phascogale	V		No	Prefer dry sclerophyll open forest with sparse groundcover of herbs, grasses, shrubs or leaf litter.	**Unlikely** No suitable habitat was present.	**Low** Marginal habitat is available for this species in the vegetated area.	**Unlikely** No suitable habitat was present.
Phascolarctos cinereus Koala	V	V	No	Coastal woodland and open forest containing suitable food trees.	**Low** Koala food trees under the CKPoM *Eucalyptus tereticornis* were present. No local records.	**Low** Marginal habitat is available for this species in the vegetated area.	**Low** Marginal habitat was present

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	BC Act 2016	EPBC Act 1999	SAII		4 Payton Street, Raymond Terrace	101 Kindlebark Drive, Medowie	154 Rocky Point Road, Fingal Bay
Macropus parma Parma Wallaby	V		No	Range is now confined to the coast and ranges of central and northern NSW from the Gosford district to south of the Bruxner Highway between Tenterfield and Casino. Preferred habitat is moist eucalypt forest with thick, shrubby understorey, often with nearby grassy areas, rainforest margins and occasionally drier eucalypt forest.	**Unlikely** No nearby records of this species.	**Unlikely** No nearby records of this species.	**Unlikely** No nearby records of this species.
Potorous tridactylus sp. *tridactylus* Long-nosed Potoroo	V	V	No	This species is known from a variety of habitats, including Rainforest, Open Forests and Woodlands with dense groundcover, and dense, wet coastal heathlands. Soft (often sandy) substrates are preferred by this species.	**Unlikely** No preferred habitat was present.	**Low** Marginal habitat is available for this species in the vegetated area.	**Unlikely** No preferred habitat was present.
Cercartetus nanus Eastern Pygmy-possum	V		No	In NSW it extends from the coast inland as far as the Pilliga, Dubbo, Parkes and Wagga Wagga on the western slopes. Found in a broad range of habitats from rainforest through sclerophyll (including Box-Ironbark) forest and woodland to heath, but in most areas woodlands and heath appear to be preferred, except in north-eastern NSW where they are most frequently encountered in rainforest.	**Unlikely** No preferred habitat was present.	**Unlikely** No preferred habitat was present.	**Unlikely** No preferred habitat was present.
Petaurus australis Yellow-bellied Glider	V	V	No	Occurs in tall mature eucalypt forest generally in areas with high rainfall and nutrient rich soils. Forest type preferences vary with latitude and elevation; mixed coastal forests to dry escarpment forests in the north; moist coastal gullies and creek flats to tall montane forests in the south. Is found along the eastern coast to the western slopes of the Great Dividing Range, from southern Queensland to Victoria.	**Low** Only marginal habitat was present.	**Low** Only marginal habitat was present.	**Unlikely** No preferred habitat was present.
Petaurus norfolcensis Squirrel Glider	V		No	Dry sclerophyll forests and woodlands with exudates for foraging and hollows for nesting.	**Low** Only marginal habitat was present.	**Low** Only marginal habitat was present.	**Unlikely** No preferred habitat was present.

SPECIES	STATUS			HABITAT DESCRIPTION AND LOCALLY KNOWN POPULATIONS	LIKELIHOOD OF OCCURRENCE WITHIN THE SUBJECT LAND		
	BC Act 2016	EPBC Act 1999	SAII		4 Payton Street, Raymond Terrace	101 Kindlebark Drive, Medowie	154 Rocky Point Road, Fingal Bay
Petauroides volans Greater Glider		V	No	Eucalypt-dominated low open forests on the coast to tall forests in the ranges and low woodland west of Great Dividing Range. Not found within rainforests.	**Unlikely** No preferred habitat was present.	**Unlikely** No preferred habitat was present.	**Unlikely** No preferred habitat was present.
Pseudomys gracilicaudatus Eastern Chestnut Mouse	V		No	In NSW the Eastern Chestnut Mouse is mostly found, in low numbers, in heathland and is most common in dense, wet heath and swamps. In the tropics it is more an animal of grassy woodlands.	**N/A**	**N/A**	**Unlikely** No preferred habitat was present.
Pseudomys novaehollandiae New Holland Mouse		V	No	Known to inhabit open heathlands, open woodlands with a heathland understorey and vegetated sand dunes.	**Unlikely** No suitable habitat was present for this species.	**Low** Only marginal habitat was present.	**Unlikely** No suitable habitat was present for this species.
Pteropus poliocephalus Grey-headed Flying-Fox	V	V	No	Wet and Dry Sclerophyll Forests, Rainforest, Mangroves and Paperbark swamps and Banksia Woodlands.	**High** Seasonal foraging habitat was available in the form of flowering myrtaceous canopy species. Nearby records of this species	**High** Seasonal foraging habitat was available in the form of flowering myrtaceous canopy species. Nearby records of this species	**High** Seasonal foraging habitat was available in the form of flowering myrtaceous canopy species. Nearby records of this species
Falsistrellus tasmaniensis	Eastern False Pipistrelle			Prefers moist habitats, with trees taller than 20 m. Generally roosts in eucalypt hollows, but has also been found under loose bark on trees or in buildings.	**Low** Suitable hunting and roosting habitat were present.	**Low-moderate** Suitable hunting and roosting habitat were present.	**Low** Suitable hunting habitat was present.
Saccolaimus flaviventris Yellow-bellied Sheathtail-bat	V		No	Has been reported from a wide variety of habitats. Roosts in tree hollows, animal burrows, dry clay cracks, under rock slabs and in abandoned Sugar Glider nests.	**Low-moderate** Suitable hunting and roosting habitat were present.	**Low-moderate** Suitable hunting and roosting habitat were present.	**Low** Suitable hunting habitat was present.
Micronomus norfolkensis	V		No	Appears to live in sclerophyll forests and woodland. Roosts in tree hollows or under loose bark.	**Low-moderate** Suitable hunting and roosting	**Low-moderate** Suitable hunting and roosting	**Low** Suitable hunting habitat was present.

SPECIES	STATUS			HABITAT DESCRIPTION AND LOCALLY KNOWN POPULATIONS	LIKELIHOOD OF OCCURRENCE WITHIN THE SUBJECT LAND		
	BC Act 2016	EPBC Act 1999	SAII		4 Payton Street, Raymond Terrace	101 Kindlebark Drive, Medowie	154 Rocky Point Road, Fingal Bay
Eastern Coastal Free-tailed Bat					habitat were present.	habitat were present.	
Miniopterus australis Little Bentwing-bat	V		Yes	Tropical rainforest to warm-temperate wet and dry sclerophyll forest; caves or similar structures for roosting.	**Low-moderate** Suitable hunting and roosting habitat were present.	**Low-moderate** Suitable hunting and roosting habitat were present.	**Low** Suitable hunting habitat was present.
Miniopterus orianae oceanensis Large Bentwing-bat	V		No	Wet and dry tall open forest, rainforest, monsoon forest, open woodland, paperbark forests and open grasslands, caves or similar structures for roosting. It occasionally uses tree hollows.	**N/A**	**Low-moderate** Suitable hunting and roosting habitat were present.	**Low** Suitable hunting habitat was present.
Myotis macropus Southern Myotis	V		No	Various habitats of the coast and adjacent ranges with suitable waterbodies for hunting; caves or similar structures for roosting. It occasionally uses tree hollows.	**Low** Marginal suitable roosting habitat was present.	**Low** Marginal suitable roosting habitat was present.	**Unlikely** No preferred habitat was present.
Nyctophilus corbeni Corben's Long-eared Bat	V	V		Inhabits a variety of vegetation types, including mallee, bulloke Allocasuarina leuhmanni and box eucalypt dominated communities, but it is distinctly more common in box/ironbark/cypress-pine vegetation that occurs in a north-south belt along the western slopes and plains of NSW and southern Queensland. Roosts in tree hollows, crevices, and under loose bark.	**Low** Marginal suitable roosting habitat was present.	**N/A**	**N/A**
Scoteanax rueppellii Greater Broad-nosed Bat	V		No	Utilises a variety of habitats from woodland through to moist and dry eucalypt forest and rainforest, though it is most commonly found in tall wet forest. Although this species usually roosts in tree hollows, it has also been found in buildings.	**Low** Marginal suitable roosting habitat was present.	**Low** Marginal suitable roosting habitat was present.	**Unlikely** No preferred habitat was present.
Vespadelus troughtoni Eastern Cave Bat	V		Yes	A cave-roosting species that is usually found in dry open forest and woodland, near cliffs or rocky overhangs; has been recorded roosting in	**Unlikely** No preferred habitat was present.	**Unlikely**	**Unlikely** No preferred habitat was present.

SPECIES	STATUS			HABITAT DESCRIPTION AND LOCALLY KNOWN POPULATIONS	LIKELIHOOD OF OCCURRENCE WITHIN THE SUBJECT LAND		
	BC Act 2016	EPBC Act 1999	SAII		4 Payton Street, Raymond Terrace	101 Kindlebark Drive, Medowie	154 Rocky Point Road, Fingal Bay
				disused mine workings, occasionally in colonies of up to 500 individuals.		No preferred habitat was present.	
Chalinolobus dwyeri Large Pied Bat	V	V	Yes	Occupies dry sclerophyll forest and woodland. Roosts in caves, abandoned mud-nests of Fairy Martins and mine tunnels.	**Low** Suitable foraging habitat was present. Preferred roosting habitat was absent.	**Low** Suitable foraging habitat was present. Preferred roosting habitat was absent.	**Low** Suitable foraging habitat was present. Preferred roosting habitat was absent.

5.4 FAUNA APPRASIAL RESULTS

5.4.1 DIURNAL SURVEYS

Amphibians

During surveys the amphibian species *Crinia caerulea* (Green Tree Frog) was heard calling within the neighbouring property at 4 Payton Street, Raymond Terrace.

No amphibian species listed as threatened under the BC Act 2016 or EPBC Act 1999 were recorded within the subject lands.

Reptile Survey

One species of reptile *Lampropholis delicata* (Grass Skink) was recorded within 101 Kindlebark Drive, Medowie.

No reptile species listed as threatened under the BC Act 2016 or EPBC Act 1999 were recorded within the subject lands.

Avifauna

A small stick nest was located within 154 Rocky Point Road, Fingal Bay and within 101 Kindlebark Drive, Medowie.

Avifauna species observed within the subject lands included:

- *Manorina melanocephala* (Noisy Miner);
- *Cracticus tibicen* (Australian Magpie);
- *Grallina cyanoleuca* (Magpie-lark).
- *Trichoglossus haematodus* (Rainbow Lorikeet)
- *Platycercus eximius* (Eastern Rosella)
- *Cacatua roseicapilla* (Galah);
- *Cracticus torquatus* (Grey Butcherbird);
- Cracticus nigrogularis (Pied Butcherbird)
- *Grallina cyanoleuca* (Magpie Lark);
- *Dacelo novaeguineae* (Laughing Kookaburra);
- *Corvus coronoides* (Australian Raven);
- *Entomyzon cyanotis* (Blue-faced Honeyeater);
- **Streptopelia chinensis* (Spotted Turtle-Dove);
- *Vanellus miles (*Masked Lapwing);
- *Cacatua roseicapilla* (Galah);
- *Eudynamys orientalis* (Common Koel)
- *Dacelo novaeguineae* (Laughing Kookaburra)
- *Malurus cyaneus* (Superb Fairy-wren)
- *Anthochaera chrysoptera* (Little Wattlebird)
- *Rhipidura albiscapa syn. Rhipidura fuliginosa* (Grey Fantail)
- *Rhipidura leucophrys* (Willie Wagtail)
- *Coracina novaehollandiae* (Black-faced Cuckoo-shrike)
-

No avifauna species listed as threatened under the BC Act 2016 or EPBC Act 1999 were recorded within or adjacent to the subject lands.

Mammal Survey

No mammal species listed as threatened under the BC Act 2016 or EPBC Act 1999 were recorded during surveys within or adjacent to the subject lands.

5.5 SURVEY LIMITATIONS

As with all reports of this type the main survey limitation is considered to be the very short period of time in which the fieldwork was carried out. Limitations to the likelihood of detecting certain subject species were also encountered during this survey. Such limitations were generally related to the seasonal occurrence of species, be it as a result of known flowering periods for flora or migratory movements by fauna.

These limitations have been overcome by applying the precautionary principle in all cases where the survey methodology may have given a false negative result. This precautionary principle was achieved by recognising that most threatened species are rare and therefore unlikely to be encountered during a survey even if they may utilise the site at other times. These species have been assessed on the basis of the presence of their habitat and the likely significance of that habitat to a viable local population.

6.0 IMPACT ASSESSMENT

6.1 AVOIDANCE AND MINIMISATION OF IMPACTS

Impact on vegetation has been minimised by positioning the approximate building envelopes associated with the planning proposal within each subject land where there are few trees and predominately exotic maintained groundcovers.

6.2 DIRECT IMPACT

The proposal will result in the following direct and potential impacts/losses:

- Removal of one specimen and likely two additional specimens of *Eucalyptus tereticornis* (Forest Red Gum) from 4 Payton Street, Raymond Terrace;
- Removal of one specimen and likely two additional specimens of Hollow-bearing Trees from 4 Payton Street, Raymond Terrace;
- Removal of likely 3 specimens of *Eucalyptus pilularis* (Blackbutt) from 154 Rocky Point Road, Fingal Bay;
- Likely management of 0.15ha of PCT 3582 Hunter Coast Lowland Apple-Bloodwood Forest for bushfire purposes from 101 Kindlebark Drive, Medowie.
- Removal of up to 0.01ha of Preferred Koala Habitat from 4 Payton Street, Raymond Terrace
- Removal of 0.05ha of 50m Buffer over mainly cleared land from 4 Payton Street, Raymond Terrace;
- Removal of up to 0.001ha of Supplementary Koala Habitat from 154 Rocky Point Road, Fingal Bay;
- Removal of Managed exotic groundcaovers from all subject lands;
- Removal of habitat for a number of the addressed threatened species.

6.3 INDIRECT IMPACTS

The proposal may result in the following indirect and potential impacts:

- Erosion and sedimentation;
- Possible restriction in the movement of some native fauna species in and out of the subject land.
- Increased spread of priority and other weed species;
- Edge effects.
- Other impacts on biodiversity values.

6.4 MITIGATION MEASURES

Mitigation measures have been specified to minimise the impact of the vegetation clearance to protect biodiversity values. The measures will include:

Trees and other Native Vegetation

Where possible, works should minimise any impact to native vegetation outside the scope of the proposal. Where unavoidable, works should minimise impacts to trees as follows:

- The clearance boundary is to be clearly marked with flagging tape;

- trees to be removed or trimmed are to be clearly marked to prevent any unintentional impact on trees that are to remain untouched;
- the clearing or trimming of any trees should be undertaken in a manner that avoids damaging adjacent vegetation;
- all material stockpiles, vehicle parking and machinery storage will be located within cleared areas proposed for clearing, and not in areas of native vegetation that are to be retained.

Phascolarctos cinereus (Koala) Habitat

- Avoid the removal of the preferred Koala Feed Tree Species *Eucalyptus tereticornis* wherever possible;
- Pre-clearance searches are to be undertaken prior to the removal of vegetation to look for Koalas and any other fauna that may be present. If a Koala is located then works are to stop until the koala vacates the impact areas by at least 100m on its own accord prior to works recommencing.
- Opportunity exists to compensate the removal of specimens of *E. tereticornis* within the subject land for the purposes of compensatory plantings. Koala Feed Trees are to be replaced according to the ratio detailed in Table 5 of Port Stephens Council Tree Technical Specification, Version 1.0. September 2014 (Port Stephens Council, 2014). Koala food tree size class (dbh) Replacement Ratio (loss:gain) >300 mm 1:10

Weeds

All machinery and equipment are to be inspected for weeds and weed propagules prior to going on site to prevent the introduction of new weed species to the area. It is recommended that all Priority Weeds within the subject lands be controlled as part of routine property maintenance. Particular attention should be given to the weeds listed in Table 5.4 of this report.

Protection of Native Fauna

Up to 3 hollow-bearing trees and Koala Food Trees require removal in support of the proposal. Where possible, within the scope of the proposal, hollow-bearing trees and Koala Food Trees should be retained. If removal of individuals is unavoidable, works should minimise impacts as follows:

- The removal of hollow-bearing trees should be supervised by a suitably qualified ecologist to reduce the impact on any fauna which may be present.
- It is also recommended that two nest boxes per habitat tree removed be installed prior to tree clearance within retained trees to help mitigate lost hollows.

7.0 CONSIDERATIONS UNDER SECTION 7.3 OF THE BC ACT 2016

Considerations of the effects of the vegetation removal undertaken for the proposed development under *Section 7.3* of the BC Act (2016) for the concerned threatened species is given below. The species dealt with are those identified during the fieldwork and those identified as having potential habitat available on site in Table 4.3.

A detailed assessment for each BC Act 2016 listed threatened species located within the study area is undertaken in Appendix C.

For the purposes of the Section 7.3 of the BC Act (2016), the following factors have been taken into account in deciding whether there is likely to be a significant effect on this threatened species, populations or ecological communities, or their habitats:

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

Threatened Flora

No threatened flora species were recorded within the subject lands during fieldwork. Of the 35 flora species assessed, the subject lands were found to contain suitable habitat for 12 of the addressed species:

Of these addressed threatened flora species the most likely to occur within the subject land area would include orchid species such as *Pterostylis chaetophora* (Tall Rustyhood), *Diuris arenaria* (Sand Doubletail) and *Diuris praecox* (Rough Doubletail). The proposal may result in an incremental loss of habitat for these threatened flora species; however, it is considered not likely that the proposal would significantly affect the life cycle of any of these threatened flora species or place any viable local populations of at risk of extinction.

Threatened Fauna

No threatened fauna species were recorded within any of the subject lands. Of the addressed threatened fauna species those most likely to utilise the subject lands would include a number of the woodland birds, Brush-tailed Phascogale, Grey-headed Flying-Fox and microchiropteran bats. The proposal will result in a small incremental reduction habitat for the above species. Given the small impact it is unlikely that the proposal will have a significant impact on these threatened fauna species such that a local extinction would occur.

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.

Although PCT 3433 is associated with the Endangered Ecological Community - Lower Hunter Spotted Gum Ironbark Forest in the Sydney Basin and NSW North Coast Bioregions, the Native vegetation within the Subject Land at 4 Payton Street, Raymond Terrace was not consistent with this Threatened Ecological Community (TEC). The vegetation within the subject land did not contain the diagnostic canopy, shrub or groundcover species for this TEC. Therefore, the presence of 4 specimens of *E. tereticornis* is not sufficient to align native vegetation within the subject land with the Lower Hunter Spotted Gum Ironbark Forest in the Sydney Basin and NSW North Coast Bioregions.

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

The proposal will result in the following direct and potential impacts/losses:

- Removal of one specimen and likely two additional specimens of *Eucalyptus tereticornis* (Forest Red Gum) from 4 Payton Street, Raymond Terrace;
- Removal of one specimen and likely two additional specimens of Hollow-bearing Trees from 4 Payton Street, Raymond Terrace;
- Removal of likely 3 specimens of *Eucalyptus pilularis* (Blackbutt) from 154 Rocky Point Road, Fingal Bay;
- Likely management of 0.15ha of PCT 3582 Hunter Coast Lowland Apple-Bloodwood Forest for bushfire purposes from 101 Kindlebark Drive, Medowie.
- Removal of up to 0.01ha of Preferred Koala Habitat from 4 Payton Street, Raymond Terrace
- Removal of 0.05ha of 50m Buffer over mainly cleared land from 4 Payton Street, Raymond Terrace;
- Removal of up to 0.001ha of Supplementary Koala Habitat from 154 Rocky Point Road, Fingal Bay;
- Removal of Managed exotic groundcovers from all subject lands;
- Removal of habitat for a number of the addressed threatened species.

(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

No areas of habitat are likely to become significantly fragmented or isolated from others areas of habitat as a result of the proposal.

(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.

The proposed development will result in the removal of up to 3 hollow-bearing trees at 4 Payton Street, Raymond Terrace and 3 *Eucalyptus pilularis* (Blackbutt) from 154 Rocky Point Road. Removal of this vegetation will result in the loss of a small amount of habitat for those threatened species with potential habitat within the subject lands. However, taking the recommendations into consideration, no area of habitat important to the long-term survival of these species and ecological communities will be significantly impacted.

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).

No areas of outstanding biodiversity value are within the study area.

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.

The 'Key Threatening Processes' currently listed under Schedule 4 of the BC Act 2016 that are relevant to the study area have been listed in Table 7.1.

Table 7.1: Key Threatening Processes.

Key Threatening Process	Applicability in regards to the subject land
Clearing of Native Vegetation.	The proposal will result in the removal of native vegetation and may be viewed as being part of this Key Threatening Process. However, the action is unlikely to be responsible for the significant loss of any TEC, endangered population or threatened species provided that recommendations for impact minimisation as listed within Section 6.4 are undertaken.
Loss of Hollow-bearing Trees	Three hollow-bearing trees were recorded within the development footprint and all will likely require removal as a result of the proposed development. Nest boxes are to be installed into retained trees at a ratio of two nest boxes per hollow-bearing tree. The nest boxes are to be installed prior to tree clearance within retained trees. The artificial nest boxes should be installed onto a tree in the nearest adjacent area of similar habitat by a suitably qualified ecologist. This mitigation measure will ensure that no net loss of hollows will result from the proposed development.
Removal of dead wood and dead trees	Any dead wood or dead trees requiring removal for the proposal is to be moved into retained vegetation outside of the impact area to provide ground habitat.
Reduced viability of adjacent habitat due to edge effects	The proposed development will not result in a significant increase in edge effects impacting upon the retained vegetation. The majority of the subject lands have been historically disturbed and as such edge effects have been an

	ongoing impact to the retained vegetation within the study area.
Invasion of native plant communities by exotic perennial grasses.	Exotic grasses such as *Chloris gayana* (Rhodes Grass) were present within the road reserve of the subject land. The proposal has the potential to result in an increase in invasion by exotic perennial grasses.
Predation by the *Felis catus* (Feral Cat)	The Feral Cat was not recorded on site at the time of the survey however this species would be considered to have an impact on native fauna in the local area. The proposal is not likely to result in an increase in feral numbers of this introduced species.
Predation by the *Vulpes vulpes* (Red Fox)	The Red Fox was not recorded during surveys within the subject land, however this species would be considered to have an impact on native fauna in the local area. The proposal is not likely to result in an increase in numbers of this introduced species.
Aggressive exclusion of birds by noisy miners (*Manorina melanocephala*)	Noisy miners were recorded within the study area. The proposal is unlikely to increase the impacts associated with this species.
High frequency fire resulting in the disruption of life cycle processes in plants and animals and loss of vegetation structure and composition	It is unknown what impact fire has had within the subject land.
Invasion, establishment and spread of Lantana (*Lantana camara*)	No Lantana was observed within the study area. Any occurrences of this weed should be managed as part of routine property maintenance.
Competition and grazing by the feral European rabbit	The proposal is not likely to result in an increase in feral numbers of this introduced species.
Infection by *Psittacine circoviral* (beak and feather) disease affecting endangered psittacine species	No evidence of the disease was observed on psittacine species.
Infection of frogs by amphibian chytrid causing the disease chytridiomycosis.	No evidence of chytrid was observed during site visits.
Introduction and establishment of Exotic Rust Fungi of the order Pucciniales pathogenic on plants of the family Myrtaceae.	No evidence of the fungi was observed during site visits.
Invasion of native plant communities by African Olive *Olea europaea* subsp. *cuspidata*	No African Olive was observed within the study area. Any occurrences of this weed should be managed as part of routine property maintenance.

8.0 KOALA HABITAT ASSESSMENT UNDER THE PORT STEPHENS COMPREHENSIVE KOALA PLAN OF MANAGEMENT

The Port Stephens Comprehensive Koala Plan of Management (CKPoM) has been prepared for the Port Stephens LGA. The aim of the CKPoM is to encourage the proper conservation and management of areas of natural vegetation that provide habitat for Koalas, to ensure permanent free-living populations over their present range and to reverse the current trend of population decline.

Koala Habitat Assessments under the Port Stephens CKPoM involve four stages: preliminary assessment, vegetation mapping, Koala habitat identification and assessment of the proposal. A Koala habitat assessment has been completed below for each subject land.

8.1 LOT 68 DP 248229 NO. 4 PAYTON STREET, RAYMOND TERRACE

8.1.1 PRELIMINARY ASSESSMENT

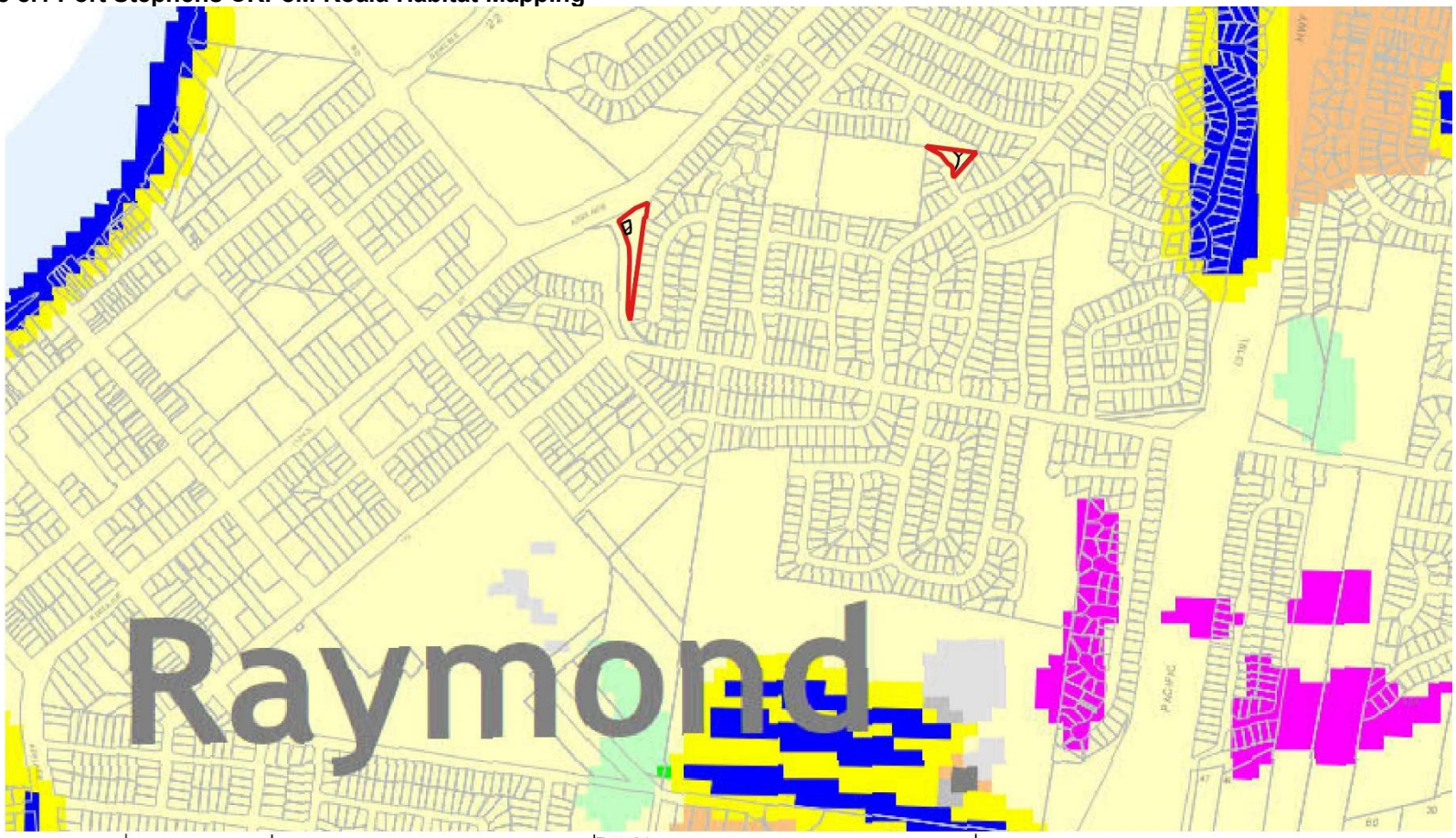
The preliminary assessment for the site involves reviewing the Koala Habitat Planning Map for the area as contained in the CKPoM and undertaking a site inspection to determine whether the site contains individuals of Koala trees outside areas marked as 'Preferred Koala Habitat'.

Review of Figure 22 – 'Port Stephens Council - Koala Habitat Planning Map' showed the site contained one category:

- Mainly Cleared - 0.17ha (Figure 8.1)

Within the CKPoM there are three species of Eucalypt identified as Koala food trees, being *Eucalyptus robusta* (Swamp Mahogany), *Eucalyptus parramattensis* subsp. *decadens* (Drooping Red Gum) and *Eucalyptus tereticornis* (Forest Red Gum). One species of CKPoM Koala feed tree *Eucalyptus tereticornis* (Forest Red Gum) was found within one subject land, 4 Payton Street, Raymond Terrace.

Figure 8.1 Port Stephens CKPoM Koala Habitat Mapping



Job Ref	12921
A4 Scale	1:8700

Disclaimer: While all reasonable care has been taken to ensure the information contained on this map is up to date and accurate, no guarentee is given that the information protrayed is free from error or omission. In addition the spatial accuracy of the map is wholly dependant on source data. Please verify the accuracy of all information prior to use. Development footprint areas should be used for indicative areas only.

0 250 500 m

Map Projection GDA2020 MGA Zone 56

Data Sources: LPI (2024), Nearmap (2024)

Figure 8.1

Port Stephens CKPoM Koala Habitat Mapping

4 Payton Street and 87A Adelaide Street
Raymond Terrace, NSW

7 November 2024

WILDTHING Environmental Consultants
(a Division of Tattersall Lander Pty Ltd)
ABN 41 003 509 215

8.1.2 VEGETATION MAPPING

The next step in the Koala Habitat Assessment is to provide a description of the vegetation assemblages present within the subject site and study area and to compare the results of the vegetation survey conducted for this report with the LGA wide vegetation map (Figure 2.4 - 'Western Section Vegetation' in Part 2 of the Port Stephens CKPoM). The LGA map showed the site as being composed of Map Unit – 25 Mainly Cleared (some trees).

Native vegetation within the subject land was found to align with PCT 3433 and contained the dominant canopy species of *Eucalyptus tereticornis*. Vegetation mapped to the north of the subject land in Figure 2.4 - 'Western Section Vegetation' in Part 2 of the Port Stephens CKPoM was given the Map Unit - 5a Spotted Gum and Ironbark Open Forest with Scribbly Gum. This Map Unit would align with the 0.23ha of native vegetation mapped within the subject land (see Figure 4.1).

8.1.3 KOALA HABITAT IDENTIFICATION

Koala Habitat Identification involves:

(i) the application of the definitions of Preferred and Supplementary Koala Habitat detailed by Lunney *et al*. (1998) to the study area;

The definitions provided by Lunney *et al.* (1998) are as follows:

- Preferred Koala Habitat - a combination of field survey Primary or Secondary and Community Survey category A/B (regardless of whether or not they overlap).
- Supplementary Koala Habitat - where field survey Marginal and community survey category C/D overlap
- Marginal Koala Habitat - where field survey Marginal and community survey category E overlap

Primary Koala habitat vegetation associations are those where the dominant or co-dominant tree species were preferred by Koalas and showed a level of use that was density independent. Secondary Koala Habitat vegetation associations occur where preferred tree species constituted between 10% and 35% of the overstorey vegetation. Marginal Koala Habitat vegetation associations are those which contain low densities of species known to be preferred by Koalas.

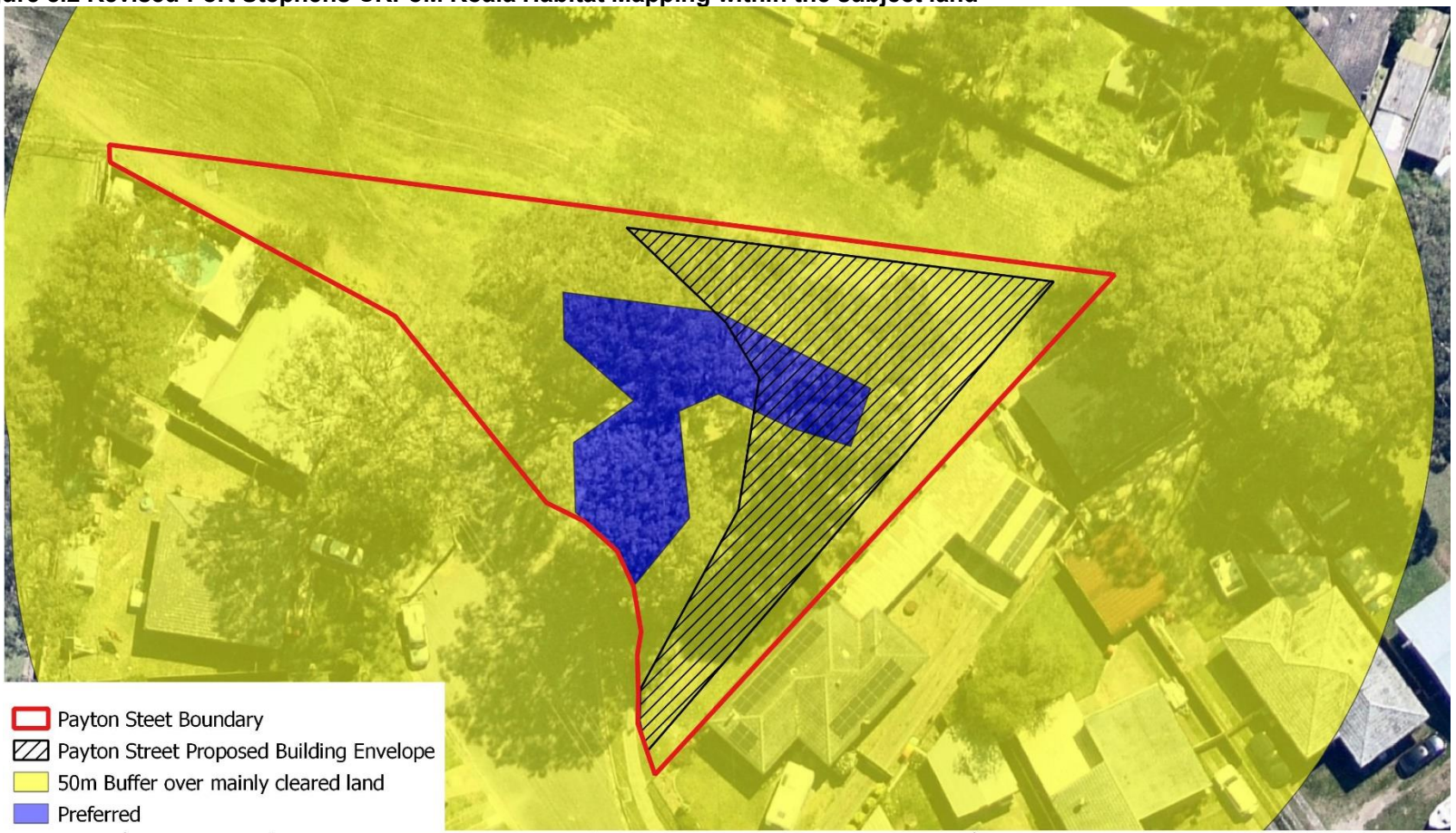
Field Survey

The area of Forest Red Gum (0.17ha) in the east of the site was most consistent with Community Survey Category A - Open Forest Red Gum Forest. The description of the map-based habitat category based on field work is most likely to be Primary Koala Habitat - 'Vegetation associations dominated by *E. tereticornis* growing on Erosional Landscapes of predominantly yellow podzolics and lithosols associated with Nerong Volcanics'. Hence the Forest Red Gum Open Forest would be classified as Preferred Koala Habitat.

Review of the Koala Habitat mapping has determined the subject land to contain 2 catgories:

-Preffered (0.03ha) and 50m Buffer over mainly cleared land (0.14ha) (Figure 8.2).

Figure 8.2 Revised Port Stephens CKPoM Koala Habitat Mapping within the subject land



8.1.4 ASSESSMENT OF THE PROPOSAL

There are eight performance criteria applied to developments proposed on sites that contain or are adjacent to 'Preferred Koala Habitat', Supplementary Koala Habitat', 'Habitat Buffers', 'Habitat Linking Areas' or areas that contain preferred Koala feed tree species. Each criterion is displayed below in italics followed by the site-specific answer.

The proposed development must:

a) *Minimise the removal or degradation of native vegetation within Preferred Koala Habitat or Habitat Buffers*

The impact area contains approximately 0.01ha of Preferred Koala Habitat and 0.05ha of 50m buffer over cleared land. The proposal will therefore result in the removal of approximately 0.01ha of Preferred Koala Habitat.

It is recommended that the proposal avoids the removal of specimens of *E. tereticornis* wherever possible.

Opportunity exists to compensate the removal of specimens of *E. tereticornis* within the subject land for the purposes of compensatory plantings. Koala Feed Trees are to be replaced according to the ratio detailed in Table 5 of Port Stephens Council Tree Technical Specification, Version 1.0. September 2014 (Port Stephens Council, 2014). Koala food tree size class (dbh) Replacement Ratio (loss:gain) >300 mm 1:10

b) *Maximise retention and minimise degradation of native vegetation within Supplementary Koala Habitat and Habitat Linking Areas;*

No areas of Supplementary Koala Habitat or Habitat Linking Areas were identified within the site.

c) *Minimise the removal of any individuals of preferred Koala food trees, wherever they occur on a development site. In the Port Stephens LGA these tree species are Eucalyptus robusta (Swamp Mahogany), Eucalyptus parramattensis (Parramatta Red Gum) and Eucalyptus tereticornis (Forest Red Gum);*

It is recommended that the proposal avoids the removal of specimens of *E. tereticornis* wherever possible.

Opportunity exists to compensate the removal of specimens of *E. tereticornis* within the subject land for the purposes of compensatory plantings. Koala Feed Trees are to be replaced according to the ratio detailed in Table 5 of Port Stephens Council Tree Technical Specification, Version 1.0. September 2014 (Port Stephens Council, 2014). Koala food tree size class (dbh) Replacement Ratio (loss:gain) >300 mm 1:10

d) *Make provisions, where appropriate, for restoration or rehabilitation of areas identified as Koala Habitat including Habitat Buffers and Habitat Linking Areas over Mainly Cleared Land;*

It is recommended that any removal of *E. tereticornis* within the site is compensated with replacement trees at a ratio of ten *E. tereticornis* trees for each one removed.

e) *Make provisions for long term management and protection of Koala habitat including both existing and restored habitat;*

It is recommended that a Vegetation Management Plan be completed for the site. The plan will include the removal, protection, enhancement and compensatory planting of native vegetation within the site.

f) *Not compromise the potential for safe movement of Koalas across the site. This should include maximising tree retention generally and minimising the likelihood that the proposal would result in the creation of barriers to Koala movement, such as would be imposed by certain types of fencing;*

The proposal has been positioned to retain connectivity within the wider landscape and with neighbouring properties. The proposal is unlikely to hinder the movement of Koalas across the subject land.

g) *Be restricted to identified envelopes which contain all buildings and infrastructure and fire fuel reduction zone;*

Trees required for removal are to be clearly marked before any works are undertaken to prevent any unnecessary clearing.

h) *Include measures to effectively minimise the threat posed by Koalas by dogs, motor vehicles and swimming pools.*

Pre-clearance searches are to be undertaken prior to the removal of vegetation to look for Koalas and any other fauna that may be present. If a Koala is located then works are to stop until the koala vacates the impact areas by at least 100m on its own accord prior to works recommencing. Any domestic dogs brought into the subject land are to be adequately contained.

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8.2 LOT 721 DP 1033896 NO. 101 KINDLEBARK DRIVE, MEDOWIE

8.2.1 PRELIMINARY ASSESSMENT

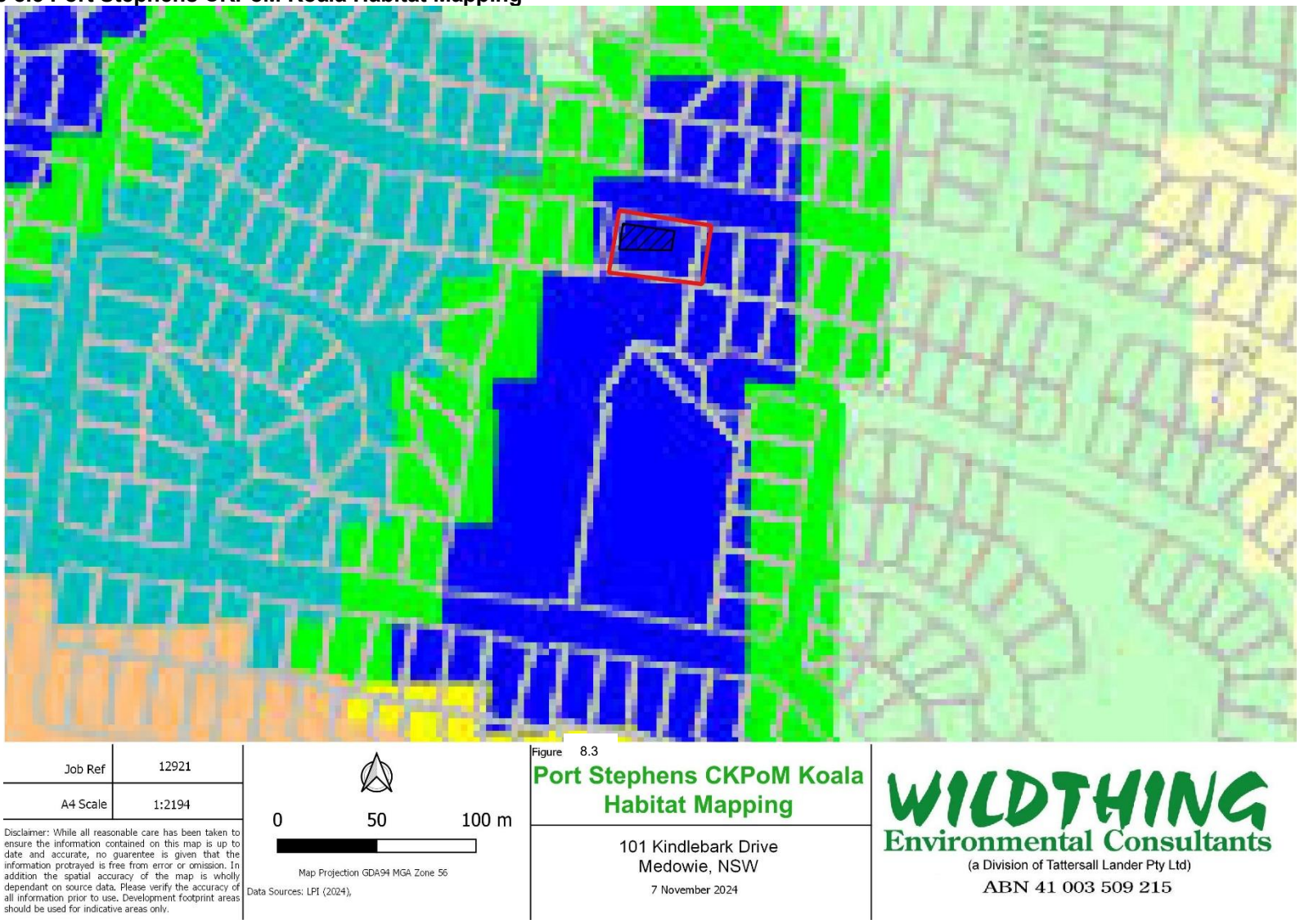
The preliminary assessment for the site involves reviewing the Koala Habitat Planning Map for the area as contained in the CKPoM and undertaking a site inspection to determine whether the site contains individuals of Koala trees outside areas marked as 'Preferred Koala Habitat'.

Review of Figure 22 – 'Port Stephens Council - Koala Habitat Planning Map' showed the site contained one category:

- Preferred - 0.15ha (Figure 8.3)

Within the CKPoM there are three species of Eucalypt identified as Koala food trees, being *Eucalyptus robusta* (Swamp Mahogany), *Eucalyptus parramattensis* subsp. *decadens* (Drooping Red Gum) and *Eucalyptus tereticornis* (Forest Red Gum). No specimens of Koala Food Tree were located within the subject land.

Figure 8.3 Port Stephens CKPoM Koala Habitat Mapping



8.2.2 VEGETATION MAPPING

The next step in the Koala Habitat Assessment is to provide a description of the vegetation assemblages present within the subject site and study area and to compare the results of the vegetation survey conducted for this report with the LGA wide vegetation map (Figure 2.4 - 'Western Section Vegetation' in Part 2 of the Port Stephens CKPoM). The LGA map showed the site as being composed of Map Unit – 25 Mainly Cleared (some trees).

Native vegetation within the subject land was found to align with PCT 3582 and contained the dominant canopy species of *Angophora Costata* and *Corymbia gummifera*. Vegetation mapped to the north of the subject land in Figure 2.4 - 'Western Section Vegetation' in Part 2 of the Port Stephens CKPoM was given the Map Unit - 4 Smooth-barked Apple, Red Bloodwood, Brown Stringybark, White Stringybark Open Forest. This Map Unit would align with the 0.15ha of native vegetation mapped within the subject land.

8.2.3 KOALA HABITAT IDENTIFICATION

Koala Habitat Identification involves:

(ii) the application of the definitions of Preferred and Supplementary Koala Habitat detailed by Lunney *et al*. (1998) to the study area;

The definitions provided by Lunney *et al.* (1998) are as follows:

- Preferred Koala Habitat - a combination of field survey Primary or Secondary and Community Survey category A/B (regardless of whether or not they overlap).
- Supplementary Koala Habitat - where field survey Marginal and community survey category C/D overlap
- Marginal Koala Habitat - where field survey Marginal and community survey category E overlap

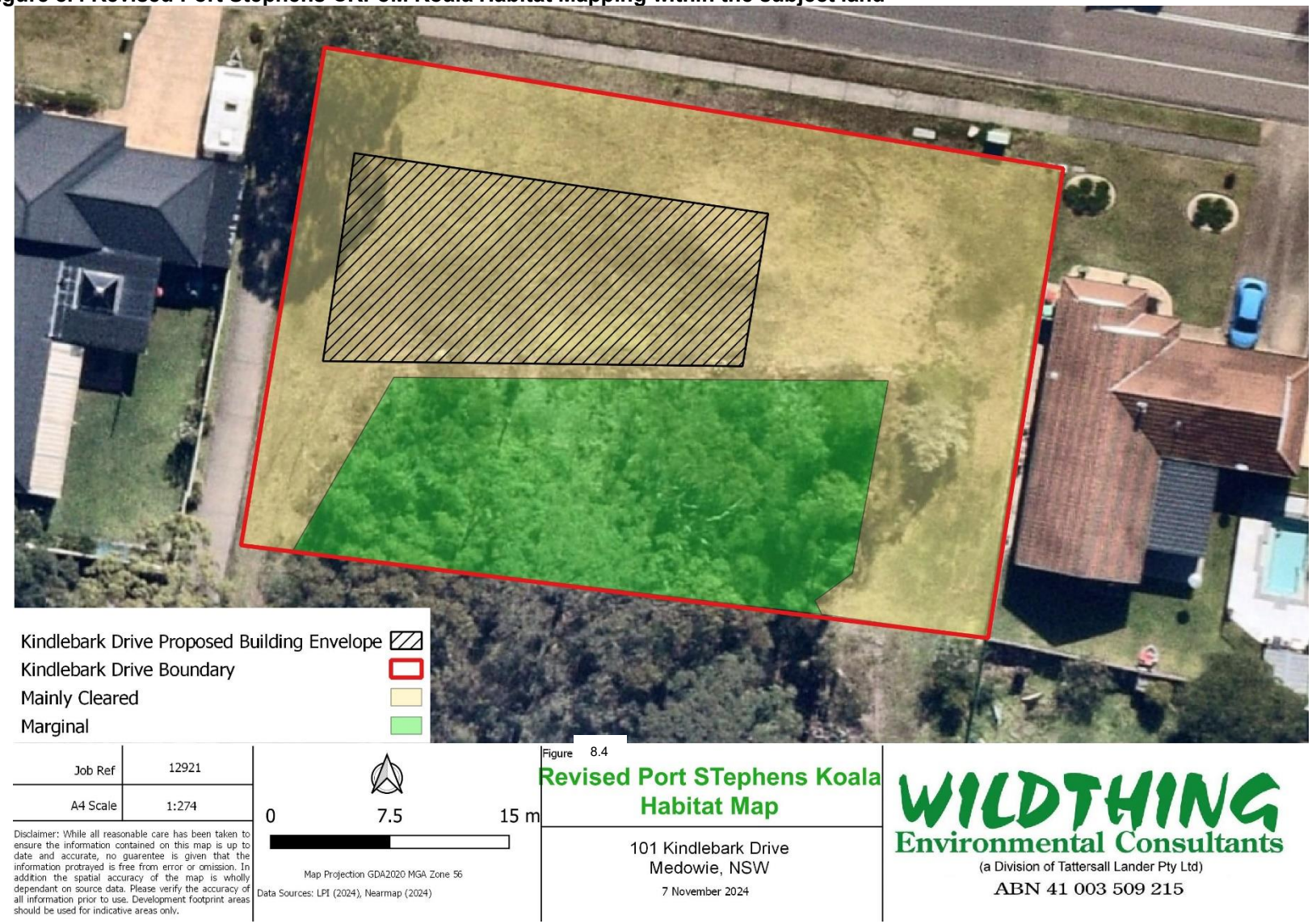
Primary Koala habitat vegetation associations are those where the dominant or co-dominant tree species were preferred by Koalas and showed a level of use that was density independent. Secondary Koala Habitat vegetation associations occur where preferred tree species constituted between 10% and 35% of the overstorey vegetation. Marginal Koala Habitat vegetation associations are those which contain low densities of species known to be preferred by Koalas.

Field Survey

Native vegetation within the Subject Land and surrounding areas was found to be most consistent with Category E - Sydney Red Gum, Red Bloodwood, Brown Stringybark, White Stringybark Forest. The description of the map-based habitat category, based on fieldwork undertaken, is most likely to be Marginal Koala Habitat, where vegetation associations where preferred tree species were largely absent or otherwise occurred at very low densities (<10%) (Lunney *et al.* 1998). Field surveys

conducted identified no Koala Food Trees present within the subject land. This was compared to the dominant canopy species *Angophora costata* (Smooth-barked Apple), and *Corymbia gummifera* (Red Bloodwood) present within the Subject Land. Therefore, under the definitions for the combined Koala Habitat Map this assemblage is considered to be 'Marginal Koala Habitat' under the CKPoM where field survey Marginal and community survey category E overlap.

Figure 8.4 Revised Port Stephens CKPoM Koala Habitat Mapping within the subject land



8.2.4 KOALA HABITAT IDENTIFICATION

Koala Habitat Identification involves:

- the application of the definitions of Preferred and Supplementary Koala Habitat detailed by Lunney *et al.* (1998) to the study area;
- the application of Habitat Buffers to all areas of Preferred Koala Habitat; and
- approximation of Habitat Linking Areas between all patches of Preferred Koala Habitat that occur within 800m of each other.

Under the definitions provided by Lunney *et al.* (1998):

- Preferred Koala Habitat is defined as a combination of the all field survey Primary, Secondary and Community Survey Category A/B (regardless of whether or not they overlap);
- Supplementary Habitat – where field survey Marginal and Community Survey Category C/D overlap;
- Marginal Koala Habitat – where field survey Marginal and Community Survey Category E overlap.

Mainly Cleared Land (some trees) as present over the entire site is classified as Cleared. As such this does not fit into Community Survey Categories A-E. Therefore the site does not satisfy the overall definition of Preferred, Supplementary or Marginal Koala habitat.

8.2.5 ASSESSMENT OF THE PROPOSAL

There are eight performance criteria applied to developments proposed on sites that contain or are adjacent to 'Preferred Koala Habitat', Supplementary Koala Habitat', 'Habitat Buffers', 'Habitat Linking Areas' or areas that contain preferred Koala feed tree species. As the site or the adjoining land did not contain any such Koala habitat or buffer areas or Koala feed tree species, the performance criteria are not applicable in this instance.

8.3 LOT 17 DP 805074 NO. 154 ROCKY POINT ROAD, FINGAL BAY.

8.3.1 PRELIMINARY ASSESSMENT

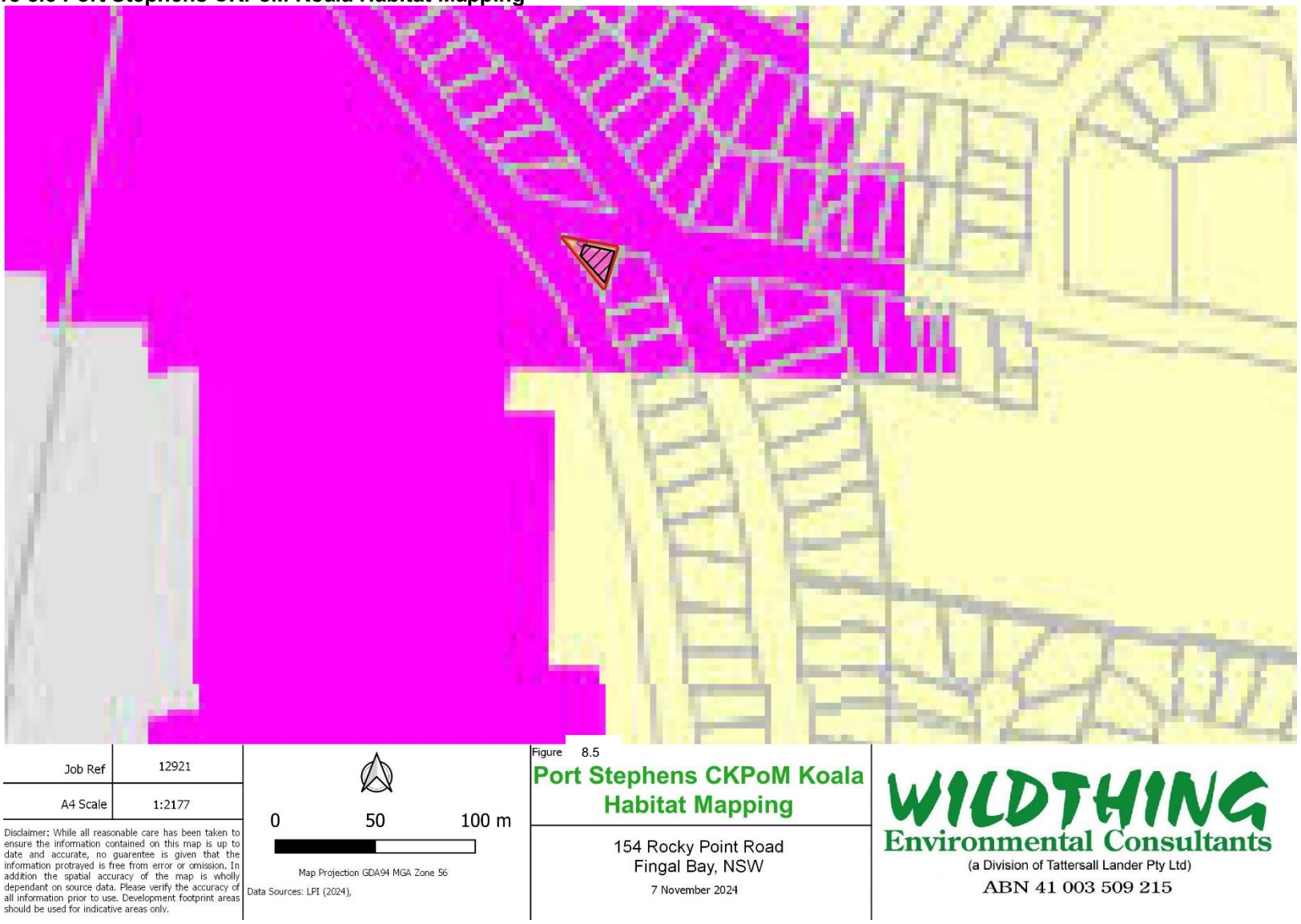
The preliminary assessment for the site involves reviewing the Koala Habitat Planning Map for the area as contained in the CKPoM and undertaking a site inspection to determine whether the site contains individuals of Koala trees outside areas marked as 'Preferred Koala Habitat'.

Review of Figure 22 – 'Port Stephens Council - Koala Habitat Planning Map' showed the site contained one category:

- Supplementary - 0.103ha (Figure 8.5)

Within the CKPoM there are three species of Eucalypt identified as Koala food trees, being *Eucalyptus robusta* (Swamp Mahogany), *Eucalyptus parramattensis* subsp. *decadens* (Drooping Red Gum) and *Eucalyptus tereticornis* (Forest Red Gum). No specimens of Koala Food Tree were located within the subject land.

Figure 8.5 Port Stephens CKPoM Koala Habitat Mapping



8.3.2 VEGETATION MAPPING

The next step in the Koala Habitat Assessment is to provide a description of the vegetation assemblages present within the subject site and study area and to compare the results of the vegetation survey conducted for this report with the LGA wide vegetation map (Figure 2.4 - 'Western Section Vegetation' in Part 2 of the Port Stephens CKPoM). The LGA map showed the site as being composed of Map Unit – 25 Mainly Cleared (some trees).

Native vegetation within the subject land was found to align with PCT 3433 and contained the dominant canopy species of *Eucalyptus tereticornis*. Vegetation mapped to the north of the subject land in Figure 2.4 - 'Western Section Vegetation' in Part 2 of the Port Stephens CKPoM was given the Map Unit - 5a Spotted Gum and Ironbark Open Forest with Scribbly Gum. This Map Unit would align with the 0.23ha of native vegetation mapped within the subject land (see Figure 4.1).

8.3.3 KOALA HABITAT IDENTIFICATION

Koala Habitat Identification involves:

(iii) the application of the definitions of Preferred and Supplementary Koala Habitat detailed by Lunney *et al*. (1998) to the study area;

The definitions provided by Lunney *et al.* (1998) are as follows:

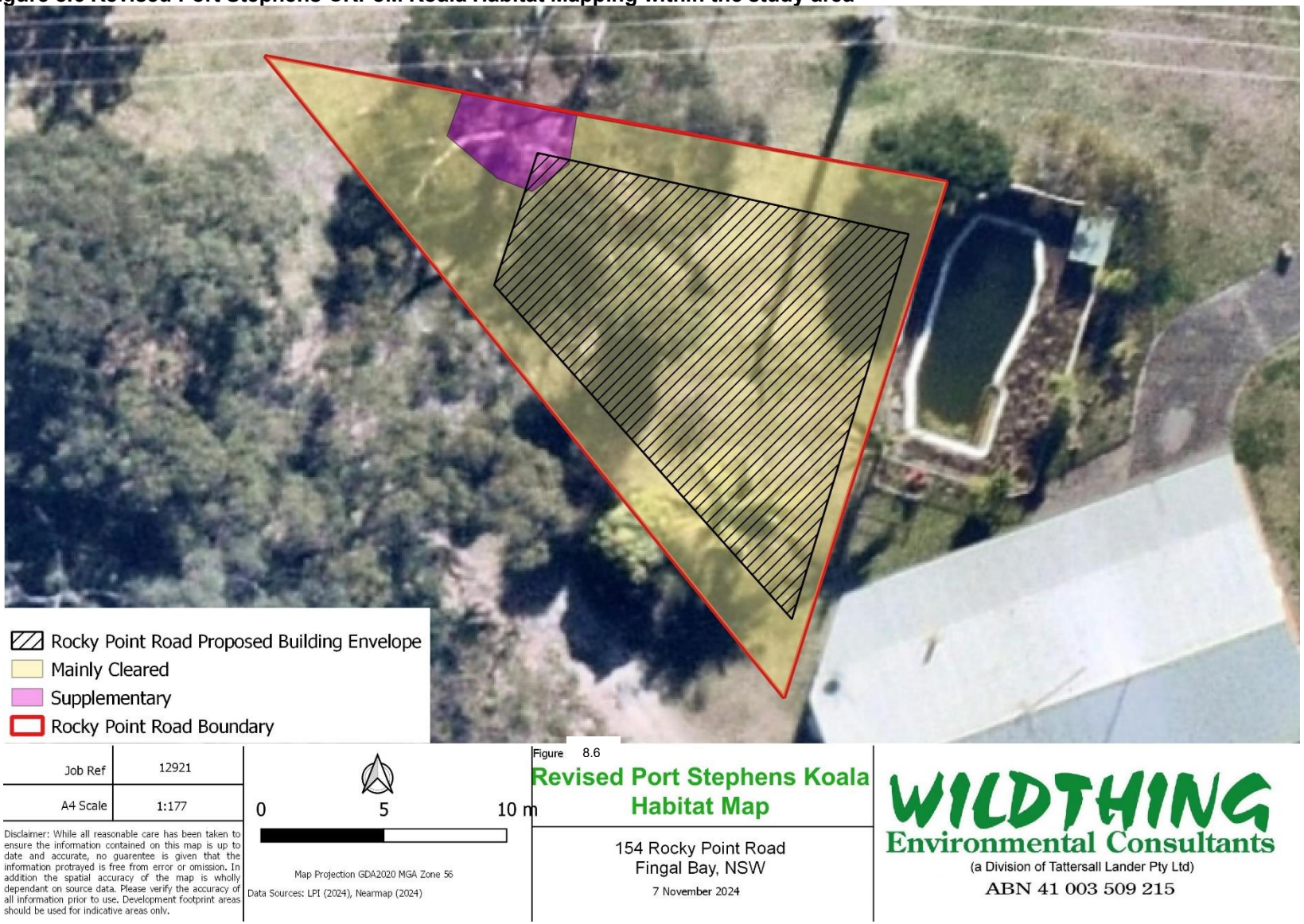
- Preferred Koala Habitat - a combination of field survey Primary or Secondary and Community Survey category A/B (regardless of whether or not they overlap).
- Supplementary Koala Habitat - where field survey Marginal and community survey category C/D overlap
- Marginal Koala Habitat - where field survey Marginal and community survey category E overlap

Primary Koala habitat vegetation associations are those where the dominant or co-dominant tree species were preferred by Koalas and showed a level of use that was density independent. Secondary Koala Habitat vegetation associations occur where preferred tree species constituted between 10% and 35% of the overstorey vegetation. Marginal Koala Habitat vegetation associations are those which contain low densities of species known to be preferred by Koalas.

Field Survey

Field survey generally agreed with the mapping of Supplementary Koala habitat, however found this mapping to be significantly reduced within the subject land. The Subject Land was found to contain 0.001ha of Supplementary Koala Habitat and 0.029ha of Mainly Cleared Land. A revised map is shown in Figure 8.6.

Figure 8.6 Revised Port Stephens CKPoM Koala Habitat Mapping within the study area



8.3.4 ASSESSMENT OF THE PROPOSAL

There are eight performance criteria applied to developments proposed on sites that contain or are adjacent to 'Preferred Koala Habitat', Supplementary Koala Habitat', 'Habitat Buffers', 'Habitat Linking Areas' or areas that contain preferred Koala feed tree species. Each criterion is displayed below in italics followed by the site-specific answer.

The proposed development must:

a) *Minimise the removal or degradation of native vegetation within Preferred Koala Habitat or Habitat Buffers*

No Preferred Koala Habitat or buffers were located within the subject land.

b) *Maximise retention and minimise degradation of native vegetation within Supplementary Koala Habitat and Habitat Linking Areas;*

A total of 0.001ha of Supplementary Koala Habitat was identified within the subject land. The proposal will require the removal of approximately 0.001ha of Supplementary Koala Habitat.

c) *Minimise the removal of any individuals of preferred Koala food trees, wherever they occur on a development site. In the Port Stephens LGA these tree species are Eucalyptus robusta (Swamp Mahogany), Eucalyptus parramattensis (Parramatta Red Gum) and Eucalyptus tereticornis (Forest Red Gum);*

No preferred Koala Food Trees were located within the subject land.

d) *Make provisions, where appropriate, for restoration or rehabilitation of areas identified as Koala Habitat including Habitat Buffers and Habitat Linking Areas over Mainly Cleared Land;*

Due to the urban nature of the subject land and the proposal, there is no scope for the restoration of Koala habitat within the subject land.

e) *Make provisions for long term management and protection of Koala habitat including both existing and restored habitat;*

Due to the urban nature of the subject land and the proposal, there is no scope for the long term management of Koala habitat within the subject land.

f) *Not compromise the potential for safe movement of Koalas across the site. This should include maximising tree retention generally and minimising the likelihood that the proposal would result in the creation of barriers to Koala movement, such as would be imposed by certain types of fencing;*

The proposal has been positioned within the northern extent of local Supplementary habitat. Due to the urban nature of the subject land and the location, the proposal is unlikely to decrease movement of Koala within the locality.

g) *Be restricted to identified envelopes which contain all buildings and infrastructure and fire fuel reduction zone;*

Trees required for removal are to be clearly marked before any works are undertaken to prevent any unnecessary clearing. A clearance boundary line is to be clearly marked with flagging tape to prevent the removal of vegetation that should be retained within the scope of the proposal.

h) *Include measures to effectively minimise the threat posed by Koalas by dogs, motor vehicles and swimming pools.*

Pre-clearance searches are to be undertaken prior to the removal of vegetation to look for Koalas and any other fauna that may be present. If a Koala is located then works are to stop until the koala vacates the impact areas by at least 100m on its own accord prior to works recommencing. Any domestic dogs brought into the subject land are to be adequately contained.

9.0 ASSESSMENT OF SERIOUS AND IRREVERSIBLE IMPACTS

Under the BC Act 2016, a determination of whether an impact is serious and irreversible (SAII) must be made in accordance with the principles prescribed in section 6.7 of the BC Regulation.

The "*Guidance to assist a decision maker to determine a serious and irreversible impact*, 2017, sets out those potential SAII species and ecological communities (known as "potential SAII entities").

The principles for determining serious and irreversible impacts in the Biodiversity Conservation Regulation, 2017 are:

- *will cause a further decline of a species or ecological community that is currently observed, estimated, inferred or reasonably suspected to be in a rapid rate of decline, or*
- *will further reduce the population of a species or ecological community that is currently observed, estimated, inferred, or reasonably suspected to have a very small population size, or*
- *are impacts on the habitat of a species or area of ecological community that is currently observed, estimated, inferred or reasonably suspected to have a very limited geographic distribution, or*
- *are impacts on a species or ecological community is unlikely to respond to measures to improve habitat and vegetation integrity and is therefore irreplaceable.*

9.1 POTENTIAL SAII ENTITIES

In this case all potential SAII entities are derived from Appendix 2 of the Guide, and are within the Bionet search area (DPE, 2023). The approval authority must take those impacts into consideration and determine whether there are any additional and appropriate measures that will minimise those impacts if approval is to be granted. An Impact evaluation is shown in Table 9.1. Entities include:

- Caladenia tessellata (Thick-lipped Spider-orchid);
- *Prasophyllum* sp. Wybong (A Leek Orchid);
- *Rhizanthella slateri* (Eastern Underground Orchid);
- *Rhodamnia rubescens* (Scrub Turpentine)
- *Rhodomyrtus psidioides* (Native Guava)
- *Euphrasia arguta* (Eyebright)
- *Mixophyes balbus* (Stuttering Frog)
- *Calidris ferruginea* (Curlew Sandpiper)
- *Numenius madagascariensis* (Eastern Curlew)
- *Lathamus discolor* (Swift Parrot);
- *Anthochaera phrygia* (Regent Honeyeater);
- *Erythrotriorchis radiates* (Red Goshawk);
- *Miniopterus australis* (Little Bentwing-bat);
- *Chalinolobus dwyeri* (Large Pied Bat);

Table 9.1: SAII impact evaluation

Potential SAII Entities	Impact Evaluation	Impact Thresholds	Serious and Irreversible Impact?
Caladenia tessellata Thick-lipped Spider-orchid	No habitat was considered present		No
Prasophyllum sp. Wybong A Leek Orchid	Only marginal habitat was present.		No
Rhizanthella slateri Eastern Underground Orchid	No habitat was considered present		No
Rhodamnia rubescens Scrub Turpentine	No habitat was considered present		No
Rhodomyrtus psidioides Native Guava	No habitat was considered present		No
Euphrasia arguta Eyebright	No habitat was considered present		No
Mixophyes balbus Stuttering Frog	No habitat was considered present		No
Calidris ferruginea Curlew Sandpiper	No habitat was considered present		No
Numenius madagascariensis Eastern Curlew	No habitat was considered present		No
Lathamus discolor Swift Parrot	Seasonal foraging habitat was present.	Not within a mapped BAM Important Area (DPE, 2023	No
Anthochaera phrygia Regent Honeyeater	Seasonal foraging habitat was present.	Not within a mapped BAM Important Area (DPE, 2023)	No
Erythrotriorchis radiatus Red Goshawk	No habitat was considered present		No
Miniopterus australis Little Bentwing-bat	Marginal habitat was present for this species		No
Chalinolobus dwyeri Large Pied Bat	Marginal habitat was present for this species		No

9.2 ADDITIONAL IMPACT ASSESSMENT PROVISIONS FOR THREATENED SPECIES AT RISK OF AN SAII

No threatened matter consistent with a SAII candidate species identified as likely to occur or to contain significant habitat within the study area is likely to be significantly impacted by the proposed development.

10.0CONSIDERATIONS UNDER THE COMMONWEALTH ENVIRONMENT PROTECTION AND BIODIVERSITY CONSERVATION ACT 1999

Considerations have been made to the Commonwealth Environment Protection and Biodiversity Conservation (EPBC) Act 1999. Assessments have been made to determine whether or not the proposal or activity has, will have, or is likely to have a significant impact on a matter of National Environmental Significance. The matters of National Environmental Significance and the appropriate responses are listed below:

- *World Heritage properties;*

The site is not likely to have a significant impact to any World Heritage Properties.

- *wetlands recognised under the Ramsar convention as having international significance;*
    - Lot 68 DP 248229 No. 4 Payton Street, Raymond Terrace- Within Hunter Estuary Wetlands
    - Lot 721 DP 1033896 No. 101 Kindlebark Drive, Medowie - Within 10km of Hunter Estuary Wetlands and Myall Lakes
    - Lot 17 DP 805074 No. 154 Rocky Point Road, Fingal Bay- Within Myall Lakes

As the nature of the proposal is in keeping with surrounding development, the proposal is unlikely to impact and Ramsar site.

- *listed threatened species and communities;*

Seven nationally threatened ecological communities were recorded on the DCCEEW database as having potential to occur within 10km of the site, these being:

- Central Hunter Valley eucalypt forest and woodland
- Coastal Swamp Oak (*Casuarina glauca*) Forest of New South Wales and South East Queensland ecological community
- Coastal Swamp Sclerophyll Forest of New South Wales and South East Queensland
- Lowland Rainforest of Subtropical Australia
- River-flat eucalypt forest on coastal floodplains of southern New South Wales and eastern Victoria
- Subtropical eucalypt floodplain forest and woodland of the New South Wales North Coast and South East Queensland bioregions
- White Box-Yellow Box-Blakely's Red Gum Grassy Woodland and Derived Native Grassland

The ecological communities located within the site were not consistent with any nationally listed threatened ecological communities.

Fifty-eight additional nationally threatened species were recorded on the DCCEEW database as occurring or having potential habitat available within 10km of the site (note all pelagic species and ocean-going birds which do not complete part of their life cycles on mainland NSW were excluded from the search), these being:

Anthochaera phrygia	Regent Honeyeater
Botaurus poiciloptilus	Australasian Bittern
Calidris ferruginea	Curlew Sandpiper
Callocephalon fimbriatum	Gang-gang Cockatoo
Calyptorhynchus lathami lathami	South-eastern Glossy Black-Cockatoo
Charadrius leschenaultii	Greater Sand Plover
Climacteris picumnus victoriae	Brown Treecreeper (south-eastern)
Erythrotriorchis radiatus	Red Goshawk
Falco hypoleucos	Grey Falcon
Grantiella picta	Painted Honeyeater
Hirundapus caudacutus	*White-throated Needletail*
Lathamus discolor	*Swift Parrot*
Melanodryas cucullata cucullata	*Hooded Robin (south-eastern)*
Neophema chrysostoma	Blue-winged Parrot
Numenius madagascariensis	*Eastern Curlew*
Pycnoptilus floccosus	*Pilotbird*
Rostratula australis	*Australian Painted Snipe*
Stagonopleura guttata	Diamond Firetail
Sternula nereis nereis	Australian Fairy Tern
Litoria aurea	*Green and Golden Bell Frog*
Mixophyes balbus	*Stuttering Frog*
Uperoleia mahonyi	Mahony's Toadlet
Chalinolobus dwyeri	*Large-eared Pied Bat*
Dasyurus maculatus maculatus	*Spot-tailed Quoll*
Notamacropus parma	*Parma Wallaby*
Petauroides volans	*Greater Glider (southern and central)*
Petaurus australis australis	*Yellow-bellied Glider (south-eastern)*
Petrogale penicillata	*Brush-tailed Rock-wallaby*
Phascolarctos cinereus	*Koala*
Potorous tridactylus tridactylus	*Long-nosed Potoroo (northern)*
Pseudomys novaehollandiae	*New Holland Mouse*
Pteropus poliocephalus	*Grey-headed Flying-fox*
Angophora inopina	*Charmhaven Apple*
Arthraxon hispidus	Hairy-joint Grass
Asperula asthenes	Trailing Woodruff
Caladenia tessellata	Thick-lipped Spider-orchid
Commersonia prostrata	Dwarf Kerrawang
Cryptostylis hunteriana	Leafless Tongue-orchid
Cynanchum elegans	White-flowered Wax Plant
Dichanthium setosum	bluegrass
Eucalyptus camfieldii	Camfield's Stringybark
Eucalyptus glaucina	*Slaty Red Gum*
Eucalyptus parramattensis subsp. decadens	*Earp's Gum, Earp's Dirty Gum*
Euphrasia arguta	
Grevillea parviflora subsp. parviflora	*Small-flower Grevillea*
Melaleuca biconvexa	*Biconvex Paperbark*
Persicaria elatior	*Tall Knotweed*
Pomaderris brunnea	*Rufous Pomaderris*
Prasophyllum sp. Wybong (C.Phelps ORG 5269)	*a leek-orchid*

Pterostylis gibbosa	*Illawarra Greenhood*
Rhizanthella slateri	*Eastern Underground Orchid*
Rhodamnia rubescens	*Scrub Turpentine*
Rhodomyrtus psidioides	*Native Guava*
Rutidosis heterogama	*Heath Wrinklewort*
Syzygium paniculatum	*Magenta Lilly Pilly*
Tetratheca juncea	*Black-eyed Susan*
Thesium australe	*Austral Toadflax*

No nationally threatened species were recorded within the study area during surveys. Habitat of varying quality was considered to be available for those mobile threatened species such as woodland birds, megachiropteran bats and microchiropteran bats. The action will result in an incremental loss/modification of habitat within the locality for these species. The removal of trees as a result of the proposal will also result in an incremental reduction of seasonal foraging habitat for the majority of birds listed above, as well as the Grey-headed Flying Fox. The proposal will result in an incremental loss of foraging and roosting/nesting habitat for these species in the local area, however it is not likely to have a significant impact on any of these species.

- *migratory species protected under international agreements;*

Eighteen nationally listed migratory species were recorded on the DCCEEW on-line database as occurring or having potential habitat available within 10km of the subject land, these being:

Migratory Terrestrial Species:

- *Cuculus optatus* (Oriental Cuckoo)
- *Hirundapus caudacutus* (White-throated Needletail)
- *Monarcha melanopsis* (Black-faced Monarch)
- *Motacilla flava* (Yellow Wagtail)
- *Myiagra cyanoleuca* (Satin Flycatcher)
- *Rhipidura rufifrons* (Rufous Fantail)
- *Symposiachrus trivirgatus* (Spectacled Monarch)

Migratory Wetland Species:

- *Actitis hypoleucos* (Common Sandpiper)
- *Calidris acuminata* (Sharp-tailed Sandpiper)
- *Calidris ferruginea* (Curlew Sandpiper)
- *Calidris melanotos* (Pectoral Sandpiper)
- *Charadrius leschenaultii* (Greater Sand Plover)
- *Gallinago hardwickii* (Latham's Snipe)
- *Limosa lapponica* (Bar-tailed Godwit)
- *Numenius madagascariensis* (Eastern Curlew)
- *Pandion haliaetus* (Osprey)
- *Tringa nebularia* (Common Greenshank)

Migratory Marine Birds

- *Apus pacificus* (Fork-tailed Swift)

Considering the relatively small impact on habitat in the locality it is unlikely that these species or any of the listed migratory species would be significantly affected by the proposal.

- *nuclear activities;*

The proposal does not involve any type of nuclear activity.

- *the Commonwealth marine environment;*

The proposal does not involve the modification of the Commonwealth marine environment.

11.0CONCLUSION

In conclusion, the proposal will result in a small incremental reduction of habitat for threatened species; within the Port Stephens LGA. Given the mitigation measures the proposal is unlikely to disrupt the life cycle of any addressed threatened species, endangered population or endangered ecological community such that local extinction would occur.

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APPENDIX A

TOTAL FLORA LIST

Introduced species are indicated by an asterisk ("*").

The following standard abbreviations are used to indicate subspecific taxa:

subsp. subspecies
var.- variety
× **-** hybrid between the two indicated species

Threatened Species - NSW Biodiversity Conservation Act 2016 (BC Act)

V Vulnerable
E1 Endangered
E2 Endangered Population
E4A Critically Endangered Population

Environment Protection and Biodiversity Conservation Act 1999 (EPBC Act)

V Vulnerable
E Endangered
CE Critically Endangered

Serious and Irreversible Impact SAII

Regional Significance (Hunter Rare Plants Database – Version 1 2003)

L endemic to Hunter Region
DA disjunct in the Hunter Region, rare or localized (aggregated)
DB disjunct in the Hunter Region, widespread and uncommon (broad)
R rare but extends beyond the Hunter Region
U everywhere uncommon
N at northern distributional limit in the Hunter
E at eastern distributional limit in the Hunter
S at southern distributional limited in the Hunter
W at western distributional limited in the Hunter
T may be threatened in the Hunter Region
S Probably secure in the Hunter Region

Weeds

Priorities under the Biosecurity Act 2015

G General Biosecurity Duty - any person dealing with plant matter must take measures to prevent, minimise or eliminate the biosecurity risk (as far as is reasonably practicable).
P Prohibition on dealings - Must not be imported into the State or sold.
R Regional Recommended Measure - Land managers mitigate the risk of the plant being introduced to their land. Land managers reduce impacts from the plant on priority assets. Land managers prevent spread from their land where feasible. The plant or parts of the plant are not traded, carried, grown or released into the environment.

NSW BC Act 2016

T Listed as a Threatening Process under the NSW BC Act 2016.

National

N Weed of National Significance (WoNS)

Table A1: Flora species recorded within the study area

SCIENTIFIC NAME	COMMON NAME	BC ACT	EPBC ACT	SAII	REGIONALLY SIGNIFICANT	WEEDS	FLOWERING PERIOD
CLASS FILICOPSIDA (Ferns)							
Dennstaedtiaceae							
Hypolepis muelleri	Harsh Ground Fern						
Pteridium esculentum	Bracken						
MAGNOLIOPSIDA: Magnoliidae							
LILOPSIDA: (Monocotyledons)							
Asparagaceae							
Lomandra longifolia	Spiny Mat Rush						Aug, Sept
Asphodelaceae							
Dianella caerulea var. *producta*	Blue Flax-lily						
Tricoryne elatior	Yellow Rush-lily						
Cyperaceae							
Gahnia clarkei	Sword Grass						
Iridaceae							
Pattersonia sericea	Silky Purple Flag						Sept
Poaceae							
**Axonopus fissifolius*	Narrow-leaved Carpet Grass						
**Briza maxima*	Quaking Grass						
Cynodon dactylon	Common Couch						
**Ehrhartia erecta*	Panic Veldt Grass						
Entolasia marginata	Bordered Panic						
Eragrostis brownii	Browns Love Grass						
Hemarithria uncinata	Matgrass						
Paspalidium distans	Spreading Panic Grass						
**Paspalum dilatatum*	Paspalum						
					N W?		
Asteraceae							
**Bidens pilosa*	Cobblers Pegs						
**Coreopsis lanceolata*	Coreopsis						
**Hypochaeris radicata*	Catsear, Flatweed						

SCIENTIFIC NAME	COMMON NAME	BC ACT	EPBC ACT	SAII	REGIONALLY SIGNIFICANT	WEEDS	FLOWERING PERIOD
**Senecio madagascariensis*	Fireweed						Sept, Oct
Bignoniaceae							
Pandorea pandorana	Wonga-wonga Vine						Aug, Sept
Cassythaceae							
Cassytha pubescens	Common Devils Twine						
Fabaceae Subfamily (Faboideae)							
Hardenbergia violacea	False Sarsaparilla						Aug, Sept
Myrtaceae							
Angophora costata	Smooth-barked Apple						Oct, Nov
Eucalyptus tereticornis	Forest Red Gum						May, Aug, Sept, Oct
Melaleuca quinquenervia	Broad-leaved Paperbark						Feb, Mar
Pittosporaceae							
Billardiera scandens	Apple Dumplings						Sept
Plantaginaceae							
**Plantago lanceolata*	Plantain						
Proteaceae							
Banksia integrifolia	Silver Banksia						
Banksia serrata	Old Man Banksia						
Hakea teretifolia	Dagger Hakea						
Persoonia lanceolata	Lance Leaf Geebung						
Rubiaceae							
Opercularia diphylla	Stinkweed						
Pomax umbellata	Pomax						
Sapindaceae							
Dodonaea triquetra	Hop Bush						
Thymelaeaceae							
Pimelea linifolia	Rice Flower						Sept