LODGE
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Date: 17 July 2025
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FLORA AND FAUNA ASSESSMENT

Shoalhaven Starches Expansion Project

Prepared for
Shoalhaven Starches

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Shoalhaven Starches Expansion Project – Flora and Fauna Assessment

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1.0 INTRODUCTION

Lodge Environmental were commissioned by Sebastain Tauni of Allen Price to prepare this Fauna and Flora Assessment (FFA) to support a modification proposal for a suite of heat recovery projects at the Shoalhaven Starches site along Bolong Road, Bomaderry NSW 2541 (herein referred to as the **Study Area**). Given the size of the Study Area and the positioning of the proposed development, this report considers the area of the proposed development only (herein referred to as the **Subject Land**).

This report describes the native vegetation, potential threatened species, populations, communities and associated habitat features that were recorded within the Subject Land in the context of an impact assessment. The information documented in this report has been obtained through desktop data searches and field surveying, with the inclusion of relevant legislative context, methods and recommendations. This report will assist in informing a DA associated with the proposal.

1.1 PROJECT DESCRIPTION

The project address is sited across several lots within the Shoalhaven Starches site along Bolong Road, Bomaderry NSW 2541 and is located within the Shoalhaven City Council (SCC) Local Government Area (LGA), with the SCC being the consenting authority. While the Shoalhaven Starches Site is large, the proposed development is restricted to Lot 241 DP 1130535, Lot 1 DP 1130953, Lot 243 DP 1309744, and Lot B DP 334511. The development also includes sections following Bolong Road.

The Subject Land is zoned as RU2 – Rural Landscape, E4 – General Industrial, with Bolong Road itself being zoned SP2 – Infrastructure. The proposed development consists of the installation of a suite of heat recovery upgrades which also includes the construction of above and below-ground electrical transmission lines, the extension of an existing carpark and modification to existing road infrastructure connecting to Bolong Road (**Figure 1**).

The impact assessment contained within this report is conducted for all areas within the Subject Land unless otherwise stated. Where relevant, information on adjacent areas has been gathered to further inform the impact assessment within this report.

1.2 OBJECTIVES

This report presents an assessment of possible impacts associated with the proposal at the Subject Land and is based on a field investigation, a literature review of previous studies undertaken in the region, the consultation of relevant databases and a consideration of the objectives of Section 4 of the EP&A Act, the State BC Act, the Commonwealth EPBC Act and any relevant State Environmental Planning Policies (SEPP).

The environmental impacts of the development have been assessed via the Test of Significance pursuant to Section 7.3 BC Act 2016, the Matters of National Environmental Significance (MNES) under the EPBC Act, and the relevant clauses within the Shoalhaven Local Environmental Plan 2014 (LEP) and the Shoalhaven Development Control Plan 2014 (DCP). The direct and indirect ongoing impacts of the development are addressed in this FFA.

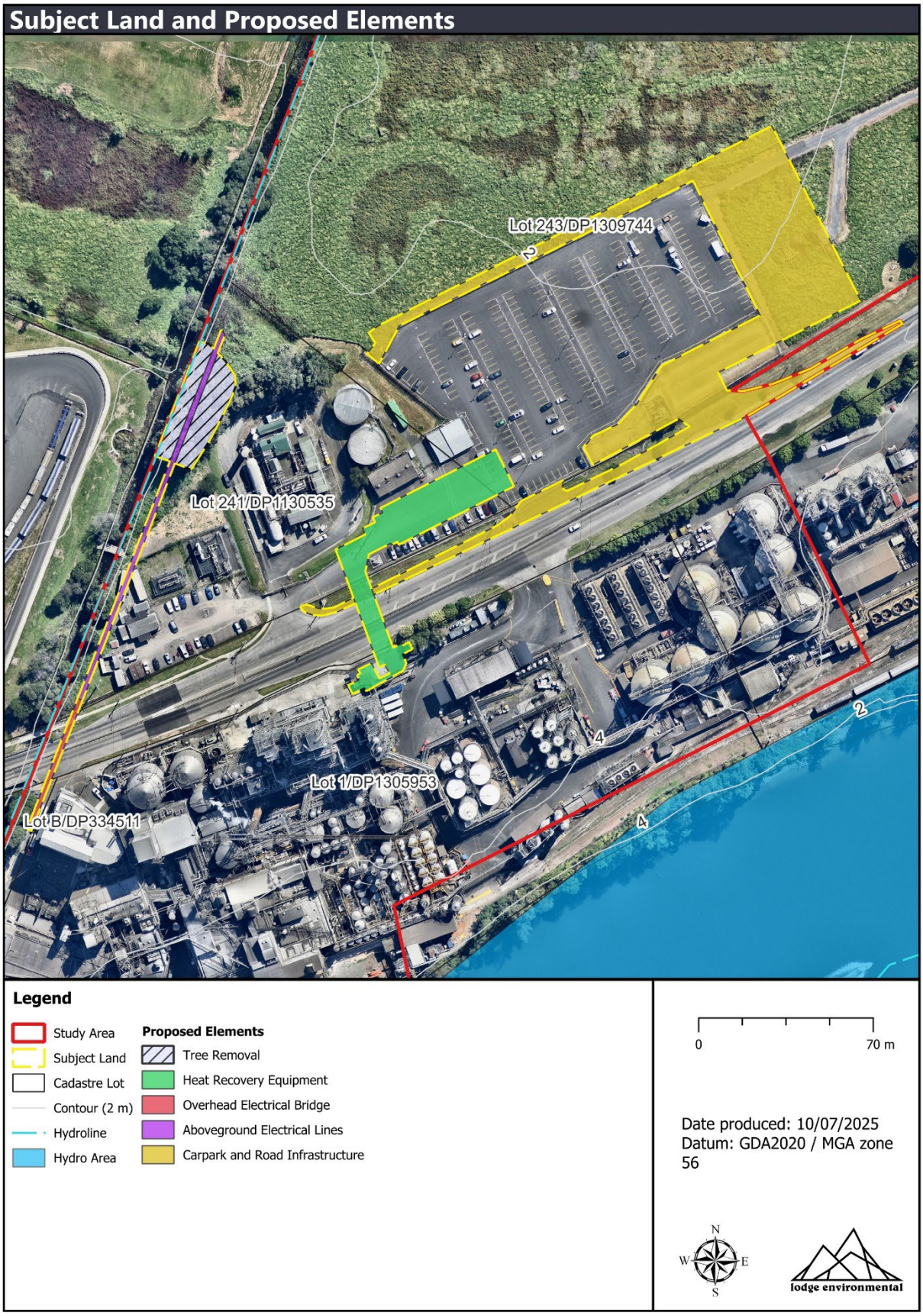

Figure 1: Subject Land and Proposed Elements

2.0 LEGISLATIVE CONTEXT

2.1 ENVIRONMENTAL PLANNING AND ASSESSMENT ACT 1979

The NSW EP&A Act is the principal planning legislation for the state, providing a framework for the overall environmental planning, and development assessment process. Various legislative instruments, such as the BC Act, NSW *Water Management Act 2000* (WM Act) and NSW *Rural Fires Act 2007* (RF Act) are integrated with the EP&A Act and have been reviewed below where relevant.

2.2 BIODIVERSITY CONSERVATION ACT 2016

The NSW BC Act aims to slow the decline of threatened species, populations and communities listed under the Act. The BC Act is integrated with the EP&A Act and requires consideration of whether a development (Part 4 of the EP&A Act) is likely to significantly affect threatened species, populations and ecological communities or their habitat.

The schedules of the BC Act lists species, populations and communities as endangered or vulnerable. All developments, land use changes or activities need to be assessed to determine if they will have an unacceptable impact on species, populations or communities listed on these schedules.

The potential impact of the development on any threatened species, populations or communities is assessed through application of an Assessment of Significance (AoS) under Section 7.3 of the BC Act at the development application stage. If the impacts on the area are found to be 'significant', a Biodiversity Development Assessment Report (BDAR) would be required as would concurrence from the Chief Executive of the NSW Environment, Energy and Sciences Group (EES) including application of the Biodiversity Assessment Methodology (BAM) and entering into the Biodiversity Offset Scheme (BOS). A BDAR would also be deemed necessary if the proposed development were to involve clearance of vegetation mapped on the State Biodiversity Values Map (BVM), or involve native vegetation clearance above the thresholds tables within the BC Act (**Table 1**).

Table 1: Offset scheme thresholds - area criteria

Minimum lot size associated with the property	Threshold for clearing, above which the BAM and offsets scheme applies
Less than 1 ha	0.25 ha or more
1 ha, and less than 40 ha	**0.5 ha or more**
40 ha, and less than 1,000 ha	1 ha or more
1,000 ha or greater	2 ha or more

2.3 ENVIRONMENT PROTECTION AND BIODIVERSITY CONSERVATION ACT 1999

The Commonwealth EPBC Act aims to protect and encourage the recovery of threatened species, populations and communities listed under the Act. Under this Act an action will require approval from the Minister for the Environment if the action has, will have, or is likely to have, a significant impact on a MNES. MNES include listed threatened species and ecological communities, migratory species and wetlands of international importance protected under international agreements. Where applicable, the assessment criteria relevant to this Act must be drawn upon to determine whether there would be a significant impact on these species and hence whether referral to the Federal Environmental Minister is required.

2.4 LOCAL PLANNING INSTRUMENTS

2.4.1 Shoalhaven Local Environmental Plan 2014

The Shoalhaven Local Environment Plan 2014 (SLEP) is the principal planning instrument for the SCC LGA. The LEP sets out the planning framework and establishes the requirements for the use and development of land in the SCC LGA. The SLEP provides broad direction regarding what types of development are permitted within specific land use zones.

2.4.2 Shoalhaven Development Control Plan 2014

The Shoalhaven Development Control Plan 2010 (SDCP) aims to make detailed local provisions for all land within the LGA. Specifically, the SDCP provides detailed construction, building and environmental controls for the types permitted land use described in the LEP. Environmental controls address issues such as biodiversity, bushfire prone land, trees and vegetation.

3.0 METHODS

3.1 DATA AND LITERATURE REVIEW

Data records and relevant literature pertaining to the ecology of the Subject Land and surrounding areas were reviewed on the 25th of June 2025. The material reviewed included:

- NSW BioNet, Atlas of NSW Wildlife database search (10 km)
- EPBC Act Protected Matter Search Tool (10 km)
- Review of the State Biodiversity Values Map
- EES threatened species profile database
- NSW State Vegetation Type Map
- Property Report
- Relevant legislative documents
- Aerial photography

Following a review of relevant databases, a list of threatened species and communities that may occur within the Subject Land was produced (**Appendix A**). Likelihood of occurrences for threatened species, endangered populations and communities in the Subject Land were then made based on location of database records, the likely presence or absence of suitable habitat on the site, and knowledge of the species' ecology. The likelihood of occurrence was stratified using a rating of "high", "moderate" or "low" likelihood, with those species considered to have a considerable likelihood of occurrence (following site validation) then identified as either potentially "affected" by the proposal and therefore requiring a significance assessment or not.

3.2 FIELD SURVEY

To address the FFA, the following survey methods were undertaken on the 27th of June 2025 by Lodge Environmental ecologists Luke Jeffery and Will Harris. The goal of the field survey was to:

- Identify plant species and vegetation communities present within the site,
- Search for signs of threatened species, observe and record significant flora and fauna – threatened and migratory species, other incidental fauna observations,
- Observe and record current disturbance and threats (e.g. weeds, trampling, litter),
- Identifying potential habitat for threatened fauna species/populations (e.g. habitat-bearing trees (HBTs), creeks, boulders etc),
- Recording presence of environmental weeds,
- Taking reference photographs of the entire site.

3.3 SURVEY WEATHER

The weather during the field survey is summarised in **Table 2** below.

Table 2: Weather Conditions during surveys

Survey	Date	Min Temp (°C)	Max Temp (°C)	Rain (mm)	Wind
Site Survey	27/06/2025	4.3	15.8	0	26 km/h SE

Observations from the Bureau of Meteorology, Nowra RAN Air Station AWS (station 068072)

3.4 SURVEY LIMITATIONS

Survey was conducted during the noted time and may be outside of the optimal survey period for some flora and fauna species. It is therefore possible that some species may not have been detected due to their seasonal geographic variation. Cryptic species may not have been obvious. However, habitat assessments were conducted to further predict the likelihood of species occurrence at the site. A conservative approach was applied in the assumption of the presence of species that could potentially occur within the site area. In this regard, the survey is considered adequate for the purposes of this report.

4.0 DESKTOP REVIEW

4.1 EXISTING VEGETATION MAPPING

A review of the NSW State Vegetation Type Mapping (SVTM) that covers the Subject Land (DCCEEW, 2024) identified one mapped Plant Community Type (PCT) within the Subject Land (**Figure 2**). The SVTM classified the Subject Land as containing:

- PCT 4049 – South Coast Floodplain Grassy Swamp Forest, and
- PCT 0 – Not Classified.

4.2 BIODIVERSITY MAPPING

The Subject Land does not contain areas on the Biodiversity Values Map (**Figure 3**). The nearest BV mapped area to the Subject Land is approximately 100 meters to the South, following the Shoalhaven River and has been identified as:

- Threatened species or communities with potential for serious or irreversible impacts.

4.3 LAND ZONING

The Subject Land is zoned as E4 – General Industrial, RU2 – Rural Landscape and SP2 – Infrastructure under the SLEP (**Figure 4**). The objectives of this zone are detailed in **Table 3**.

Table 3: Objectives of Land Zoning within the Subject Lant

Zone	Objectives
E4 - General Industrial	• To provide a range of industrial, warehouse, logistics and related land uses. • To ensure the efficient and viable use of land for industrial uses. • To minimise any adverse effect of industry on other land uses. • To encourage employment opportunities. • To enable limited non-industrial land uses that provide facilities and services to meet the needs of businesses and workers. • To allow a diversity of activities that do not significantly conflict with the operation of existing or proposed development.
RU2 - Rural Landscape	• To encourage sustainable primary industry production by maintaining and enhancing the natural resource base. • To maintain the rural landscape character of the land. • To provide for a range of compatible land uses, including extensive agriculture.
SP2 - Infrastructure	• To provide for infrastructure and related uses. • To prevent development that is not compatible with or that may detract from the provision of infrastructure.

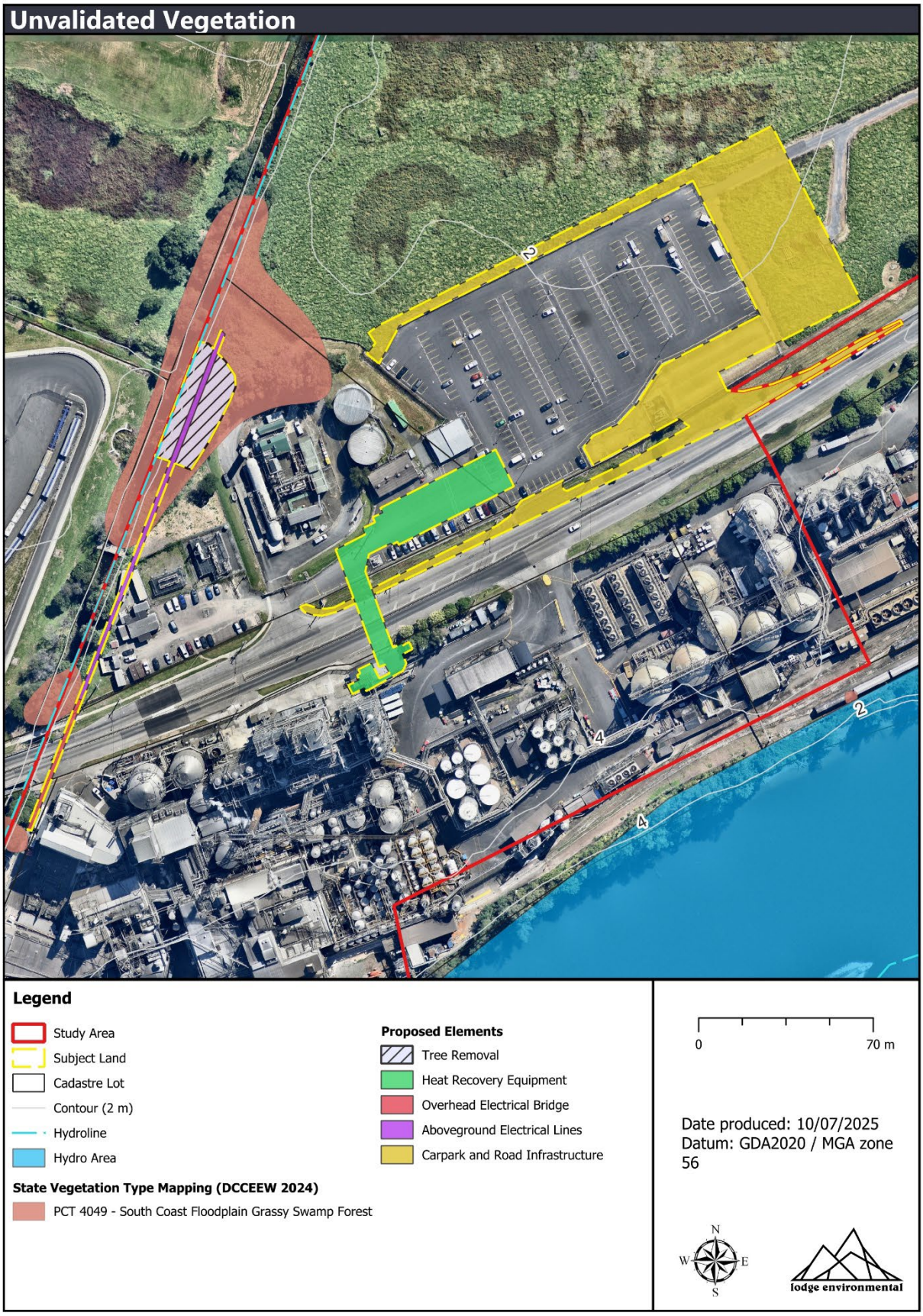

Figure 2: Unvalidated Vegetation

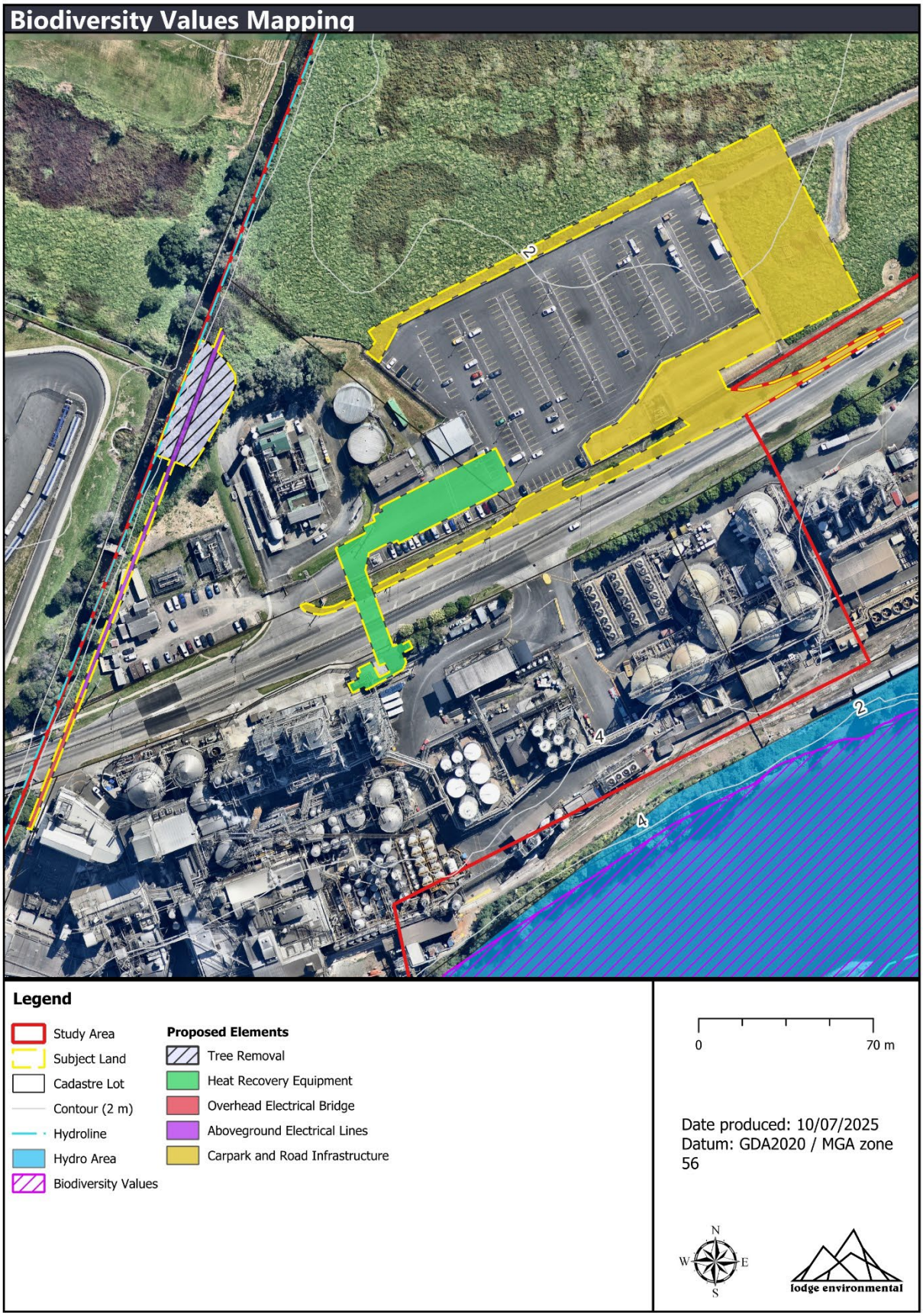

Figure 3: Biodiversity Values Map

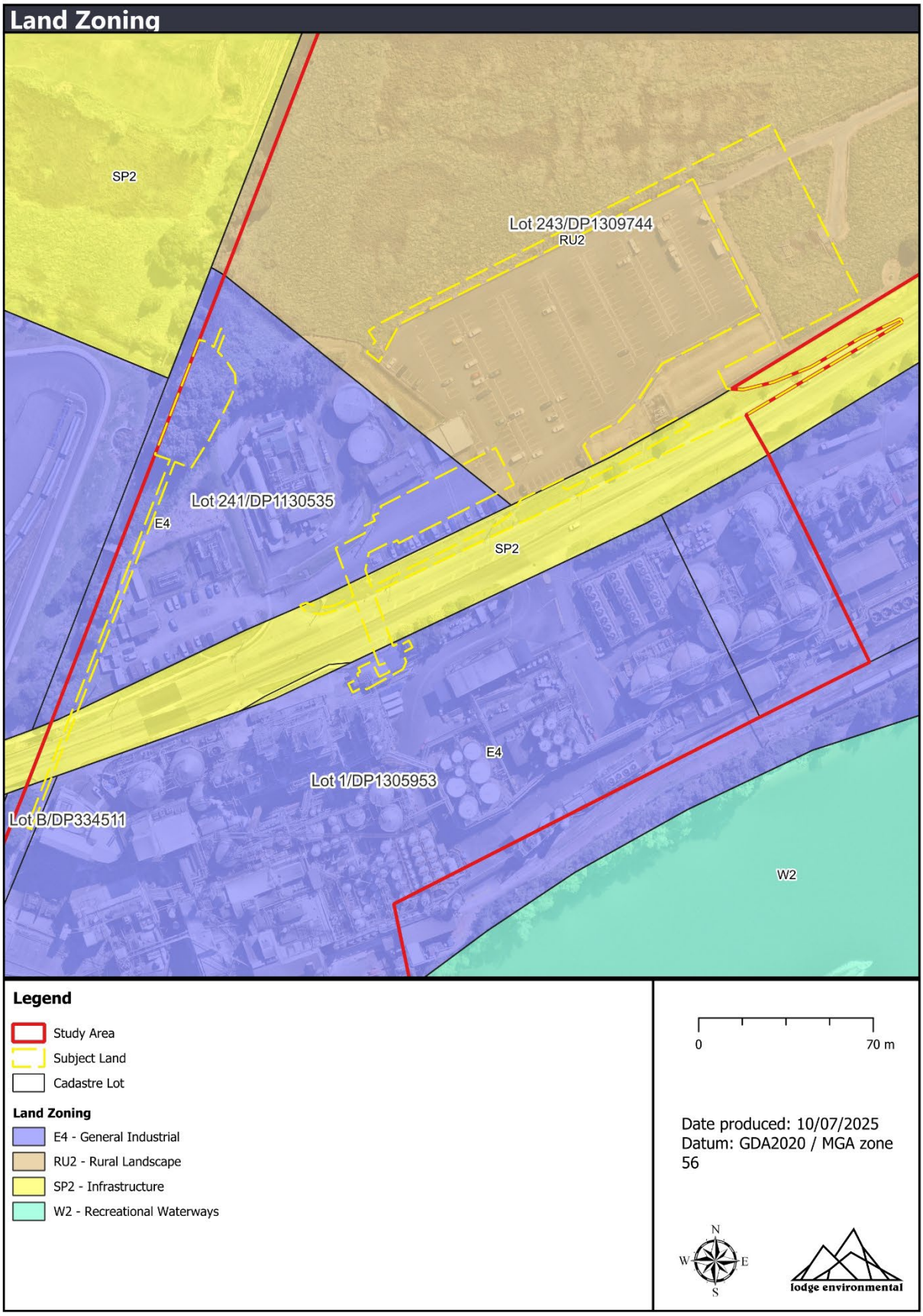

Figure 4: Land Zoning

4.4 THREATENED FLORA SPECIES

A review of BC Act and EPBC Act databases identified eight threatened ecological communities (TEC), and 27 flora species listed under the BC Act and/or the EPBC Act that have been previously recorded, or are considered to have habitat, within 10 km of the site. Sightings of species listed under the BC Act are shown in **Figure 5**. This initial compilation of potentially occurring species informed the site survey, provided an indication of which species required consideration within the site. An assessment of the likelihood of occurrence of threatened flora species within the site is available in **Appendix A** and was used to guide the field survey methodology.

Prior to field survey, two Threatened Ecological Communities (TEC) and four threatened flora species was identified as having moderate to high potential to occur within the Subject Land (**Table 4**).

Table 4: Potential threatened ecological communities and flora species within the Subject Land

Scientific Name	Common Name	BC Act	EPBC Act
Threatened Ecological Community			
Swamp Oak Floodplain Forest of the New South Wales North Coast, Sydney Basin and South East Corner Bioregions		E	-
Coastal Swamp Oak (Casuarina glauca) Forest of New South Wales and South East Queensland ecological community		-	E
Flora			
Hibbertia stricta subsp. *furcatula*	-	E	-
Rhodamnia rubscens	Scrub Turpentine	CE	CE
Solanum celatum	-	E	-
Syzygium paniculatum	Magenta Lilly Pilly	V	V

Key. V=Vulnerable, E=Endangered, Ep=Endangered Population, CE=Critically Endangered, M=Migratory. Species habitat associations have been informed predominantly from EES (2025) and DotEE (2025) species profiles.

4.5 THREATENED FAUNA SPECIES

A review of BC Act and EPBC Act databases identified 80 threatened fauna species listed under the BC Act and/or the EPBC Act that have been previously recorded, or are considered to have habitat, within 10 km of the site. Sightings of bird species listed under the BC Act are shown in **Figure 6**, with all other species shown in **Figure 7**. An assessment of the likelihood of occurrence of threatened fauna species within the site is available in **Appendix A** and was used to guide the field survey methodology.

Prior to field survey, nine threatened fauna species were identified as having moderate to high potential to occur within the Subject Land (**Table 5**).

Table 5: Potential threatened fauna within the Subject Land

Common name	Scientific name	BC Act	EPBC Act
Aves			
Dusky Woodswallow	*Artamus cyanopterus cyanopterus*	V	-
Australian Bittern	*Botaurus poiciloptilus*		
Gang-gang Cockatoo	*Callocephalon fimbriatum*	V	E
Glossy black Cockatoo	*Calyptorhynchus lathami*	V	V
Varied Sittella	*Daphoenositta chrysoptera*	V	-
Barking Owl	*Ninox connivens*	V	-

Powerful Owl	*Ninox strenua*	V	-
Masked Owl	*Tyto novaehollandiae*	V	-
Mammals			
Grey-headed Flying Fox	*Pteroptus poliocephalus*	V	V

Key. V=Vulnerable, E=Endangered, Ep=Endangered Population, CE=Critically Endangered, M=Migratory. Species habitat associations have been informed predominantly from EES (2025) and DotEE (2025) species profiles.

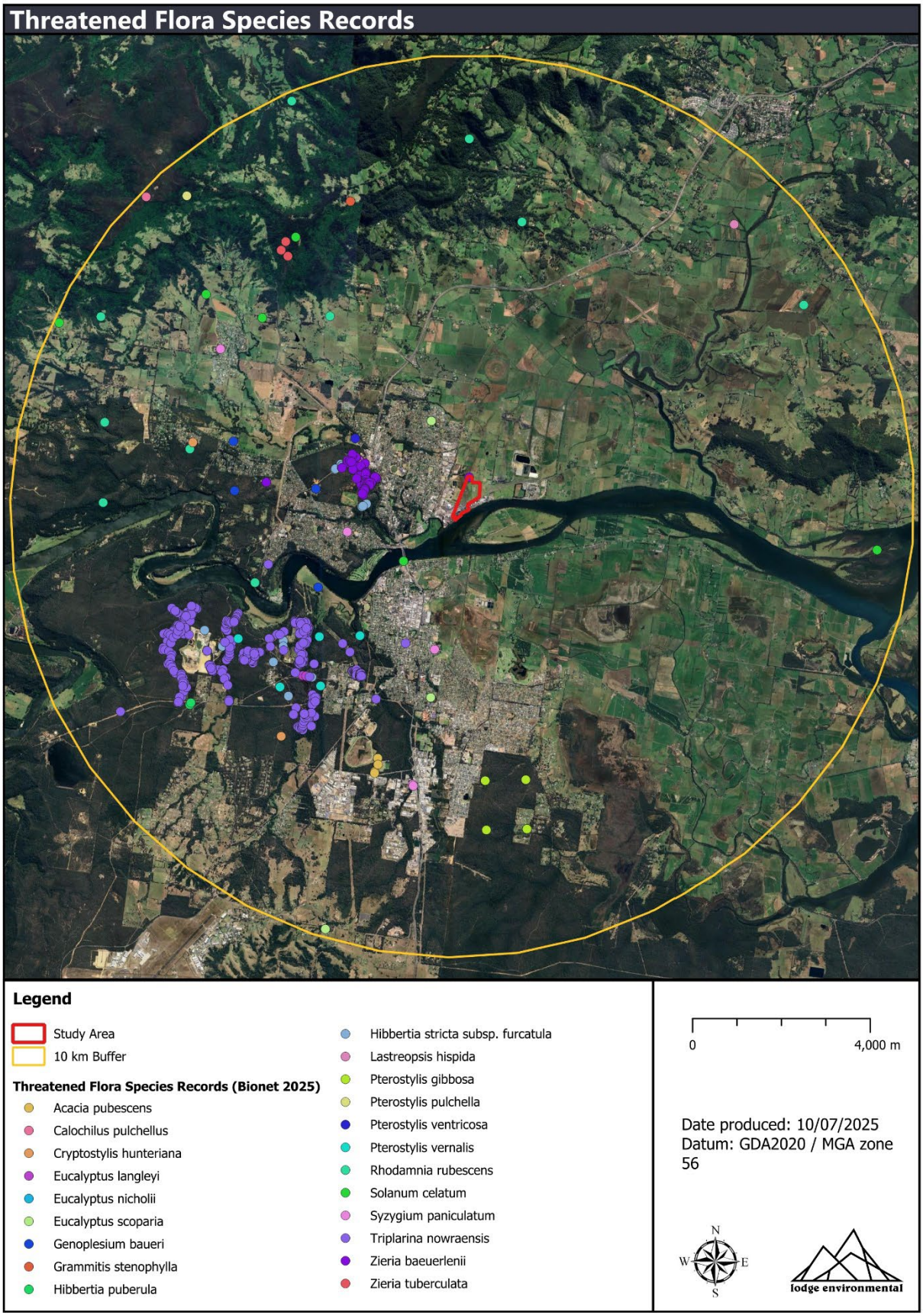

Figure 5: Threatened flora species records within 10 km of the Subject Land

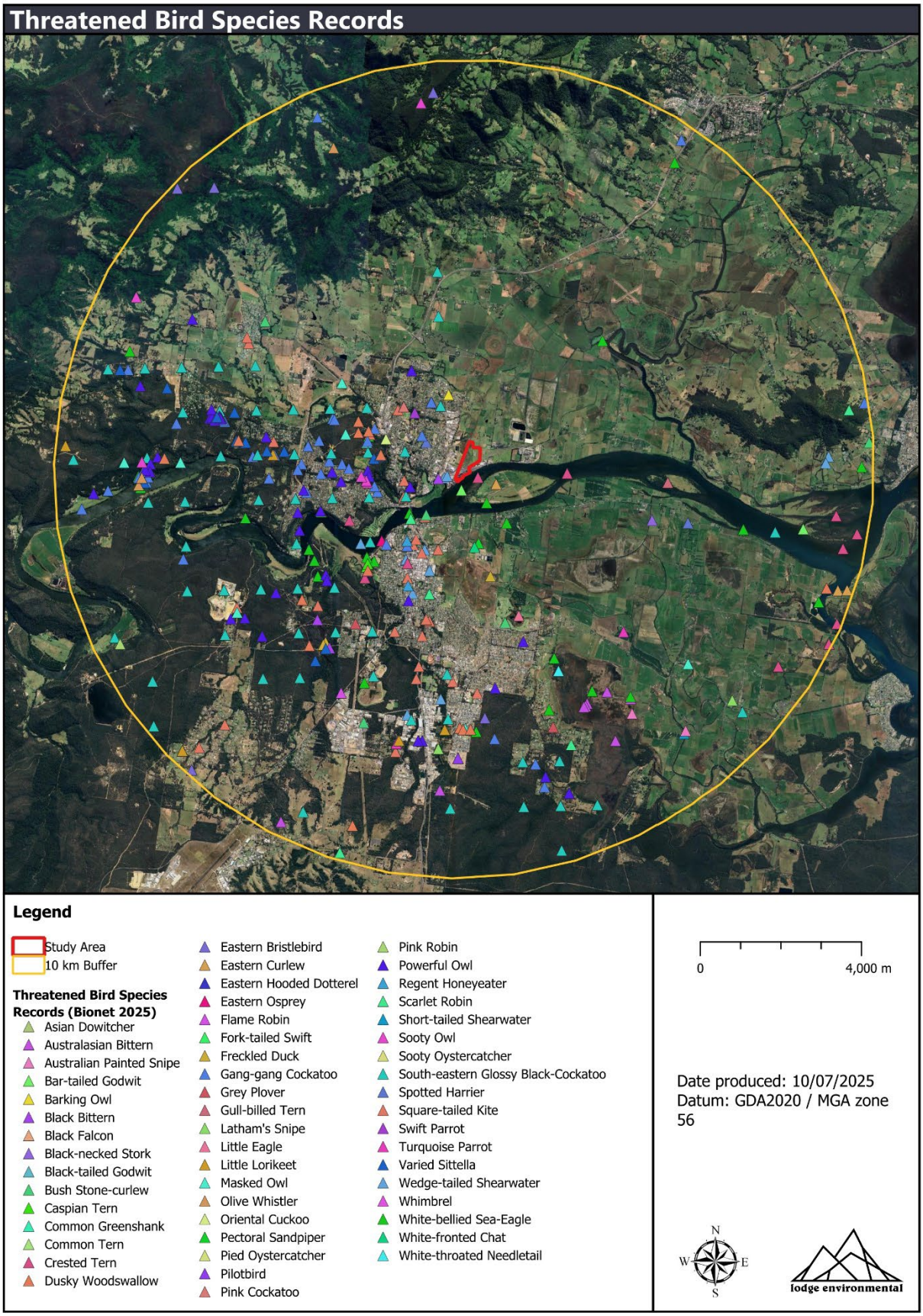

Figure 6: Threatened Bird Species Records within 10 km of the Subject Land

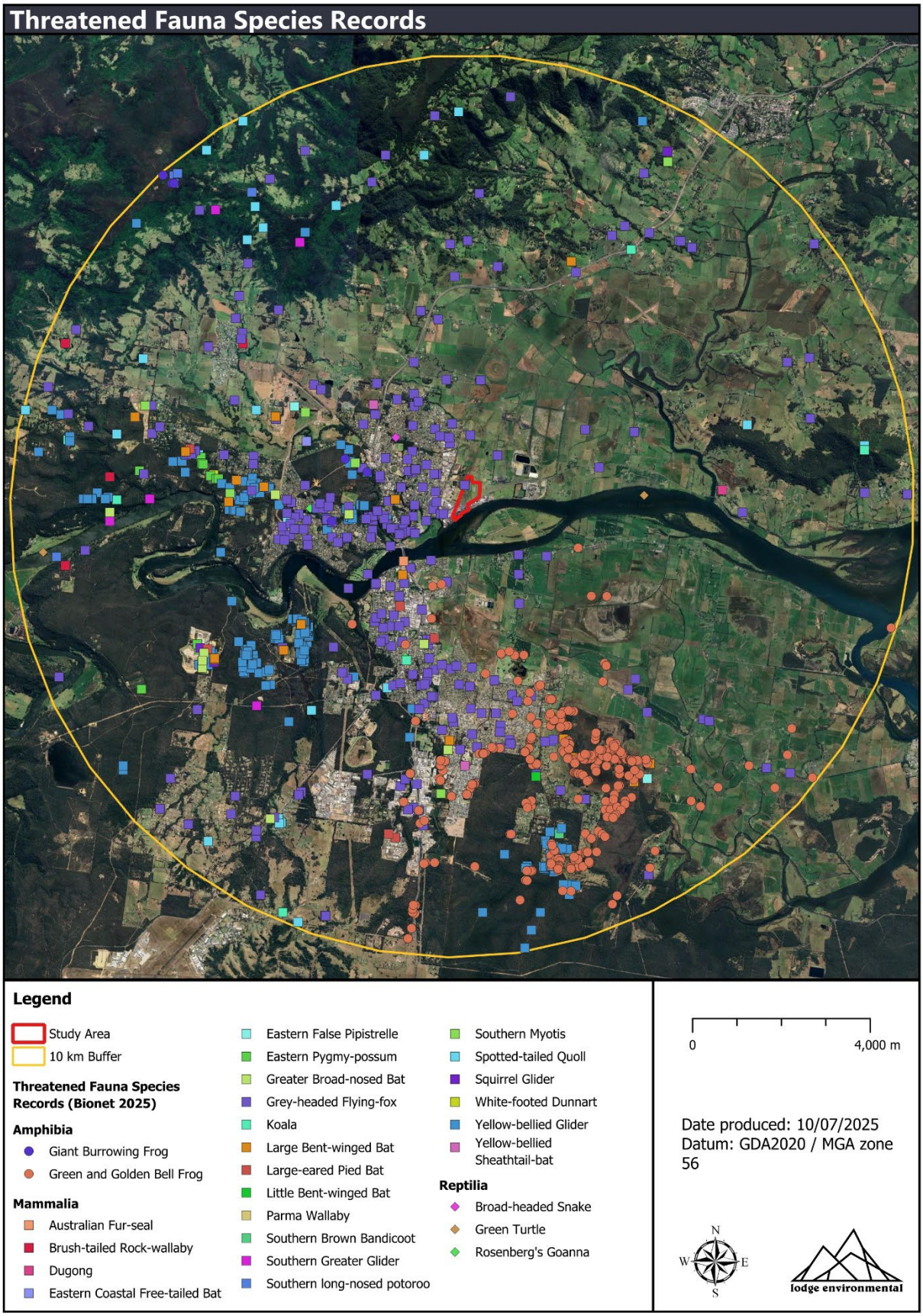

Figure 7: Threatened fauna records within 10 km of the Subject Land

5.0 FIELD SURVEY RESULTS

5.1 EXISTING ENVIRONMENT

The vegetation within the Subject Land is characterised by large, cleared areas dominated by exotic pasture grasses, forbs and shrubs, with small areas of planted native vegetation (**Figure 8**). Several weed species were identified within the Subject Land; these species are detailed in **Section 5.4.1**.

Existing development within the Subject Land consists of large industrial buildings, equipment, access roads, and carparks associated with the Shoalhaven Starches site along Bolong Road, Bomaderry. The Subject Land exists within a highly modified landscape with large industrial development to the South and West, with the town of Bomaderry beyond to the west. The surrounding land to the north and west consists of large agricultural lots, predominantly utilised for cattle grazing. An artificial canal flows southward along the eastern edge of the Subject Land.

Due to current and historical disturbance, there was low fauna presence within the Subject Land. The fauna species recorded are common within developed areas and disturbed vegetation such as those present in the Subject Land.

No threatened species or significant habitat features were recorded during the site survey.

5.1.1 Habitat Features

Habitat for native fauna within the Subject Land was very limited, with no significant habitat features such as stick nests or hollows recorded. Areas of the Subject Land had very dense shrub coverage which may provide sheltering habitat for small bird species such as the Superb Fairywren (*Malurus cyaneus*), which was recorded on site.

An overview of the habitat features present within the site is described below in **Table 6**.

Table 6: Overview of habitat features present within the Subject Land

Habitat Feature	Description of the feature	Presence of the habitat feature
Habitat-bearing trees	Habitat-bearing trees can be alive or dead (stag) and include any additional sheltering, roosting or nesting features that may be relied upon by native fauna, but are not captured within the traditional definition of a Hollow-bearing tree. These features include hollows, crevices, cracks, fissured branches, exfoliating bark, nests, dreys and arboreal termite mounds	No hollows, nests or similar habitat features were identified within the Subject Land.
Small trees and shrubs	Small trees and shrubs, often referred to as the understorey, provides unique niches in the environment animals can use for shelter, foraging, and breeding purposes. Smaller birds, for instance, rely on the tangle of branches often found in the understorey to construct their nests, as the dense foliage provides protection from larger predators. Moreover, the understorey also helps stabilise the soils, provide wind protection and prevent the loss of leaf litter.	Small trees and shrubs were limited within the Subject Land due to historical and current land use. The mid-stratum is restricted or entirely absent. Dense patches of exotic vegetation are present which may provide sheltering habitat for small birds.
Groundcover	Groundcover consists of low shrubs, grasses, herbs, and leaf litter. Tall, dense tussock grasses provide important shelter and nesting habitat for	Ground cover within the Subject Land is comprised predominately of exotic

Habitat Feature	Description of the feature	Presence of the habitat feature
	a diverse range of animals, including birds, reptiles, marsupials, and insects.	grasses and forbs with scattered patches of natives.
Leaf litter and fallen timber	Leaf litter and plant debris provide important foraging habitat for insects and insectivore species. Hollow logs provide important breeding and shelter habitat for many reptiles, frog, mammal and even some bird species.	Leaf litter coverage is low across the Subject Land due to low canopy coverage. Very little fallen timber is present.
Regeneration	In a natural environment, mature plants in both the canopy and understorey are continually replaced by regeneration, allowing for the ongoing succession and renewal of the ecosystem. In a self-sustaining ecosystem, regeneration should be a minor component but occur across all strata.	Native regeneration within the Subject Land is restricted to planted *Allocasuarina littoralis* (Black Sheoak) following a fence line along the northern boundary of the Subject Land.
Riparian areas	Riparian areas provide important habitat for water-dependant species such as fish and amphibians. Riparian areas are also critical feeding habitat for many species including reptiles, birds and bats.	The Subject Land is bordered by an artificial canal to the east which is likely utilised for agriculture.

5.2 VEGETATION COMMUNITIES

Following site survey and consideration of the historical disturbances and current land use practices, the PCTs within the Subject Land were validated as:

- PCT 4049 - South Coast Floodplain Grassy Swamp Forest (0.08 ha), and
- PCT 0 – Exotic Vegetation and Existing Infrastructure (0.83 ha).

Figure 8 depicts the validated vegetation within the Subject Land. The below subsections and **Table 6** provide a detailed description of the vegetation zones recorded.

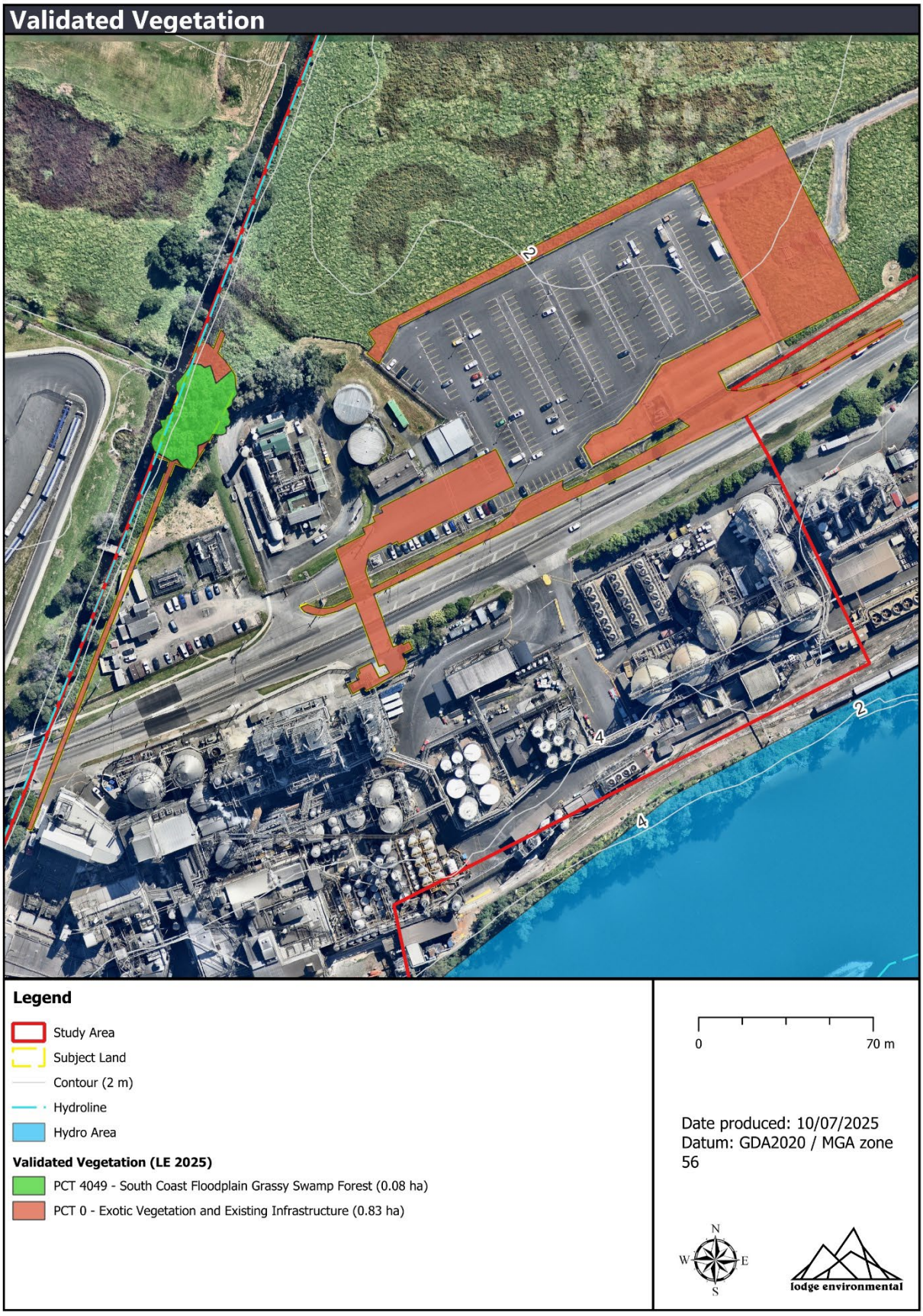

Figure 8: Validated Plant Community Types within the Subject Land

5.2.1 PCT 4049 – South Coast Floodplain Grassy Swamp Forest

This patch is characterised by a native canopy of *Allocasurarina littoralis* (Black Sheoak), and *Casuarina glauca* (Swamp Oak). Due to historical and current disturbance, native vegetation within the mid and ground stratum is almost absent. **Table 7** gives a detailed description of the vegetation in this zone and justification for PCT selection.

Table 7: PCT 4049 – South Coast Floodplain Grassy Swamp Forest

PCT 4049 – South Coast Floodplain Grassy Swamp Forest	
Vegetation Formation	Forested Wetlands
Vegetation Class	Coastal Floodplain Wetlands
Percent Cleared	85.68 %
TEC Association	PCT 4049 has two TEC associations, being: • Swamp Oak Floodplain Forest of the New South Wales North Coast, Sydney Basin and South East Corner Bioregions (Endangered – BC Act), • Coastal Swamp Oak (Casuarina glauca) Forest of New South Wales and South East Queensland ecological community (Endangered – EPBC Act).
Generic PCT Description taken from BioNet	A tall grassy open forest of low-lying slightly saline sites on coastal floodplain margins and headland soaks of the southern Sydney Basin and northern South East Corner bioregions. This PCT is distributed between Narooma and Wollongong at elevations of 2-25 metres asl in areas receiving 1000-1350 mm mean annual rainfall, commonly on organic-rich sandy clay alluvium. A mid-dense to dense tree canopy is commonly dominated by *Casuarina glauca*, occasionally with *Eucalyptus longifolia*, above a stratum of scattered small trees with occasional *Melaleuca ericifolia* or *Melaleuca linariifolia*. Smaller shrubs very frequently include *Pittosporum undulatum*, with *Leucopogon juniperinus* common and occasional patches of *Kunzea ambigua*. The ground layer is dominated by grasses and graminoids, commonly with *Oplismenus imbecillis*, *Entolasia marginata*, *Microlaena stipoides*, *Echinopogon caespitosus*, and tall *Lomandra longifolia*, *Gahnia clarkei, Dianella caerulea* and *Carex longebrachiata*. The vines *Parsonsia straminea*, *Polymeria calycina* and *Glycine clandestina* are also common, as are soft forbs *Lobelia purpurascens*, *Dichondra repens*, *Viola hederacea*, *Hydrocotyle sibthorpioides* and *Lagenophora stipitata*. This community may grade into PCT 4028 in slightly lower, wetter parts of floodplains, and into PCT 4040 in more saline and permanently waterlogged areas.
Subject Land Occurrence of PCT 4049 – South Coast Floodplain Grassy Swamp Forest	
Vegetation Structure	The vegetation structure of the Subject Land has been highly modified due to historical and current land use practices, resulting in the existence of native canopy and scattered native mid and ground stratum species with very low species diversity.
Landscape Position	The Subject Land is at an elevation of approximately 2 m above sea level (asl) and is found a large flat floodplain following the Shoalhaven River.
Soil	With reference to the Soil and Land Resources of the Kiama (DCCEEW 1992), the soil within the Subject Land has been mapped as being the *Shoalhaven* Formation (sf). Shoalhaven soils are described as: "*Alluvium–gravel, sand, silt and clay derived mainly from sandstone and shale overlying buried estuarine sediments.*"
Upper Stratum Species recorded that align with the PCT (Boldened text denotes dominant species)	*Acacia mearnsii*, **Allocasuarina littoralis**, **Casuarina glauca**
Mid Stratum Species recorded that align with the	-

PCT (Boldened text denotes dominant species)	
Ground Stratum Species recorded that align with the PCT (Boldened text denotes dominant species)	*Dichondra repens*, *Senecio minimus*
Justification for PCT selection	PCT 4049 was assigned to this vegetation zone based on the attributes recorded in the field and subsequent desktop analysis, scientific description, vegetation community details and the floristic composition as detailed on BioNet. The justification for this selection is as follows: • The vegetation within this zone has a severely reduced species diversity due to historical disturbance and current land use practices that have reduced the structure, diversity and extent of the community, and continue to restrict the regeneration potential of the vegetation community. • The location, landscape position and soil type within the Subject Land matches the description of PCT 4049. • PCT 4049 is known to occur in similar conditions within the broader landscape. It is likely that should the vegetation be effectively managed that it would return to a state matching the description of PCT 4049.
Alternative PCTs Considered	Alternative PCTs that were considered but ultimately ruled out are: • PCT 4027 – Estuarine Swamp Oak Mangrove Forest: PCT 4027 lacks the mixed *Allocasurarina littoralis* and *Casuarina glauca* canopy found within the Subject Land. • PCT 4028 – Esturarine Swamp Oak Twig-rush Forest: PCT 4028 lacks the mixed *Allocasurarina littoralis* and *Casuarina glauc*a canopy found within the Subject Land.

Survey Method	Condition	Area (ha) within Subject Land
Random meander	Poor	0.08 ha

PCT 4049 Photograph

5.2.2 PCT 0 – Exotic Vegetation and Existing Infrastructure

The majority of the Subject Land consists of areas of exotic vegetation. Historical and current land use practices have prevented regeneration of native vegetation and severely restricted species diversity and structural complexity. This zone is characterised by high coverage of exotic grasses and forbs, low native species diversity and disturbance from weed intrusion (**Figure 9**).

Canopy in this zone is absent except for some overhanging canopy is largely absent, where present consists of *Lantana camara* (Lantana) and one small *Acacia mernsii* (Blackwood). Common exotic species in this area included pasture grasses such as *Cenchrus clandestinus* (Kikuyu Grass), and *Paspalum urvellei* (Vasey Grass), and forbs including *Solanum mauritianum* (Wild Tobacco Bush), *Lysimachia arvensis* (Scarlet Pimpernel), *Plantago lanceolata* (Lamb's Tongue), *Phytolacca octandra* (Inkweed), and *Rumex crispus* (Curled Dock). The native *Dichondra repens* (Kidney Weed) was present but with low cover. *Araujia sericifera* (Moth Vine) was frequently observed shrubs and climbing along fences.

No threatened flora species were recorded within this vegetation zone.

Figure 9: Occurrence of PCT 0 - Exotic Vegetation along the northern extent of the Subject Land

5.3 THREATENED ECOLOGICAL COMMUNITIES

TECs are ecological communities that are at the risk of extinction from a number of pressures, including:

- Clearing of native vegetation
- Inappropriate fire regimes
- Exotic and/or invasive species
- Climate change
- Water diversion
- Pollution and urban development.

TECs are afforded considerable protection via their listing under both the State BC Act and Commonwealth EPBC Act. PCT 4049 – South Coast Floodplain Grassy Swamp Forest has two listed TEC associations, as detailed below in **Table 8**. The extent of TEC presence within the Subject Land is displayed in **Figure 10**.

Table 8: PCT 4049 Threatened Ecological Community Associations

PCT	Associated TEC	BC Act	EPBC Act
4049	Swamp Oak Floodplain Forest of the New South Wales North Coast, Sydney Basin and South East Corner Bioregions	Endangered	-
	Coastal Swamp Oak (Casuarina glauca) Forest of New South Wales and South East Queensland ecological community	-	Endangered

Figure 10: Threatened Ecological Communities within the Subject Land

5.3.1 BC Act Threatened Ecological Communities Association

The NSW Scientific Committee outlines the legal definition of each BC Act TEC. This definition is used to determine if a PCT is considered to represent the associated TECs. An assessment of the relevant TEC criteria and determinations is contained below.

5.3.1.1 Swamp Oak Floodplain Forest of the New South Wales North Coast, Sydney Basin and South East Corner Bioregions

Swamp Oak Floodplain Forest of the NSW North Coast, Sydney Basin and South East Corner bioregions (SOFF) is listed as Endangered under the BC Act. SOFF is the name given to the ecological community associated with grey-black clay-loams and sandy loams, where the groundwater is saline or sub-saline, on waterlogged or periodically inundated flats, drainage lines, lake margins and estuarine fringes associated with coastal floodplains. Floodplains are level landform patterns on which there may be active erosion and aggradation by channelled and overbank stream flow with an average recurrence interval of 100 years or less. SOFF generally occurs below 20 m (rarely above 10 m) elevation in the NSW North Coast, Sydney Basin and South East Corner bioregions. The structure of the community may vary from open forests to low woodlands, scrubs or reedlands with scattered trees. Typically, these forests, woodlands, scrubs and reedlands form mosaics with other floodplain forest communities and treeless wetlands, and often they fringe treeless floodplain lagoons or wetlands with semi-permanent standing water.

A comparison of the occurrence of PCT 4049 – South Coast Floodplain Grassy Swamp Forest within the Subject Land and the determining factors listed within the NSW Scientific Committee Final Determinations for SOFF is detailed below in **Table 9**.

Table 9: Comparison of PCT 4049 – South Coast Floodplain Grassy Swamp Forest within the Subject and the Final Determination for Swamp Oak Floodplain Forest of the New South Wales North Coast, Sydney Basin and South East Corner Bioregions

Key attribute	NSW Scientific Committee Final Determination – SOFF	PCT 4049 – South Coast Floodplain Swamp Forest within the Subject Land
Location	SOFF is known to occur across several LGAs, including Shoalhaven	The Subject is located at Bomaderry, within the Shoalhaven LGA and the Southeast Corner Bioregion.
Soils and landscape position	SOFF is known to occur on grey-black clay-loams and sandy loams, where the groundwater is saline or sub-saline, on waterlogged or periodically inundated flats, drainage lines, lake margins and estuarine fringes associated with coastal floodplains.	The Subject Land occurs on Alluvial Shoalhaven Soils, which are described as having black sand topsoils and brown sandy clay subsoils. The Subject Land also occurs on a broad, flat floodplain adjacent to the Shoalhaven River under 10 m elevations. The Shoalhaven River is described specifically as having major occurrence of the SOFF TEC.
Floristic composition	SOFF is characterised by the floristic assemblage species outlined in Part 1 of the SOFF NSW Scientific Committee Final Determination.	2 of the 9 native species recorded within the Study Area are listed as characteristic of SOFF. Critically, *Casurarina glauca* was one of the dominant canopy species. It is important to note that the species diversity of this vegetation zone has been

Key attribute	NSW Scientific Committee Final Determination – SOFF	PCT 4049 – South Coast Floodplain Swamp Forest within the Subject Land
		significantly decreased due to its disturbance history.
Characteristic tree species	SOFF has a sparse to dense tree layer in which *Casuarina glauca* is the dominant species. Other common species include *Syzygiium smithii*, *Glochidion* spp. and *Melaleuca* spp.	*Casurarina glauca* is one of the dominant tree species. *Melaleuca quinquinervia* was also observed adjacent to the Subject Land.
Disturbance	SOFF has been extensively cleared and modified. Large areas that formerly supported this community are occupied by exotic pastures grazed by cattle, market gardens, other cropping enterprises. Very few examples of SOFF remain unaffected by weeds. The causes of weed invasion include physical disturbance to the vegetation structure of the community, dumping of landfill rubbish and garden refuse, polluted runoff from urban and agricultural areas, construction of roads and other utilities, and grazing by domestic livestock.	The Study Area is subject to historical and current disturbances, including: • Clearance, and • Exotic species.

While the condition of the native vegetation within the Subject Land is poor, the final determination for SOFF does not consider the vegetation condition directly. The final determination notes that SOFF often exists is poor condition with high rates of weed incursion and other disturbance. Taking a precautionary approach, and given that the Subject Land is located on a flat floodplain within the Shoalhaven LGA, on black sand – clay soils and *Casurarina glauca* is one of the dominant canopy species, the occurrence of PCT 4049 – South Coast Floodplain Grassy Forest within the Subject Land is considered to represent the TEC Swamp Oak Floodplain Forest of the New South Wales North Coast, Sydney Basin and South East Corner Bioregions.

5.3.2 EPBC Act Threatened Ecological Communities Association

Commonwealth threatened status and listings focus legal protection on patches of threatened ecological communities that are most functional, have a high abundance of native species and in comparatively good condition. Condition thresholds and key diagnostic characteristics assist in identifying if the EPBC Act is to apply to a patch of native vegetation.

5.3.2.1 Coastal Swamp Oak (Casuarina glauca) Forest of New South Wales and South East Queensland ecological community

Coastal Swamp Oak (*Casuarina glauca*) Forest of New South Wales and South East Queensland ecological community (CSOF) is listed as Endangered under the EPBC Act. CSOF occurs in sub-tropical, sub-humid and temperate climatic zones from Curtis Island, north of Gladstone, in Queensland to Bermagui in southern New South Wales. The ecological community is found within the South Eastern Queensland, NSW North Coast, Sydney Basin and South East Corner IBRA7 bioregions. CSOF occurs in coastal catchments, mostly at elevations of less than 20 m above sea-level (ASL) that are typically found within 30 km of the coast.

CSOF is often found in association with other vegetation types such as coastal saltmarsh, mangroves, freshwater wetlands, littoral rainforests or swamp sclerophyll forests in a 'mosaic' of coastal floodplain communities. The structure of CSOF can vary from forest to woodland depending on its location in the landscape and disturbance history. The local expression of the ecological community is influenced by soils, history of inundation by tidal flows/estuarine system dynamics, groundwater salinity, site history, disturbance regimes and current land management. Many remaining patches of the ecological community contain regrowth from past clearance or other disturbances, and/or due to naturally occurring river and coastal dynamics. Some patches, for example where drainage is more impeded, may be expressed primarily as sedgeland or rushland, with a very sparse canopy (down to 10 per cent crown cover) of predominantly swamp oak. Other patches may just occur as canopy trees, over dense needle litter with sparse native groundcover.

For native vegetation to be considered as CSOF under the EPBC Act, the areas of the ecological community must meet:

- The key diagnostic characteristics, and
- At least the minimum condition thresholds for Category C.

Key Diagnostic Criteria

A comparison of the occurrence of PCT 4049 within the Subject Land and the Approved Conservation Advice prepared by the Department of Environment (2018) is detailed blow in **Table 10**.

Table 10: Comparison of PCT 4049 – South Coast Floodplain Grassy Swamp Forest within the Subject and the Approved Conservation Advice for Coastal Swamp Oak (*Casuarina glauca*) Forest of New South Wales and South East Queensland ecological community

Key Diagnostic Characteristic	Approved Conservation Advice for CSOF	PCT 4049 – South Coast Floodplain Grassy Swamp Forest
Location	Occurs from south-east Queensland to southern NSW within the South Eastern Queensland, NSW North Coast, Sydney Basin, or South East Corner bioregions	The Study Area is located in Bomaderry in the Shoalhaven LGA, which lies in the South East Corner Bioregions.
Landscape position and soil	Occurs in coastal catchments at elevations up to 50 m ASL, typically less than 20 m ASL, on coastal flats, floodplains, drainage lines, lake margins, wetlands and estuarine fringes where soils are at least occasionally saturated, water-logged or inundated. Occurs on soils derived from unconsolidated sediments (including alluvium), typically hydrosols (grey-black clay-loam and/or sandy loam soils) and sometimes organosols (peaty soils).	The Subject Land also occurs on a broad, flat floodplain adjacent to the Shoalhaven River under 10 m elevations. The Subject Land occurs on Alluvial Shoalhaven Soils, which are described as having black sand topsoils and brown sandy clay subsoils.
Vegetation Structure	Has an open woodland, woodland, forest, or closed forest structure, with a tree canopy that has a total crown cover of at least 10 &.	The vegetation structure within the Subject Land is that of a grassy woodland with over 10 % crown cover.

Floristic composition	Has a canopy of trees dominated by *Casuarina glauca* (Swamp Oak).	The canopy of trees is dominated by a mixed canopy of *Casurarina glauca* and *Allocasurarina littoralis*.

Given the Subject Land is located in the South East Corner Bioregion, on a coastal floodplain, is mapped as occurring on alluvial black sand-clay soils, and has *Casurarina glauca* as a dominant canopy species, the occurrence of PCT 4049 within the Subject Land meets the key diagnostic criteria for CSOF.

Condition Thresholds

The condition thresholds for this ecological community are designed to identify the best patches for national protection. Large patches of CSOF or those parts of large native vegetation patches with high quality native understorey are a higher priority for protection and management. Condition classes and thresholds for CSOF are displayed below in **Table 11**.

Given that patch size of relevant vegetation is less than 0.5 ha, the occurrence of PCT 4049 within the Subject Land does not meet the minimum condition thresholds required to be classified as Coastal Swamp Oak (Casuarina glauca) Forest of New South Wales and South East Queensland ecological community under the EPBC Act.

Table 11: Condition classes and thresholds for Coastal Swamp Oak (Casuarina glauca) Forest of New South Wales and South East Queensland ecological community (DoE 2018)

<table>
<tr><td>Condition thresholds
Patch size classes➔
🡻 Vegetation quality classes</td><td>Large patch
The patch is at least 5 ha</td><td>Medium patch
The patch is at least 2 ha and less than 5 ha</td><td>Small contiguous** patch
The patch is at least 0.5 ha and less than 2 ha, and is connected to a larger area of native vegetation of at least 5 ha</td><td>Small patch
The patch is at least 0.5 ha and less than 2 ha</td></tr>
<tr><td>HIGH QUALITY
Predominantly native understorey
Non-native species comprise less than 20% of total understorey vegetation cover*</td><td>CATEGORY A
A large patch that meets key diagnostics and has a predominantly native understorey</td><td colspan="2">CATEGORY B
A medium patch that meets key diagnostics and has a predominantly native understorey
OR
A small patch that meets key diagnostics and has a predominantly native understorey and is contiguous** with another large area of native vegetation</td><td>CATEGORY C
A small patch that meets key diagnostics and has a predominantly native understorey</td></tr>
<tr><td>GOOD QUALITY
Mostly native understorey
Non-native species comprise less than 50% of total understorey vegetation cover* AND transformer species*** comprise less than 30% of total understorey vegetation cover*</td><td>CATEGORY B
A large patch that meets key diagnostics and has a mostly native understorey</td><td colspan="2">CATEGORY C
A medium patch that meets key diagnostics and has a mostly native understorey
OR
A small patch that meets key diagnostics and has a mostly native understorey and is contiguous** with another large area of native vegetation</td><td></td></tr>
<tr><td>MODERATE QUALITY
Some native understorey
Non-native species comprise less than 80% of total understorey vegetation cover* AND transformer species*** comprise less than 50% of total understorey vegetation cover*</td><td colspan="2">CATEGORY C
A large or medium patch that meets key diagnostics and has some native understorey</td><td></td><td></td></tr>
<tr><td colspan="5">*Refers to total perennial understorey vegetation cover for the patch of the ecological community. Includes vascular plant species of all layers below the canopy with a life-cycle of more than two growing seasons. It includes herbs (graminoids and forbs), grasses, shrubs and juvenile plants of canopy species, but does not include annual plants, cryptogams, plant litter or exposed soil. Areas of little to no understorey vegetation cover (e.g. plant litter) are included if key diagnostics are met and non-native species are below thresholds.
**Contiguous means the patch is connected or in close proximity (within 30 m) to another area of native vegetation.
***Transformer species (e.g. Chrysanthemoides monilifera, Asparagus spp, Pennisetum spp, Ipomoea spp. etc.) are non-native plant species with the potential to permanently change the character, condition, form or nature of patches of the ecological community. See p. 43 for further information on weeds, including transformer species. Annual weeds, such as Symphyotrichum subulatum (saltmarsh aster), may be seasonally very abundant and temporarily restrict the development of native species, but would not be counted as transformer weeds in determining condition.</td></tr>
</table>

5.4 FLORA

A total of 32 species were recorded during the site inspection (9 natives and 23 exotic). A species list is provided in **Appendix B**.

5.4.1 Priority Weeds

Weeds that create the highest level of risk and have the feasibility of being controlled are called priority weeds. Priority weeds identified within the Subject Land are detailed below in **Table 12.**

Weeds of National Significance (WoNS) list the most problematic plant species in Australia as determined by the Australian Weeds Strategy 2017 – 2027 (DAFF, 2017). The species on this list have been identified by their severe invasiveness, potential for spread, and environmental, social and economic impacts.

Within NSW, all pest plants are regulated with a general biosecurity duty (GBD) to prevent, eliminate or minimise any biosecurity risk they may pose. Any person who deals with any plant, who knows (or ought to know) of any biosecurity risk, has a duty to ensure the risk is prevented, eliminated or minimised, so far as is reasonably practicable (DPI, 2024).

State priority weeds (STW) have been assessed by NSW Department of Primary Industries as posing a high to medium biosecurity risk to the entire state of NSW. Regional Priority Weeds (RPW) are those considered to pose a key risk to the region. Both State and Priority weeds are listed in the South-East Regional Strategic Weed Management Plan 2023-2027 (Local Land Services, 2022).

Control requirements for environmental weeds within the SCC are the same as those listed in the South-East Regional Strategic Weed Management Plan 2023-2027.

Weeds that create the highest level of risk and have the feasibility of being controlled are called priority weeds. Priority weeds identified within the Subject Land are detailed below in **Table 12**.

Table 12: Priority Weeds within the Subject Land.

Scientific Name	Common Name	WoNS	NSW GBD	STW	RPW
Araujia sericifera	Moth Vine	-	X	-	-
Cestrum parqui	Green cestrum	-	X	-	-
Conyza bonariensis	Flaxleaf Fleabane	-	X	-	-
Lantana camara	Lantana	X	X	X	X
Ligustrum lucidum	Broad-leaved Privet	-	X	-	-
Rumex sagittatus	Rambling Dock	-	X	-	-
Solanum mauritianum	Tabacco Bush	-	X	-	-
Tradescantia fluminensis	Trad	-	X	-	-

5.4.2 Threatened Flora Species

No targeted surveys were conducted for threatened flora species. However, given the size of the Study Area, the survey effort is considered comprehensive in assessing the potential presence of threatened flora species identified in **Section 4.4** as having a moderate likelihood of occurrence within the Study Area. It is important to note that the time of year the survey was conducted may be outside the flowering period of some threatened species. As such, all observed species within the Subject Land were identified to a minimum of genus level. No

species recorded within the Subject Land belonged to genera which contain threatened species likely to occur within the Study Area.

Based on these findings, no further consideration of threatened flora species is required.

5.5 FAUNA

A total of 11 fauna species were observed within and adjacent to the Subject Land. A species list is included in **Appendix C**. Targeted fauna surveys were not conducted as part of this assessment.

5.5.1 Threatened Fauna Species

No threatened fauna species were identified during field surveys.

Following field surveys, it was determined that the vegetation within the Subject Land offers marginal sheltering and foraging habitat with limited potential for use by mobile threatened species. The canopy within the Subject Land is disconnected from larger adjacent patches of native vegetation and represents less preferential habitat.

The following observations were noted:

- The native vegetation within the Subject Land is in poor condition due to historical and ongoing land use practices associated with industrial and agricultural land use.
- No significant fauna habitat, such as Habitat Bearing Trees (HBTs), nests, or caves were identified.
- Native species diversity and coverage has been significantly reduced with very high weed incursion within the Subject Land and in the surrounding landscape.
- Juvenile recruitment of tree and shrubs is absent.

Following the site survey and with a greater understanding of the habitat attributes of the Subject Land the threatened species listed in (**Table 13**) have the potential to utilise the habitat attributes within the Subject Land.

Table 13: Threatened fauna species with a potential to utilise the Subject Land

Common name	Scientific name	BC Act	EPBC Act
Aves			
Dusky Woodswallow	*Artamus cyanopterus cyanopterus*	V	-
Glossy black Cockatoo	*Calyptorhynchus lathami*	V	V
Barking Owl	*Ninox connivens*	V	-
Powerful Owl	*Ninox strenua*	V	-
Masked Owl	*Tyto novaehollandiae*	V	-

Key. V=Vulnerable, E=Endangered, Ep=Endangered Population, CE=Critically Endangered, M=Migratory. Species habitat associations have been informed predominantly from EES (2025) and DotEE (2025) species profiles.

6.0 IMPACT ASSESSMENT

6.1 SUMMARY OF IMPACTS

Figure 11 depicts the Subject Land and the associated impacts to native vegetation assessed within this report.

6.1.1 Direct Impacts

The proposed development will impact up to a maximum of 0.08 ha of native vegetation validated as PCT 4049 – South Coast Floodplain Grassy Swamp Forest and representative of the TEC Swamp Oak Floodplain Forest of the New South Wales North Coast, Sydney Basin and South East Corner Bioregions under the BC Act and 0.82 ha of exotic vegetation and existing infrastructure. No significant habitat features are proposed for removal.

The area of native vegetation to be impacted is very small and is considered to provide marginal foraging habitat for the threatened fauna species listed in **Section 5.4.1**. To take a conservative approach, further assessment (**Section 6.6**) of the impact on native species has been undertaken to ascertain whether the proposal has a significant impact on these threatened species and whether entry into the BOS is required.

6.1.2 Indirect Impacts

The proposal is not considered to introduce any significant additional indirect impacts on important vegetation or fauna habitat beyond those already present due to industrial and agricultural land use. The proposed development will impact a very small area of native vegetation within an already highly modified parcel of land where indirect impacts already exist, such as weed incursion, vehicle strikes, erosion etc. The vegetation to be impacted is isolated from other similar vegetation and as such the proposed development will not disrupt any biodiversity linkages.

Table 14 details the indirect impacts relevant to the proposal and any measures that are to be implemented to avoid or minimise the impact.

Table 14: Indirect Impacts and recommended avoidance and minimisation measures

Indirect Impact	Assessment of impact	Avoidance and Minimisation Measures
Non-native vegetation	Due to current and historical land use, the vegetation within the Subject Land has very low native species diversity and coverage, and high amounts of weed intrusion. A total of eight weed species were identified (see **Section 5.4.1**) Works increase the potential for weed spread and invasion into adjacent vegetation.	All weed species should be controlled and disposed of appropriately. A Construction Environmental Management Plan (CEMP) is to be prepared by suitably qualified personnel prior to the release of a construction certificate. The CEMP is to address how to manage the removal of existing weeds and prevent the spread and invasion of exotic species into adjacent vegetation.
Construction works	There is the potential for additional impact to native flora and fauna due to construction works including:	A Construction Environmental Management Plan (CEMP) is to be prepared by suitably qualified personnel prior to the release of a

Indirect Impact	Assessment of impact	Avoidance and Minimisation Measures
	• Soil erosion • Direct impact or trampling by vehicles and personnel.	construction certificate. The CEMP is to address how to manage erosion controls, as well as flora and fauna protection measures. The CEMP should include: • Adequate measures to minimise soil erosion for the duration of works within the site. Special care should be taken to avoid water and soil runoff into adjacent ephemeral streams. • Adequate Tree Protection Zones should be established surrounding all trees to be retained adjacent to the proposed development.

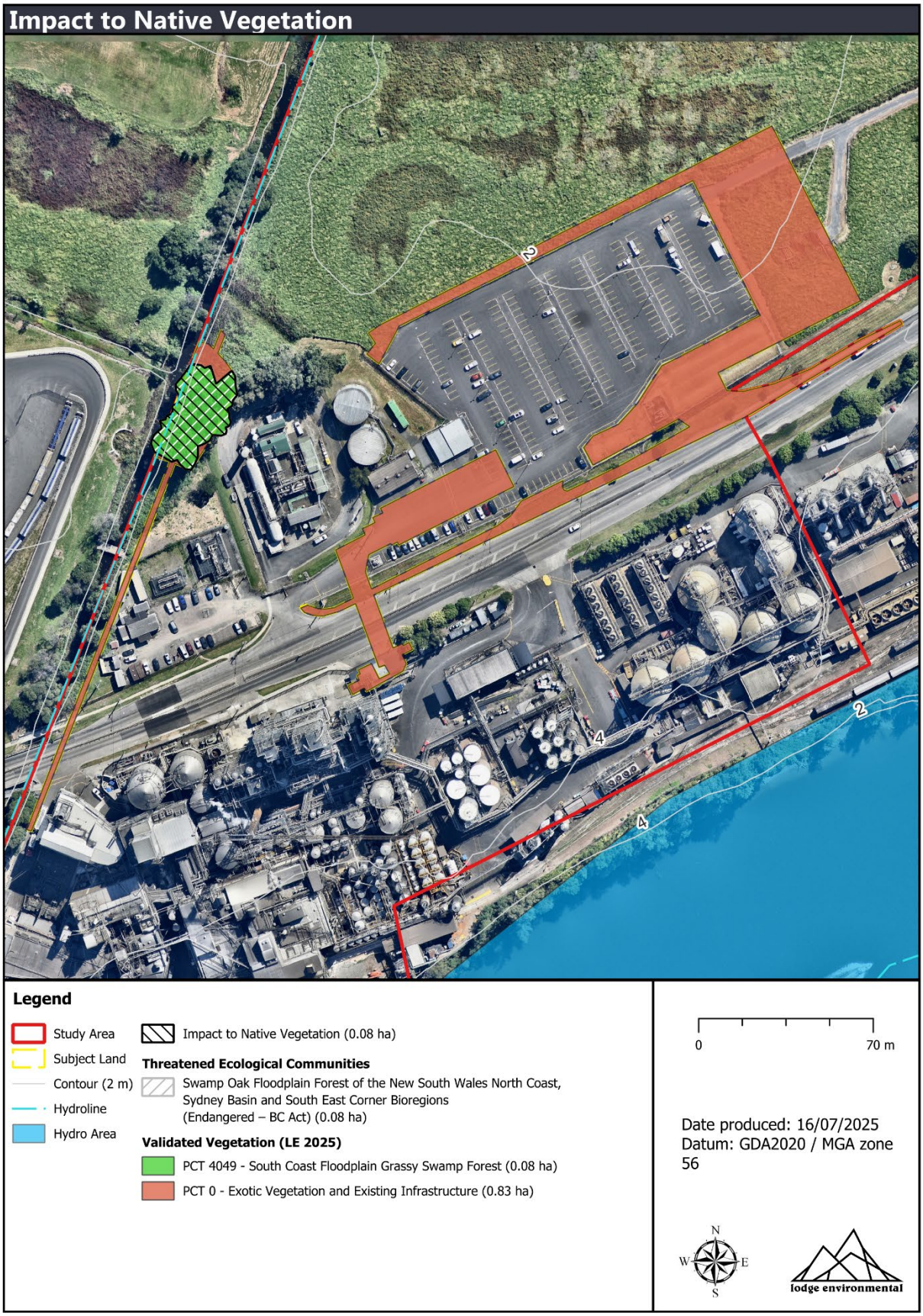

Figure 11: Impact to native vegetation

6.2 SHOALHAVEN LEP (2014)

No areas within the Subject Land are mapped under the relevant biodiversity and riparian clauses of the LEP. As such, no further considerations of these clauses are required.

6.3 RESILIENCE AND HAZARDS SEPP 2021

The Subject Land is mapped on the Coastal Use Area Map and the Coastal Environment Area Map (SEPP (Resilience and Hazards) 2021) (**Figure 12**). As per Division 5 SEPP (Resilience and Hazards) 2021, if a single parcel of land is within more than one coastal management area and the development controls of those areas are inconsistent, the development controls of the higher priority coastal management area prevail. As the Coastal Environment Area is a higher priority than the Coastal Use Area, its controls prevail. The objectives of Coastal Environment Areas and discussion of how the proposed development meets those objectives is detailed below in **Table 15**.

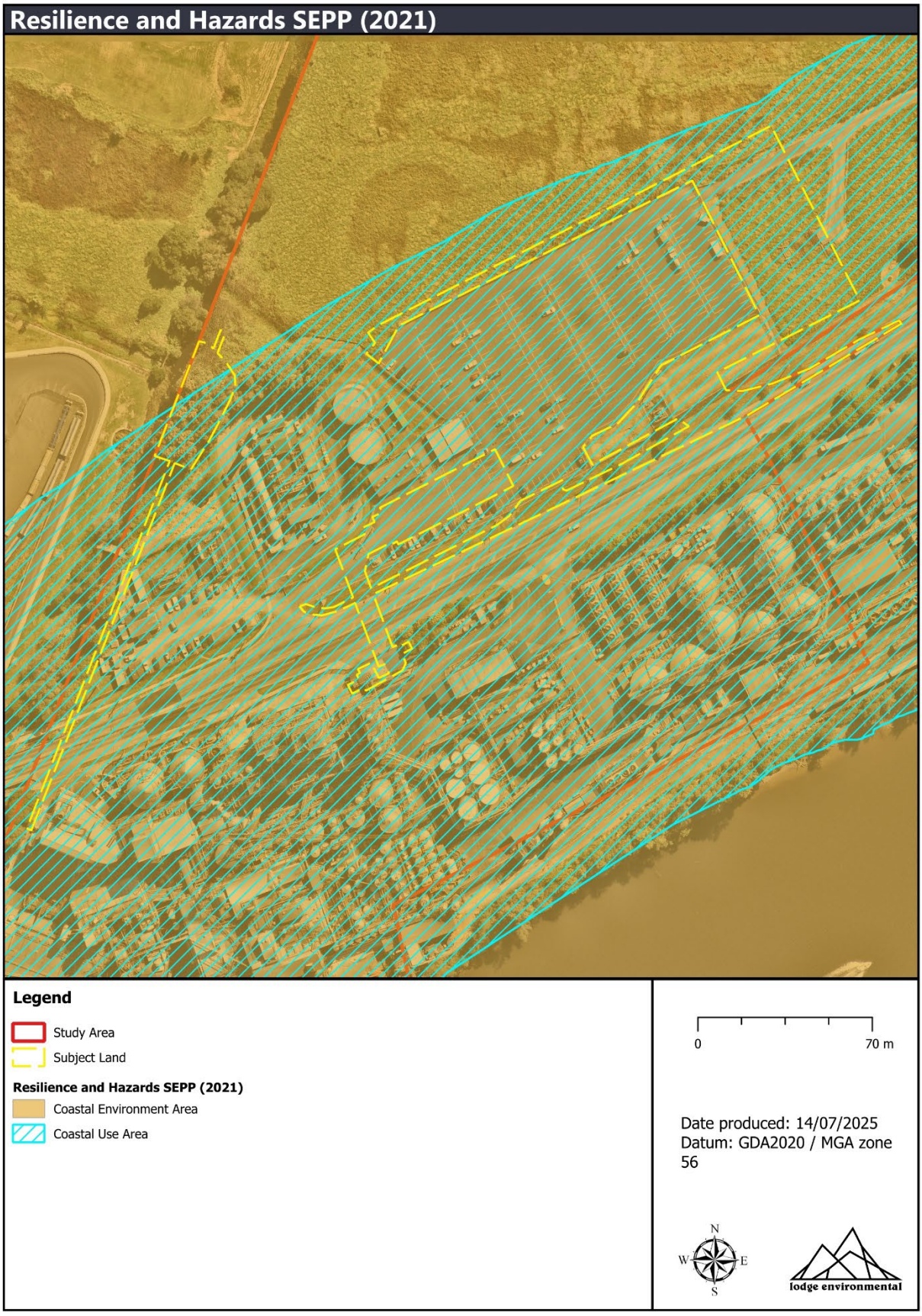

Figure 12: Resilience and Hazards SEPP (2021) Clauses

Table 15: Objectives of Coastal Environment Areas as per Division 5 of the SEPP (Resilience and Hazards) 2021

Objective	Assessment of impact
Development consent must not be granted to development on land that is within the coastal environment area unless the consent authority has considered whether the proposed development is likely to cause an adverse impact on the following:	
The integrity and resilience of the biophysical, hydrological (surface and groundwater) and ecological environment	The proposed development occurs along the outer boundary of the Coastal Environment Area and is separated from the Shoalhaven River by a large industrial development. Impacts to the Subject Land are unlikely to impact of the biophysical, hydrological and ecological environment of the Coastal Environment Area.
Coastal environmental values and natural coastal processes	The proposed development occurs along the outer boundary of the Coastal Environment Area and is separated from the Shoalhaven River by a large industrial development. Impacts to vegetation within the Subject Land will not detract from Coastal Environmental values or impact natural coastal processes.
The water quality of the marine estate (within the meaning of the Marine Estate Management Act 2014), in particular, the cumulative impacts of the proposed development on any of the sensitive coastal lakes identified in Schedule 1	The Subject Land does not occur in or surrounding any of the sensitive coastal lakes identified within Schedule 1.
Marine vegetation, native vegetation and fauna and their habitats, undeveloped headlands and rock platforms	The Subject Land occurs on a floodplain along the Shoalhaven River. The proposed development will not impact any marine vegetation, fauna habitat, undeveloped headlands or rock platforms.
Existing public open space and safe access to and along the foreshore, beach, headland or rock platform for members of the public, including persons with a disability	The Subject Land occurs along an irrigation channel and is surrounded by agricultural, industrial and commercial development. The development will not prevent public access to any foreshore, beach, headlands or rock platforms.
Aboriginal cultural heritage, practices and places	No known aboriginal cultural heritage, practices or places occur within the Subject Land.
The use of the surf zone	The Subject Land occurs on a floodplain along the Shoalhaven River; no surf zones are to be impacted by the proposed development.
Development consent must not be granted to development on land to which this section applies unless the consent authority is satisfied that: • the development is designed, sited and will be managed to avoid an adverse impact referred to in subsection (1), or • if that impact cannot be reasonably avoided—the development is designed, sited and will be managed to minimise that impact, or	The proposed development is sited following an artificial irrigation channel and is surrounded by agricultural, commercial and industrial development. It is separated from the nearest marine habitat by a large industrial development. As such, the proposed development will avoid adverse impacts referred to in subsection (1), and no further consideration of the Resilience and Hazards SEPP (2021) is required.

Objective	Assessment of impact
• if that impact cannot be minimised–the development will be managed to mitigate that impact.	

6.4 BIODIVERSITY AND CONSERVATION SEPP (2021)

Chapter 4 (Koala Habitat Protection 2021) of the SEPP aims to encourage the conservation and management of areas of natural vegetation that provide habitat for Koalas to support a permanent free-living population over their present range and reverse the current trend of Koala population decline.

Based on lot size, land zoning and Local Government Area, a Koala Assessment Report would be required if the Subject Land is deemed to be Core Koala Habitat.

The SEPP 2021 defines Core Koala Habitat as:

- An area of land which has been assessed by a suitably qualified and experienced person as being highly suitable koala habitat and where koalas are recorded as being present at the time of assessment, or
- An area of land which has been assessed by a suitably qualified and experienced person as being highly suitable koala habitat and where koalas have been recorded as being present in the previous 18 years.

The Subject Land does not contain any Koala feed trees, and the nearest Koala record is over 4 km away with no habitat connectivity to the Subject Land. As such, the native vegetation within the Subject Land cannot be considered core Koala habitat. Accordingly, no further consideration of Chapter 4 (Koala Habitat Protection 2021) of the SEPP is required.

6.5 BIODIVERSITY OFFSET SCHEME ENTRANCE

6.5.1 Native vegetation clearance threshold

The proposed development impact to native vegetation totals 0.08 ha, at a maximum. The impact to native species is below the Biodiversity Offset Scheme entrance threshold of 1 ha for a minimum lot size of 40 - 100 ha. Therefore, the BOS entrance threshold is not triggered.

6.5.2 Biodiversity Values Mapping

There is no land within the Subject Land overlain by the Biodiversity Values Map. Therefore, the BOS entrance threshold is not triggered.

6.5.3 Assessments of Significance

Assessments of Significance (AoS) were applied where necessary. The AoS are discussed below.

6.6 SIGNIFICANCE ASSESSMENTS

6.6.1 Assessment of Significance under the EP&A Act and BC Act

Assessments using the criteria provided under the EP&A Act must be considered by consent or determining authorities when considering a development proposal or development application. This enables a decision to be made as to whether there is likely to be a significant impact on the species and hence if entry into the BOS required.

The results of the field survey have been used to inform whether significance assessments are required and for any listed species and communities. Significance assessments have been undertaken (**Appendix D**) for the species listed in **Table 16**.

After undertaking the AoS for the below listed entities, under its current layout, the proposal was not considered to have any significant impact on any of the listed ecological communities or threatened species.

Table 16: Entities to which the BC Act Assessment of Significance has been applied

Common name	Scientific name	BC Act	EPBC Act
Threatened Ecological Community			
Swamp Oak Floodplain Forest of the New South Wales North Coast, Sydney Basin and South East Corner Bioregions		E	-
Aves			
Dusky Woodswallow	*Artamus cyanopterus cyanopterus*	V	-
Glossy Black Cockatoo	*Calyptorhynchus lathami*	V	V
Barking Owl	*Ninox connivens*	V	-
Powerful Owl	*Ninox strenua*	V	-
Masked Owl	*Tyto novaehollandiae*	V	-
Key. V=Vulnerable, E=Endangered, Ep=Endangered Population, CE=Critically Endangered, M=Migratory. Species habitat associations have been informed predominantly from EES (2025) and DotEE (2025) species profiles.			

6.6.2 EPBC Act Significant Impact Guidelines

The EPBC Act establishes a process for assessing the environmental impact of activities and developments where MNES may be affected. The process includes the application of Significant Impact Criteria for listed threatened species and ecological communities that represent a MNES that will be impacted because of the proposed action. Significant impact guidelines that outline several criteria have been developed by the Commonwealth, to aid in conducting the assessment and help decide whether a referral to the Commonwealth is required. Consideration of the SIC was undertaken for the species listed in **Table 17**.

On application of the SIC, it is determined that the proposed development is unlikely to result in a significant impact to MNES (threatened and migratory species).

Table 17: Entities to which the EPBC Significant Impact Criteria has been applied

Common name	Scientific name	EPBC Act
Aves		
Glossy black Cockatoo	*Calyptorhynchus lathami*	V
Species habitat associations have been informed predominantly from EES (2025) and DotEE (2025) species profiles. **Key.** V=Vulnerable, E=Endangered, Ep=Endangered Population, CE=Critically Endangered, M=Migratory.		

7.0 RECOMMENDATIONS

This report assesses the removal of 0.08 ha of PCT 4049 – South Coast Floodplain Grassy Swamp Forest, representative of the TEC Swamp Oak Floodplain Forest of the New South Wales North Coast, Sydney Basin and South East Corner Bioregions within the Subject Land. The following recommendations are provided to minimise potential impacts to threatened and non-threatened vegetation communities, flora and fauna that could result from the proposed action:

- To mitigate impacts to PCT 4049 – South Coast Floodplain Grassy Swamp Forest and to achieve no net loss of native vegetation, it is recommended that an equivalent area of vegetation be replanted at a density of 1 tree per 2 m^2. Additionally, any future landscaping should aim to utilise species indigenous to the area, and ideally those found within the local PCT 4049 – South Coast Floodplain Grassy Swamp Forest wherever possible.
- If an injured animal is found within the Subject Land, the project ecologist or WIRES should be contacted to determine the best course of action.
- Care must be taken when moving equipment near vegetation to be retained. If works appear to encroach on retained vegetation, advice from a qualified Arborist should be gained to infer appropriate tree protection measures. Generally, the Tree Protection Zone (TPZ) is a hypothetical estimation of the area required to protect a tree from adverse construction and development activities. It is calculated for each tree by multiplying diameter at breast height (DBH) by 12 and is a radius measured in metres from the centre of trunk. It is understood that encroachments into the TPZ can occur for 10% of the zone in accordance with AS4970-2009 Protection of trees on development sites.
- Adequate erosion and sediment control measures should always be in place during construction, in accordance with best practice guidelines (Landcom 2004), including:
    - sediment fencing,
    - vehicle and machinery movement confined to designated work areas, and
    - consideration given to weather, with works stopped if the onset of heavy rain is deemed likely to cause soil erosion or soil structure damage.
- All weed species should be controlled. A Construction Environmental Management Plan (CEMP) is to be prepared by suitably qualified personnel prior to the release of a construction certificate. The CEMP is to address how to manage the spread and invasion of exotic species into adjacent native vegetation.
    - Weed material must be disposed of appropriately, at a waste disposal centre, where the composting process will destroy all plant pathogens and seeds.

8.0 CONCLUSION

Through the completion of the surveys conducted as part of this report, no threatened flora or fauna were recorded within the Subject Land that will be significantly impacted by the development.

A range of suitable recommendations have been made to improve the environmental outcome of the proposal. These include use of native landscaping, Tree Protection Zones for retained vegetation, and weed control.

Assessments of Significance were undertaken where necessary. It was determined that the proposal will not constitute a significant impact on the listed entities.

This Flora and Fauna Assessment has adequately considered threatened species and communities in the context of the proposed development in the Subject Land by:

- Conducting a field survey and targeted flora surveys.
- adopting the precautionary principle in the assessment of threatened species; and
- designating appropriate recommendations to minimise potential impacts to threatened species that may transiently occur on the site as well as any other fauna.

The assessments contained within this report have determined that the proposed development is unlikely to have a significant effect on any listed communities or species or their habitat in accordance with the EP&A Act, BC Act and EPBC Act provided the recommendations contained in this report are adhered to. There will not be an impact on any active and mapped areas of Biodiversity Value, nor will there be an impact on native vegetation above the relevant impact threshold.

Therefore, the preparation and submission of a BDAR or referral to the Commonwealth is not required.

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10.0 LIMITATIONS

This report and the associated services performed by Lodge Environmental are in accordance with the scope of services set out in the contract between Lodge Environmental and the Client. The scope of services was defined by the requests of the Client, by the time and budgetary constraints imposed by the Client, and by the availability of access to Site.

Lodge Environmental derived the data in this report primarily from visual inspections, and limited survey and analysis made on the dates indicated. In preparing this report, Lodge Environmental has relied upon, and presumed accurate, certain information provided by government authorities, the Client and others identified herein. The report has been prepared on the basis that while Lodge Environmental believes all the information in it is deemed reliable and accurate at the time of preparing the report, it does not warrant its accuracy or completeness and to the full extent allowed by law excludes liability in contract, tort or otherwise, for any loss or damage sustained by the Client arising from or in connection with the supply or use of the whole or any part of the information in the report through any cause whatsoever.

The data, findings, observations, conclusions and recommendations in the report are based solely upon the state of the Site at the time of the investigation. The passage of time, manifestation of latent conditions or impacts of future events (e.g. changes in legislation, scientific knowledge, land uses, etc) may render the report inaccurate. In those circumstances, Lodge Environmental shall not be liable for any loss or damage that may be occasioned directly or indirectly through the use of, or reliance on, the contents of the report.

This report has been prepared on behalf of and for the exclusive use of the Client and is subject to and issued in connection with the provisions of the agreement between Lodge Environmental and the Client. Lodge Environmental accepts no liability or responsibility whatsoever and expressly disclaims any responsibility for or in respect of any use of or reliance upon this report by any third party or parties.

It is the responsibility of the Client to accept if the Client so chooses any recommendations contained within and implement them in an appropriate, suitable and timely manner.

APPENDICES

Appendix A: Threatened flora and fauna likelihood table

Scientific Name	Common Name	Legislation		Habitat Associations	Likelihood of Occurrence	Further Significance Assessment Undertaken
		BC Act	EPBC Act			
Ecological Communities						
Subtropical and Temperate Coastal Saltmarsh		-	V	The Subtropical and Temperate Coastal saltmarsh ecological community occurs within a relatively narrow margin of the Australian coastline, within the subtropical and temperate climatic zones south of the South-east Queensland IBRA bioregion	Low	No - This TEC was not identified within the Subject Land
Upland Basalt Eucalypt Forests of the Sydney Basin Bioregion		-	E	The Upland Basalt Eucalypt Forests of the Sydney Basin Bioregion is typically tall open eucalypt forests found on basalt and basalt-like substrates in, or adjacent to, the Sydney Basin Bioregion. Typically, the ecological community has a sparse to dense layer of shrubs and vines, and a diverse understorey of native grasses, forbs, twiners and ferns	Low	No - This TEC was not identified within the Subject Land
Coastal Swamp Sclerophyll Forest of New South Wales and South East Queensland		-	E	The Coastal Swamp Sclerophyll Forest typically features a canopy and/or sub-canopy dominated by *Melaleuca* spp. and/or *Eucalyptus robusta*. Other eucalypts, which are also tolerant of regular inundation and are adapted to sandy soils, may emerge from the canopy with the mix of species present varying depending on the location.	Low	No - This TEC was not identified within the Subject Land
Illawarra-Shoalhaven Subtropical Rainforest of the Sydney Basin Bioregion		-	CE	It occurs on the coastal plain, low-lying foothills and slopes, benches and drainage lines of the eastern coastal escarpment (and of some coastal mountains), between the Hacking and Clyde rivers. It rarely extends onto the upper escarpment slopes.	Low	No - This TEC was not identified within the Subject Land
River-flat eucalypt forest on coastal floodplains of southern New South Wales and eastern Victoria		-	CE	The ecological community occurs on alluvial landforms related to coastal river floodplains and associated sites where transient water accumulates. The structure of the ecological community is generally a tall open forest to woodland, but there may be localised areas of closed forest and/or low forest, often associated with disturbance.	Low	No - This TEC was not identified within the Subject Land
Coastal Swamp Oak (Casuarina glauca) Forest of New South Wales and South East Queensland ecological community		-	E	The ecological community occurs in sub-tropical, sub-humid and temperate climatic zones from Curtis Island, north of Gladstone, in Queensland to	Moderate	No - This TEC was not identified

Scientific Name	Common Name	Legislation		Habitat Associations	Likelihood of Occurrence	Further Significance Assessment Undertaken
		BC Act	EPBC Act			
				Bermagui in southern New South Wales. The structure of Coastal Swamp Oak Forest can vary from forest to woodland depending on its location in the landscape and disturbance history. The local expression of the ecological community is influenced by soils, history of inundation by tidal flows/estuarine system dynamics, groundwater salinity, site history, disturbance regimes and current land management.		within the Subject Land
Illawarra and south coast lowland forest and woodland ecological community		-	CE	This TEC comprises eucalypt forest or woodlands, which can have a grassy ground layer and/or a shrub layer as well as a small tree layer. The distribution is patchy, with the remaining occurrences mostly on lowland sandy loam, loam or clay loam soils around Wollongong to Shellharbour, Milton, Bawley Point and Moruya.	Low	No - This TEC was not identified within the Subject Land
Swamp Oak Floodplain Forest of the New South Wales North Coast, Sydney Basin and South East Corner Bioregions		**E**	**-**	**This community is found on the coastal floodplains of NSW. It has a dense to sparse tree layer in which Casuarina glauca (swamp oak) is the dominant species northwards from Bermagui.**	**Moderate**	**Yes**
Flora						
Acacia bynoeana	Bynoe's Wattle	E	V	Occurs in heath or dry sclerophyll forest on sandy soils. Seems to prefer open, sometimes slightly disturbed sites such as trail margins, edges of roadside spoil mounds and in recently burnt patches. Associated overstorey species include Red Bloodwood, Scribbly Gum, Parramatta Red Gum, Saw Banksia and Narrow-leaved Apple.	Low	No – This species was not identified within the Subject Land.
Acacia pubescens	Downy Wattle	V	V	Occurs on alluviums, shales and at the intergrade between shales and sandstones. The soils are characteristically gravely soils, often with ironstone. Occurs in open woodland and forest, in a variety of plant communities, including Cooks River/Castlereagh Ironbark Forest, Shale/Gravel Transition Forest and Cumberland Plain Woodland. Longevity is unknown, but clonal species have been known to survive for many decades.	Low	No – This species was not identified within the Subject Land.
Caladenia tessellata	Thick Lip Spider Orchid	V	V	Generally found in grassy sclerophyll woodland on clay loam or sandy soils, though the population near Braidwood is in low woodland with stony soil.	Low	No – This species was not identified within the Subject Land.

Scientific Name	Common Name	Legislation		Habitat Associations	Likelihood of Occurrence	Further Significance Assessment Undertaken
		BC Act	EPBC Act			
Calochilus pulchellus	Pretty Beard Orchid	E	E	The species has a cryptic nature, with a single leaf present above ground for only a few months and a flowering stem that lasts for a few days or a week. The life cycle of C. pulchellus is typical for temperate zone members of the genus, with the leaf emerging from a subterranean tuber in mid-winter, and flowering occurring from late October to late November.	Low	No – This species was not identified within the Subject Land.
Cryptostylis hunteriana	Leafless Tongue Orchid	V	V	Does not appear to have well defined habitat preferences and is known from a range of communities, including swamp-heath and woodland. The larger populations typically occur in woodland dominated by Scribbly Gum (*Eucalyptus sclerophylla*), Silvertop Ash (*E. sieberi*), Red Bloodwood (*Corymbia gummifera*) and Black Sheoak (*Allocasuarina littoralis*).	Low	No – This species was not identified within the Subject Land.
Eucalyptus langleyi	Albatross Mallee	V	V	Found in mallee shrubland on poorly drained, shallow, sandy soils on sandstone.	Low	No – This species was not identified within the Subject Land.
Eucalyptus nicholii	Narrow-leaved Black Peppermint	V	V	Typically grows in dry grassy woodland, on shallow soils of slopes and ridges. Found primarily on infertile soils derived from granite or metasedimentary rock.	Low	No – This species was not identified within the Subject Land.
Eucalyptus scoparia	Wallangarra White Gum	E	V	Found in open eucalypt forest, woodland and heaths on well-drained granite/rhyolite hilltops, slopes and rocky outcrops, typically at high altitudes. At lower elevations can occur in less rocky soils in damp situations.	Low	No – This species was not identified within the Subject Land.
Genoplesium baueri	Bauer's Midge Orchid	E	E	Grows in dry sclerophyll forest and moss gardens over sandstone. Flowers February to March.	Low	No – This species was not identified within the Subject Land.
Grammitis stenophylla	Narrow-leaf Finger Fern	E	-	Moist places, usually near streams, on rocks in rainforest and dry and moist eucalypt forest.	Low	No – This species was not identified within the Subject Land.
Grevillea parviflora subsp. parviflora	Small-flower Grevillea	V	V	Grows in sandy or light clay soils usually over thin shales, often with lateritic ironstone gravels and nodules. Sydney region occurrences are usually on Tertiary sands and alluvium, and soils derived from	Low	No – This species was not identified within the Subject Land.

Scientific Name	Common Name	Legislation		Habitat Associations	Likelihood of Occurrence	Further Significance Assessment Undertaken
		BC Act	EPBC Act			
				the Mittagong Formation. Soil landscapes include Lucas Heights or Berkshire Park. Occurs in a range of vegetation types from heath and shrubby woodland to open forest.		
Hibbertia puberula	-	E	-	Flowering time is October to December, sometimes into January. Occurs on sandy soil often associated with sandstone, or on clay. Habitats are typically dry sclerophyll woodland communities, although heaths are also occupied.	Low	No – This species was not identified within the Subject Land.
Hibbertia stricta subsp. furcatula	-	E	-	Habitat of the Southern Sydney population is broadly dry eucalypt forest and woodland. This population appears to occur mainly on upper slopes and above the Woronora River gorge escarpment, at or near the interface between the Lucas Heights soil landscape and Hawkesbury sandstone.	Low	No – This species was not identified within the Subject Land.
Lastreopsis hispida	Bristly Shield Fern	E	-	Grows in moist humus-rich soils in wet forest and rainforest gullies. At Mt Wilson, associated species include *Ceratopetalum apetalum*, *Elaeocarpus holopetalus*, *Fieldia australis*, *Cyathea australis*, *Blechnum nudum*, *B. patersonii* and *Leptopteris fraseri*.	Low	No – This species was not identified within the Subject Land.
Leucopogon exolasius	Woronora Beard-heath	V	V	The plant occurs in woodland on sandstone. Flowering occurs in August and September.	Low	No – This species was not identified within the Subject Land.
Prostanthera densa	Villous Mint-bush	V	V	*Prostanthera densa* generally grows in sclerophyll forest and shrubland on coastal headlands and near coastal ranges, chiefly on sandstone, and rocky slopes near the sea. Plants regenerate from rootstock after fire and flower within the first year or two.	Low	No – This species was not identified within the Subject Land.
Pterostylis gibbosa	Illawarra Greenhood	E	E	All known populations grow in open forest or woodland, on flat or gently sloping land with poor drainage. In the Illawarra region, the species grows in woodland dominated by Forest Red Gum (*Eucalyptus tereticornis*), Woollybutt (*E. longifolia*) and White Feather Honey-myrtle (*Melaleuca decora*). Near Nowra, the species grows in an open forest of Spotted Gum (*Corymbia maculata*), Forest Red Gum and Grey Ironbark (*E. paniculata*).	Low	No – This species was not identified within the Subject Land.

Scientific Name	Common Name	Legislation		Habitat Associations	Likelihood of Occurrence	Further Significance Assessment Undertaken
		BC Act	EPBC Act			
Pterostylis pulchella	Waterfall Greenhood	V	V	The Waterfall Greenhood is found on cliff faces close to waterfalls and creek banks and mossy rocks alongside running water. Flowers appear from February to May	Low	No – This species was not identified within the Subject Land.
Pterostylis ventricosa	-	CE	-	Predominantly in more open areas of tall coastal eucalypt forest often dominated by one or more of the following tree species: Turpentine, Spotted Gum, Grey Ironbark, Blackbutt, White Stringybark, Scribbly Gum and Sydney Peppermint. Often favours more open areas such as along powerline easements and on road verges where the tree overstorey has been removed or thinned.	Low	No – This species was not identified within the Subject Land.
Pterostylis vernalis	-	CE	CE	*Pterostylis vernalis* grows in open sites around moss gardens in shallow soil over sandstone sheets or moss gardens on heavy laterite associated soils, in heath and dry heathy forest/woodland. The distribution of the plants throughout its range is naturally patchy as the species is often restricted to sections of rock shelf where there is only a thin layer of soil over the rock shelf and where these sites are subject to particular hydrological conditions. Habitat generally contains moss gardens on various substrates.	Low	No – This species was not identified within the Subject Land.
Rhodamnia rubescens	Scrub Turpentine	CE	CE	Found in littoral, warm temperate and subtropical rainforest and wet sclerophyll forest usually on volcanic and sedimentary soils. This species is characterised as highly to extremely susceptible to infection by Myrtle Rust. Myrtle Rust affects all plant parts.	Low	No – This species was not identified within the Subject Land.
Solanum celatum	-	E	-	Grows in rainforest clearings, or in wet sclerophyll forests. Flowers August to October and produces fruit December to January. Normally recorded in disturbed margins and clearings	Low	No – This species was not identified within the Subject Land.
Syzygium paniculatum	Magenta Lilly Pilly	E	V	On the south coast the Magenta Lilly Pilly occurs on grey soils over sandstone, restricted mainly to remnant stands of littoral (coastal) rainforest. On the central coast Magenta Lilly Pilly occurs on gravels, sands, silts and clays in riverside gallery rainforests and remnant littoral rainforest communities.	Low	No – This species was not identified within the Subject Land.
Triplarina nowraensis	Nowra Heath Myrtle	E	E	Nowra Heath Myrtle occurs on poorly drained, gently sloping sandstone shelves or along creek lines	Low	No – This species was not identified

Scientific Name	Common Name	Legislation		Habitat Associations	Likelihood of Occurrence	Further Significance Assessment Undertaken
		BC Act	EPBC Act			
				underlain by Nowra Sandstone. The sites are often either treeless or have a very open tree canopy due to the impeded drainage. Individuals have been observed to resprout from lignotubers and they are also expected to reproduce from seed though this needs to be confirmed.		within the Subject Land.
Xerochrysum palustre	Swamp Everlasting	-	V	Grows in swamps and bogs which are often dominated by heaths. Also grows at the edges of bog margins on peaty soils with a cover of shrubs or grasses.	Low	No – This species was not identified within the Subject Land.
Zieria baeuerlenii	Bomaderry Zieria	E	E	Bomaderry Zieria occurs on skeletal sandy loam overlaying sandstone, on a rocky plateau amongst sandstone boulders in either shrubby open forest, shrubby woodland or closed scrub. Seed production has never been observed in the Bomaderry Zieria and all evidence collected to date suggests that the species has lost its capacity to reproduce sexually. Plants resprout following fire.	Low	No – This species was not identified within the Subject Land.
Zieria tuberculata	Warty Zieria	V	V	The Warty Zieria grows in heath amongst rocky outcrops on rain forest edges and in tall forest and shrubland. The flowers appear from late winter to spring.	Low	No – This species was not identified within the Subject Land.
Birds						
Anthochaera phrygia	Regent Honeyeater	CE	CE	The Regent Honeyeater is a flagship threatened woodland bird whose conservation will benefit a large suite of other threatened and declining woodland fauna. The species inhabits dry open forest and woodland, particularly Box-Ironbark woodland, and riparian forests of River Sheoak. Regent Honeyeaters inhabit woodlands that support a significantly high abundance and species richness of bird species. These woodlands have significantly large numbers of mature trees, high canopy cover and abundance of mistletoes.	Low	No - Vegetation within the Subject Land is in a highly disturbed condition and not suitable habitat for this species.
Aphelocephala leucopsis	Southern Whiteface	V	V	Southern whiteface occur across most of mainland Australia south of the tropics, from the north-eastern edge of the Western Australian wheatbelt, east to the Great Dividing Range. Southern whitefaces live in a wide range of open woodlands and shrublands where there is an understorey of grasses or shrubs, or	Low	No - Vegetation within the Subject Land is in a highly disturbed condition and not

Scientific Name	Common Name	Legislation		Habitat Associations	Likelihood of Occurrence	Further Significance Assessment Undertaken
		BC Act	EPBC Act			
				both. These areas are usually in habitats dominated by acacias or eucalypts on ranges, foothills and lowlands, and plains.		suitable habitat for this species.
Ardenna grisea	Sooty Shearwater	-	V	Globally, the sooty shearwater is found in the southern hemisphere during summer, where the species breeds around New Zealand, southern Australia and southern South America. The species moves to the southern hemisphere during the breeding season (see Distribution). Its breeding range extends over 20 degrees of latitude from warm temperate to cold subantarctic islands.	Low	No - Vegetation within the Subject Land is in a highly disturbed condition and not suitable habitat for this species.
Artamus cyanopterus cyanopterus	**Dusky Woodswallow**	**V**	**-**	**Primarily inhabit dry, open eucalypt forests and woodlands, including mallee associations, with an open or sparse understorey of eucalypt saplings, acacias and other shrubs, and ground-cover of grasses or sedges and fallen woody debris. It has also been recorded in shrublands, heathlands and very occasionally in moist forest or rainforest. Also found in farmland, usually at the edges of forest or woodland.**	**Moderate**	**Yes**
Botaurus poiciloptilus	Australasian Bittern	E	E	Favours permanent freshwater wetlands with tall, dense vegetation, particularly bullrushes (*Typha* spp.) and spikerushes (*Eleocharis* spp.). Hides during the day amongst dense reeds or rushes and feed mainly at night on frogs, fish, yabbies, spiders, insects and snails.	Low	No - Vegetation within the Subject Land is in a highly disturbed condition and not suitable habitat for this species.
Burhinus grallarius	Bush Stone-curlew	E	-	Inhabits open forests and woodlands with a sparse grassy groundlayer and fallen timber. Largely nocturnal, being especially active on moonlit nights.	Low	No - Vegetation within the Subject Land is in a highly disturbed condition and not suitable habitat for this species.
Calidris canutus	Red Knot	-	E	In NSW the Red Knot mainly occurs in small numbers on intertidal mudflats, estuaries, bays, inlets, lagoons, harbours and sandflats and sandy beaches of sheltered coasts. It is occasionally found on sandy ocean beaches or shallow pools on exposed wave-cut rock platforms and is a rare visitor to terrestrial saline wetlands and freshwater swamps. It usually	Low	No - Vegetation within the Subject Land is in a highly disturbed condition and not suitable habitat for this species.

Scientific Name	Common Name	Legislation		Habitat Associations	Likelihood of Occurrence	Further Significance Assessment Undertaken
		BC Act	EPBC Act			
				forages near the water's edge, with feeding activity regulated by the tide as birds closely follow the tide-edge.		
Calidris tenuirostris	Great Knot	V	V	Occurs within sheltered, coastal habitats containing large, intertidal mudflats or sandflats, including inlets, bays, harbours, estuaries and lagoons. Often recorded on sandy beaches with mudflats nearby, sandy spits and islets and sometimes on exposed reefs or rock platforms.	Low	No - Vegetation within the Subject Land is in a highly disturbed condition and not suitable habitat for this species.
Callocephalon fimbriatum	Gang-gang Cockatoo	E	E	In spring and summer, generally found in tall mountain forests and woodlands, particularly in heavily timbered and mature wet sclerophyll forests. In autumn and winter, the species often moves to lower altitudes in drier more open eucalypt forests and woodlands, particularly box-gum and box-ironbark assemblages, or in dry forest in coastal areas and often found in urban areas. May also occur in sub-alpine Snow Gum (*Eucalyptus pauciflora*) woodland and occasionally in temperate rainforests. Favours old growth forest and woodland attributes for nesting and roosting.	Low	No - Vegetation within the Subject Land is in a highly disturbed condition and not suitable habitat for this species.
Calyptorhynchus lathami lathami	**South-eastern Glossy Black-Cockatoo**	**V**	**V**	**Inhabits open forest and woodlands of the coast and the Great Dividing Range where stands of sheoak occur. Black Sheoak (Allocasuarina littoralis) and Forest Sheoak (A. torulosa) are important foods. Inland populations feed on a wide range of sheoaks, including Drooping Sheoak, Allocasuaraina diminuta, and A. gymnathera. Belah is also utilised and may be a critical food source for some populations.**	**Moderate**	**Yes**
Circus assimilis	Spotted Harrier	V	-	Occurs 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, foraging over open habitats including edges of inland wetlands.	Low	No - Migratory Marine Species
Climacteris picumnus victoriae	Brown Treecreeper (eastern subspecies)	V	V	Found in eucalypt woodlands (including Box-Gum Woodland) and dry open forest of the inland slopes and plains inland of the Great Dividing Range	Low	No - Vegetation within the Subject Land is in a highly disturbed

Scientific Name	Common Name	Legislation		Habitat Associations	Likelihood of Occurrence	Further Significance Assessment Undertaken
		BC Act	EPBC Act			
				Sedentary, considered to be resident in many locations throughout its range.		condition and not suitable habitat for this species.
Daphoenositta chrysoptera	Varied Sittella	V	-	Inhabits eucalypt forests and woodlands, especially those containing rough-barked species and mature smooth-barked gums with dead branches, mallee and Acacia woodland.	Low	No - Vegetation within the Subject Land is in a highly disturbed condition and not suitable habitat for this species.
Dasyornis brachypterus	Eastern Bristlebird	E	E	Habitat for central and southern populations is characterised by dense, low vegetation including heath and open woodland with a heathy understorey. In northern NSW the habitat occurs in open forest with dense tussocky grass understorey and sparse mid-storey near rainforest ecotone.	Low	No - Vegetation within the Subject Land is in a highly disturbed condition and not suitable habitat for this species.
Diomedea antipodensis	Antipodean Albatross	V	V	The majority of birds breed on Antipodes Island, with a small number of pairs breeding on Campbell Island. The Antipodean Albatross breeds biennially in colonies on ridges, slopes and plateaus of isolated subantarctic islands, usually in vegetation such as grass tussocks.	Low	No - Vegetation within the Subject Land is in a highly disturbed condition and not suitable habitat for this species.
Diomedea exulans	Wandering Albatross	E	V	Wandering albatross spend the majority of their time in flight, soaring over the southern oceans. They breed on a number of islands just north of the Antarctic Circle: South Georgia Island (belonging to the UK), Prince Edward and Marion Islands (South Africa), Crozet and Kerguelen Islands (French Southern Territories) and Macquarie Island (Australia). Breeding takes place on exposed ridges and hillocks, amongst open and patchy vegetation. Wandering albatross pairs mate for life Wandering Albatross breed bienially in small, loose colonies among grass tussocks, using a large mud nest.	Low	No - Vegetation within the Subject Land is in a highly disturbed condition and not suitable habitat for this species.
Ephippiorhynchus asiaticus	Black-necked Stork	E	-	Floodplain wetlands (swamps, billabongs, watercourses and dams) of the major coastal rivers are the key habitat in NSW for the Black-necked Stork. Secondary habitat includes minor floodplains, coastal sandplain wetlands and estuaries.	Low	No - Vegetation within the Subject Land is in a highly disturbed condition and not

Scientific Name	Common Name	Legislation		Habitat Associations	Likelihood of Occurrence	Further Significance Assessment Undertaken
		BC Act	EPBC Act			
						suitable habitat for this species.
Epthianura albifrons	White-fronted Chat	V	-	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. Have been observed breeding from late July through to early March, with 'open-cup' nests built in low vegetation.	Low	No - Vegetation within the Subject Land is in a highly disturbed condition and not suitable habitat for this species.
Falco hypoleucos	Grey Falcon	V	V	Usually restricted to shrubland, grassland and wooded watercourses of arid and semi-arid regions, although it is occasionally found in open woodlands near the coast. Also occurs near wetlands where surface water attracts prey. Preys primarily on birds, especially parrots and pigeons, using high-speed chases and stoops Like other falcons it utilises old nests of other birds of prey and ravens, usually high in a living eucalypt near water or a watercourse	Low	No - Vegetation within the Subject Land is in a highly disturbed condition and not suitable habitat for this species.
Falco subniger	Black Falcon	V	-	The Black Falcon is widely, but sparsely, distributed in New South Wales, mostly occurring in inland regions. Some reports of 'Black Falcons' on the tablelands and coast of New South Wales are likely to be referable to the Brown Falcon. In New South Wales there is assumed to be a single population that is continuous with a broader continental population, given that falcons are highly mobile, commonly travelling hundreds of kilometres.	Low	No - Vegetation within the Subject Land is in a highly disturbed condition and not suitable habitat for this species.
Gallinago hardwickii	Latham's Snipe	V	V	Latham's snipe is a non-breeding visitor to south-eastern Australia and is a passage migrant through northern Australia The species has been recorded along the east coast of Australia from Cape York Peninsula through to south-eastern South Australia.	Low	No - Vegetation within the Subject Land is in a highly disturbed condition and not suitable habitat for this species.
Haematopus fuliginosus	Sooty Oystercatcher	V	-	Favours rocky headlands, rocky shelves, exposed reefs with rock pools, beaches and muddy estuaries. Forages on exposed rock or coral at low tide for foods such as limpets and mussels. Breeds in spring and summer, almost exclusively on offshore islands, and occasionally on isolated promontories.	Low	No - Vegetation within the Subject Land is in a highly disturbed condition and not suitable habitat for this species.

Scientific Name	Common Name	Legislation		Habitat Associations	Likelihood of Occurrence	Further Significance Assessment Undertaken
		BC Act	EPBC Act			
Haematopus longirostris	Pied Oystercatcher	E	-	Favours intertidal flats of inlets and bays, open beaches and sandbanks. Forages on exposed sand, mud and rock at low tide, for molluscs, worms, crabs and small fish. The chisel-like bill is used to pry open or break into shells of oysters and other shellfish.	Low	No - Vegetation within the Subject Land is in a highly disturbed condition and not suitable habitat for this species.
Haliaeetus leucogaster	White-bellied Sea-Eagle	V	-	Habitats are characterised by the presence of large areas of open water including larger rivers, swamps, lakes, and the sea. Occurs at sites near the sea or sea-shore, such as around bays and inlets, beaches, reefs, lagoons, estuaries and mangroves Terrestrial habitats include coastal dunes, tidal flats, grassland, heathland, woodland, and forest (including rainforest).	Low	No - Vegetation within the Subject Land is in a highly disturbed condition and not suitable habitat for this species.
Hieraaetus morphnoides	Little Eagle	V	-	Occupies open eucalypt forest, woodland or open woodland. Sheoak or Acacia woodlands and riparian woodlands of interior NSW are also used. Nests in tall living trees within a remnant patch, where pairs build a large stick nest in winter.	Low	No - Vegetation within the Subject Land is in a highly disturbed condition and not suitable habitat for this species.
Hirundapus caudacutus	White-throated Needletail	V	V	Migratory and usually seen in eastern Australia from October to April. Breeds in forests in south-eastern Siberia, Mongolia, the Korean Penninsula and northern Japan June-August. Most often seen in eastern Australia before storms, low pressure troughs and approaching cold fronts and occasionally bushfire.	Low	No - Vegetation within the Subject Land is in a highly disturbed condition and not suitable habitat for this species.
Ixobrychus flavicollis	Black Bittern	V	-	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.	Low	No - Vegetation within the Subject Land is in a highly disturbed condition and not suitable habitat for this species.
Lathamus discolor	Swift Parrot	E	CE	Migrates to the Australian south-east mainland between February and October. On the mainland they occur in areas where eucalypts are flowering profusely or where there are abundant lerp (from sap-sucking bugs) infestations.	Low	No - Vegetation within the Subject Land is in a highly disturbed condition and not

Scientific Name	Common Name	Legislation		Habitat Associations	Likelihood of Occurrence	Further Significance Assessment Undertaken
		BC Act	EPBC Act			
						suitable habitat for this species.
Limosa limosa	Black-tailed Godwit	V	E	Primarily a coastal species. Usually found in sheltered bays, estuaries and lagoons with large intertidal mudflats and/or sandflats. Further inland, it can also be found on mudflats and in water less than 10 cm deep, around muddy lakes and swamps. Individuals have been recorded in wet fields and sewerage treatment works.	Low	No - Vegetation within the Subject Land is in a highly disturbed condition and not suitable habitat for this species.
Lophochroa leadbeateri	Pink Cockatoo	V	E	Inhabits a wide range of treed and treeless inland habitats, always within easy reach of water. Feeds mostly on the ground, especially on the seeds of native and exotic melons and on the seeds of species of saltbush, wattles and cypress pines.	Low	No - Vegetation within the Subject Land is in a highly disturbed condition and not suitable habitat for this species.
Lophoictinia isura	Square-tailed Kite	V	-	Found in a variety of timbered habitats including dry woodlands and open forests. Shows a particular preference for timbered watercourses. In arid north-western NSW, has been observed in stony country with a ground cover of chenopods and grasses, open acacia scrub and patches of low open eucalypt woodland.	Low	No - Vegetation within the Subject Land is in a highly disturbed condition and not suitable habitat for this species.
Macronectes halli	Northern Giant-Petrel	V	V	Breeding in Australian territory is limited to Macquarie Island and occurs during spring and summer. Adults usually remain near the breeding colonies throughout the year (though some do travel widely) while immature birds make long and poorly known circumpolar and trans-oceanic movements.	Low	No - Migratory Marine Species
Neophema chrysostoma	Blue-winged Parrot	V	V	Blue-winged parrots breed on mainland Australia south of the Great Dividing Range in southern Victoria from Port Albert in Gippsland west to Nelson, and sometimes in the far south-east of South Australia, and the north-western, central and eastern parts of Tasmania. Blue-winged parrots inhabit a range of habitats from coastal, sub-coastal and inland areas, through to semi-arid zones. They tend to favour grasslands and grassy woodlands and are often found near wetlands both near the coast and in semi-arid zones	Low	No - Vegetation within the Subject Land is in a highly disturbed condition and not suitable habitat for this species.

Scientific Name	Common Name	Legislation		Habitat Associations	Likelihood of Occurrence	Further Significance Assessment Undertaken
		BC Act	EPBC Act			
Neophema pulchella	Turquoise Parrot	V	-	Lives on the edges of eucalypt woodland adjoining clearings, timbered ridges and creeks in farmland. Usually seen in pairs or small, possibly family, groups and have also been reported in flocks of up to thirty individuals.	Low	No - Vegetation within the Subject Land is in a highly disturbed condition and not suitable habitat for this species.
Ninox connivens	**Barking Owl**	**V**	**-**	**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 cleared habitats (e.g. western NSW) due to the higher density of prey found on these fertile riparian soils.**	**Moderate**	**Yes**
Ninox strenua	**Powerful Owl**	**V**	**-**	**The Powerful Owl inhabits a range of vegetation types, from woodland and open sclerophyll forest to tall open wet forest and rainforest. The Powerful Owl requires large tracts of forest or woodland habitat but can occur in fragmented landscapes as well. The species breeds and hunts in open or closed sclerophyll forest or woodlands and occasionally hunts in open habitats.**	**Moderate**	**Yes**
Numenius madagascariensis	Eastern Curlew	CE	CE	It generally occupies coastal lakes, inlets, bays and estuarine habitats, and in New South Wales is mainly found in intertidal mudflats and sometimes saltmarsh of sheltered coasts. Occasionally, the species occurs on ocean beaches (often near estuaries), and coral reefs, rock platforms, or rocky islets It forages in or at the edge of shallow water, occasionally on exposed algal mats or waterweed, or on banks of beach-cast seagrass or seaweed.	Low	No - Vegetation within the Subject Land is in a highly disturbed condition and not suitable habitat for this species.
Pachycephala olivacea	Olive Whistler	V	-	Mostly inhabit wet forests above about 500m. During the winter months they may move to lower altitudes. Forage in trees and shrubs and on the ground, feeding on berries and insects. Make nests of twigs and grass in low forks of shrubs. Lay two or three eggs between September and January	Low	No - Vegetation within the Subject Land is in a highly disturbed condition and not suitable habitat for this species.
Pandion cristatus	Eastern Osprey	V	-	Favour coastal areas, especially the mouths of large rivers, lagoons and lakes. Feed on fish over clear,	Low	No - Vegetation within the Subject

Scientific Name	Common Name	Legislation		Habitat Associations	Likelihood of Occurrence	Further Significance Assessment Undertaken
		BC Act	EPBC Act			
				open water. Breed from July to September in NSW. Nests are made high up in dead trees or in dead crowns of live trees, usually within one kilometre of the sea.		Land is in a highly disturbed condition and not suitable habitat for this species.
Petroica boodang	Scarlet Robin	V	-	The Scarlet Robin lives in dry eucalypt forests and woodlands. The understorey is usually open and grassy with few scattered shrubs. This species lives in both mature and regrowth vegetation. It occasionally occurs in mallee or wet forest communities, or in wetlands and tea-tree swamps. Scarlet Robin habitat usually contains abundant logs and fallen timber: these are important components of its habitat.	Low	No - Vegetation within the Subject Land is in a highly disturbed condition and not suitable habitat for this species.
Petroica phoenicea	Flame Robin	V	-	Breeds in upland tall moist eucalypt forests and woodlands, often on ridges and slopes. Prefers clearings or areas with open understoreys. The groundlayer of the breeding habitat is dominated by native grasses and the shrub layer may be either sparse or dense. Occasionally occurs in temperate rainforest, and also in herbfields, heathlands, shrublands and sedgelands at high altitudes. In winter, birds migrate to drier more open habitats in the lowlands (i.e. valleys below the ranges, and to the western slopes and plains).	Low	No - Vegetation within the Subject Land is in a highly disturbed condition and not suitable habitat for this species.
Petroica rodinogaster	Pink Robin	V	-	Inhabits rainforest and tall, open eucalypt forest, particularly in densely vegetated gullies. Catches prey by the perch-and-pounce method, foraging more on the ground than the more flycatcher-like Rose Robin. Insects and spiders are the main dietary items.	Low	No - Vegetation within the Subject Land is in a highly disturbed condition and not suitable habitat for this species.
Pycnoptilus floccosus	Pilotbird	V	V	Pilotbirds are endemic to south-east Australia. Lowland Pilotbirds occur in forests from the Blue Mountains west of Newcastle, around the wetter forests of eastern Australia, to Dandenong near Melbourne. Pilotbirds are strictly terrestrial, living on the ground in dense forests with heavy undergrowth. Largely sedentary, they are typically seen hopping briskly over the forest floor and foraging on damp ground or among leaf-litter.	Low	No - Vegetation within the Subject Land is in a highly disturbed condition and not suitable habitat for this species.

Scientific Name	Common Name	Legislation		Habitat Associations	Likelihood of Occurrence	Further Significance Assessment Undertaken
		BC Act	EPBC Act			
Rostratula australis	Australian Painted Snipe	E	E	Prefers fringes of swamps, dams and nearby marshy areas where there is a cover of grasses, lignum, low scrub or open timber. Nests on the ground amongst tall vegetation, such as grasses, tussocks or reeds. The nest consists of a scrape in the ground, lined with grasses and leaves. Breeding is often in response to local conditions Forages nocturnally on mud-flats and in shallow water.	Low	No - Vegetation within the Subject Land is in a highly disturbed condition and not suitable habitat for this species.
Stagonopleura guttata	Diamond Firetail	V	V	Found in grassy eucalypt woodlands, including Box-Gum Woodlands and Snow Gum (*Eucalyptus pauciflora*) Woodlands. Also occurs in open forest, mallee, Natural Temperate Grassland, and in secondary grassland derived from other communities. Often found in riparian areas (rivers and creeks), and sometimes in lightly wooded farmland.	Low	No - Vegetation within the Subject Land is in a highly disturbed condition and not suitable habitat for this species.
Sternula albifrons	Little Tern	E	-	Almost exclusively coastal, preferring sheltered environments 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. The nest is a scrape in the sand, which may be lined with shell grit, seaweed or small pebbles.	Low	No - Vegetation within the Subject Land is in a highly disturbed condition and not suitable habitat for this species.
Sternula nereis nereis	Fairy Tern	-	V	The Fairy Tern (Australian) nests on sheltered sandy beaches, spits and banks above the high tide line and below vegetation. The subspecies has been found in embayments of a variety of habitats including offshore, estuarine or lacustrine (lake) islands, wetlands and mainland coastline.	Low	No - Vegetation within the Subject Land is in a highly disturbed condition and not suitable habitat for this species.
Stictonetta naevosa	Freckled Duck	V	-	Prefer permanent freshwater swamps and creeks with heavy growth of Cumbungi, Lignum or Tea-tree. During drier times they move from ephemeral breeding swamps to more permanent waters such as lakes, reservoirs, farm dams and sewage ponds.	Low	No - Vegetation within the Subject Land is in a highly disturbed condition and not suitable habitat for this species.
Thalassarche bulleri	Buller's Albatross	-	V	Occurs in both inshore and offshore waters, including the continental shelf break and pelagic waters. Feeds mainly on squid, fish, tunicates, octopus and crustacea.	Low	No - Migratory Marine Species

Scientific Name	Common Name	Legislation		Habitat Associations	Likelihood of Occurrence	Further Significance Assessment Undertaken
		BC Act	EPBC Act			
Thalassarche impavida	Campbell Albatross	-	V	Occurs in both inshore and offshore waters, including the continental shelf break and pelagic waters. Forages on fish, squid, crustacea, carrion and gelatinous organisms.	Low	No - Migratory Marine Species
Thalassarche melanophris	Black-browed Albatross	V	V	Inhabits antarctic, subantarctic, subtropical marine and coastal waters over upwellings and boundaries of currents. Can tolerate water temperatures between 0°C and 24°C. Spends most of its time at sea, breeding on small isolated islands. When at sea, individuals soar on strong winds and rest on the ocean, when calm, often in groups. This species feeds on fish, crustaceans, offal and squid and often forages in flocks with other seabirds.	Low	No - Migratory Marine Species
Thinornis cucullatus cucullatus	Eastern Hooded Dotterel	CE	V	In south-eastern Australia Hooded Plovers prefer sandy ocean beaches, especially those that are broad and flat, with a wide wave-wash zone for feeding, much beachcast seaweed, and backed by sparsely vegetated sand-dunes for shelter and nesting.	Low	No - Vegetation within the Subject Land is in a highly disturbed condition and not suitable habitat for this species.
Tringa nebularia	Common Greenshank	E	E	No listed habitat association	Low	No - Migratory Marine Species
Tyto novaehollandiae	**Masked Owl**	**V**	**-**	**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. The typical diet consists of tree-dwelling and ground mammals, especially rats. Pairs have a large home-range of 1000 hectares or more, depending on prey availability.**	**Moderate**	**Yes**
Tyto tenebricosa	Sooty Owl	V	-	Occurs in rainforest, including dry rainforest, subtropical and warm temperate rainforest, as well as moist eucalypt forests. Roosts by day in the hollow of a tall forest tree or in heavy vegetation Nests in very large tree-hollows.	Low	No - Vegetation within the Subject Land is in a highly disturbed condition and not suitable habitat for this species.
Mammals						
Arctocephalus pusillus doriferus	Australian Fur-seal	V	-	Prefers rocky parts of islands with flat, open terrain. They occupy flatter areas than do New Zealand Fur-seals where they occur together.	Low	No – Marine Species.

Scientific Name	Common Name	Legislation		Habitat Associations	Likelihood of Occurrence	Further Significance Assessment Undertaken
		BC Act	EPBC Act			
Cercartetus nanus	Eastern Pygmy-possum	V	-	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.	Low	No - Vegetation within the Subject Land is in a highly disturbed condition and not suitable habitat for this species.
Chalinolobus dwyeri	Large-eared Pied Bat	E	E	Roosts in caves (near their entrances), crevices in cliffs, old mine workings and in the disused, bottle-shaped mud nests of the Fairy Martin (Petrochelidon ariel), frequenting low to mid-elevation dry open forest and woodland close to these features.	Low	No - Vegetation within the Subject Land is in a highly disturbed condition and not suitable habitat for this species.
Dasyurus maculatus	Spotted-tailed Quoll	V	E	Recorded across a range of habitat types, including rainforest, open forest, woodland, coastal heath and inland riparian forest, from the sub-alpine zone to the coastline. Quolls use hollow-bearing trees, fallen logs, other animal burrows, small caves and rock outcrops as den sites.	Low	No - Vegetation within the Subject Land is in a highly disturbed condition and not suitable habitat for this species.
Dugong dugon	Dugong	E	-	Major concentrations of Dugongs occur in wide shallow protected bays, wide shallow mangrove channels and in the lee of large inshore islands. Will also occupy deeper waters if their sea grass food is available. Have a low reproductive rate. Shallow waters such as tidal sandbanks and estuaries have been reported as sites for calving.	Low	No - Marine species
Falsistrellus tasmaniensis	Eastern False Pipistrelle	V	-	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. Hunts beetles, moths, weevils and other flying insects above or just below the tree canopy. Hibernates in winter. Females are pregnant in late spring to early summer.	Low	No - Vegetation within the Subject Land is in a highly disturbed condition and not suitable habitat for this species.
Isoodon obesulus obesulus	Southern Brown Bandicoot (eastern)	E	E	Southern Brown Bandicoots are largely crepuscular (active mainly after dusk and/or before dawn). They are generally only found in heath or open forest with a heathy understorey on sandy or friable soils. They feed on a variety of ground-dwelling invertebrates	Low	No - Vegetation within the Subject Land is in a highly disturbed condition and not

Scientific Name	Common Name	Legislation		Habitat Associations	Likelihood of Occurrence	Further Significance Assessment Undertaken
		BC Act	EPBC Act			
				and the fruit-bodies of hypogeous (underground-fruiting) fungi.		suitable habitat for this species.
Micronomus norfolkensis	Eastern Coastal Free-tailed Bat	V	-	Occur in dry sclerophyll forest, woodland, swamp forests and mangrove forests east of the Great Dividing Range. Roost maily in tree hollows but will also roost under bark or in man-made structures. Usually solitary but also recorded roosting communally, probably insectivorous.	Low	No - Vegetation within the Subject Land is in a highly disturbed condition and not suitable habitat for this species.
Miniopterus australis	Little Bent-winged Bat	V	-	Moist eucalypt forest, rainforest, vine thicket, wet and dry sclerophyll forest, Melaleuca swamps, dense coastal forests and banksia scrub. Generally found in well-timbered areas. Little Bentwing-bats roost in caves, tunnels, tree hollows, abandoned mines, stormwater drains, culverts, bridges and sometimes buildings during the day, and at night forage for small insects beneath the canopy of densely vegetated habitats.	Low	No - Vegetation within the Subject Land is in a highly disturbed condition and not suitable habitat for this species.
Miniopterus orianae oceanensis	Large Bent-winged Bat	V	-	Caves are the primary roosting habitat, but also use derelict mines, storm-water tunnels, buildings and other man-made structures. Form discrete populations centred on a maternity cave that is used annually in spring and summer for the birth and rearing of young.	Low	No - Vegetation within the Subject Land is in a highly disturbed condition and not suitable habitat for this species.
Myotis macropus	Southern Myotis	V	-	Generally roost in groups of 10 - 15 close to water in caves, mine shafts, hollow-bearing trees, storm water channels, buildings, wharves, bridges and in dense foliage. Forage over streams and pools catching insects and small fish by raking their feet across the water surface.	Low	No - Vegetation within the Subject Land is in a highly disturbed condition and not suitable habitat for this species.
Notamacropus parma	Parma Wallaby	V	V	Preferred habitat is moist eucalypt forest with thick, shrubby understorey, often with nearby grassy areas, rainforest margins and occasionally drier eucalypt forest. Typically feed at night on grasses and herbs in more open eucalypt forest and the edges of nearby grassy areas.	Low	No - Vegetation within the Subject Land is in a highly disturbed condition and not suitable habitat for this species.
Petauroides volans	Southern Greater Glider	E	E	Feeds exclusively on eucalypt leaves, buds, flowers and mistletoe. Shelter during the day in tree hollows	Low	No - Vegetation within the Subject

Scientific Name	Common Name	Legislation		Habitat Associations	Likelihood of Occurrence	Further Significance Assessment Undertaken
		BC Act	EPBC Act			
				and will use up to 18 hollows in their home range. Recorded using hollows with a minimum diameter of 8 cm.		Land is in a highly disturbed condition and not suitable habitat for this species.
Petaurus australis	Yellow-bellied Glider	V	V	Occur in tall mature eucalypt forest generally in areas with high rainfall and nutrient rich soils. Forest type preferences vary with latitude and elevation Feed primarily on plant and insect exudates, including nectar, sap, honeydew and manna with pollen and insects providing protein.	Low	No - Vegetation within the Subject Land is in a highly disturbed condition and not suitable habitat for this species.
Petaurus norfolcensis	Squirrel Glider	V	-	Inhabits mature or old growth Box, Box-Ironbark woodlands and River Red Gum forest west of the Great Dividing Range and Blackbutt-Bloodwood forest with heath understorey in coastal areas. Prefers mixed species stands with a shrub or Acacia midstorey.	Low	No - Vegetation within the Subject Land is in a highly disturbed condition and not suitable habitat for this species.
Petrogale penicillata	Brush-tailed Rock-wallaby	E	V	Occupy rocky escarpments, outcrops and cliffs with a preference for complex structures with fissures, caves and ledges, often facing north. Shelter or bask during the day in rock crevices, caves and overhangs and are most active at night when foraging.	Low	No - Vegetation within the Subject Land is in a highly disturbed condition and not suitable habitat for this species.
Phascolarctos cinereus	Koala	E	E	Inhabit eucalypt woodlands and forests. Feed on the foliage of more than 70 eucalypt species and 30 non-eucalypt species, but in any one area will select preferred browse species. Inactive for most of the day, feeding and moving mostly at night. Spend most of their time in trees, but will descend and traverse open ground to move between trees.	Low	No - Vegetation within the Subject Land is in a highly disturbed condition and not suitable habitat for this species.
Pseudomys novaehollandiae	New Holland Mouse	-	V	Known to inhabit open heathlands, woodlands and forests with a heathland understorey and vegetated sand dunes It is a social animal, living predominantly in burrows shared with other individuals Distribution is patchy in time and space, with peaks in abundance during early to mid stages of vegetation succession typically induced by fire	Low	No - Vegetation within the Subject Land is in a highly disturbed condition and not suitable habitat for this species.

Scientific Name	Common Name	Legislation		Habitat Associations	Likelihood of Occurrence	Further Significance Assessment Undertaken
		BC Act	EPBC Act			
Pteropus poliocephalus	Grey-headed Flying-fox	V	V	Occur in subtropical and temperate rainforests, tall sclerophyll forests and woodlands, heaths and swamps as well as urban gardens and cultivated fruit crops. Roosting camps are generally located within 20 km of a regular food source and are commonly found in gullies, close to water, in vegetation with a dense canopy.	Low	No - Vegetation within the Subject Land is in a highly disturbed condition and not suitable habitat for this species.
Saccolaimus flaviventris	Yellow-bellied Sheathtail-bat	V	-	Roosts singly or in groups of up to six, in tree hollows and buildings When foraging for insects, flies high and fast over the forest canopy, but lower in more open country.	Low	No - Vegetation within the Subject Land is in a highly disturbed condition and not suitable habitat for this species.
Scoteanax rueppellii	Greater Broad-nosed Bat	V	-	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	No - Vegetation within the Subject Land is in a highly disturbed condition and not suitable habitat for this species.
Sminthopsis leucopus	White-footed Dunnart	V	-	The White-footed Dunnart is found in a range of different habitats across its distribution, including coastal dune vegetation, coastal forest, tussock grassland and sedgeland, heathland, woodland and forest. In NSW, the species seems to favour vegetation communities with an open understorey structure (contrasting with populations in Victoria which apparently prefer dense shrub and ground layers).	Low	No - Vegetation within the Subject Land is in a highly disturbed condition and not suitable habitat for this species.
Reptiles						
Chelonia mydas	Green Turtle	V	V	Ocean-dwelling species spending most of its life at sea. Carnivorous when young but as adults they feed only on marine plant material. Eggs laid in holes dug in beaches throughout their range. Scattered nesting records along the NSW coast.	Low	No - Marine species
Hoplocephalus bungaroides	Broad-headed Snake	E	E	Nocturnal. Shelters in rock crevices and under flat sandstone rocks on exposed cliff edges during autumn, winter and spring. Moves from the sandstone rocks to shelters in crevieces or hollows in	Low	No - Vegetation within the Subject Land is in a highly disturbed

Scientific Name	Common Name	Legislation		Habitat Associations	Likelihood of Occurrence	Further Significance Assessment Undertaken
		BC Act	EPBC Act			
				large trees within 500m of escarpments in summer. Feeds mostly on geckos and small skinks Females produce four to 12 live young from January to March, which is a relatively low level of fecundity.		condition and not suitable habitat for this species.
Varanus rosenbergi	Rosenberg's Goanna	V	-	Found in heath, open forest and woodland. Associated with termites, the mounds of which this species nests in Individuals require large areas of habitat. Feeds on carrion, birds, eggs, reptiles and small mammals. Shelters in hollow logs, rock crevices and in burrows, which they may dig for themselves, or they may use other species' burrows, such as rabbit warrens.	Low	No - Vegetation within the Subject Land is in a highly disturbed condition and not suitable habitat for this species.

Key. V=Vulnerable, E=Endangered, Ep=Endangered Population, CE=Critically Endangered, M=Migratory.
Species habitat associations have been informed predominantly from Bionet Ecology and Habitat Descriptions (DCCEEW 2025).

Appendix B: Flora Species List

Scientific name	Common name	Native	Exotic
Acacia mearnsii	Black Wattle	X	
Acetosa sagittata	Rambling Dock		X
Allocasuarina littoralis	Black She-Oak	X	
Araujia sericifera	Moth Vine		X
Casuarina glauca	Swamp Oak	X	
Cenchrus clandestinus	Kikuyu Grass		X
Cestrum parqui	Green Cestrum		X
Conyza bonariensis	Flaxleaf Fleabane		X
Cyperus eragrostis	Umbrella Sedge		X
Daucus carota	Wild Carrot		X
Dichondra repens	Kidney Weed	X	
Juncus spp.	-	X	
Lantana camara	Lantana		X
Ligustrum lucidum	Large-leaved Privet		X
Lysimachia arvensis	Scarlet Pimpernel		X
Melaleuca quinquenervia	Broad-leaved Paperbark	X	
Melia azedarach	White Cedar	X	
Modiola caroliniana	Red-flowered Mallow		X
Oxalis spp.	-	X	
Paspalum urvillei	Vasey Grass		X
Phytolacca octandra	Inkweed		X
Plantago lanceolata	Lamb's Tongues		X
Rumex crispus	Curled Dock		X
Senecio minimus	-	X	
Sida rhombifolia	Paddy's Lucerne		X
Solanum americanum	Glossy Nightshade		X
Solanum mauritianum	Wild Tobacco Bush		X
Sonchus oleraceus	Common Sowthistle		X
Stellaria media	Common Chickweed		X
Tradescantia fluminensis	Wandering Jew		X
Trifolium spp.	-		X
Verbena bonariensis	Purpletop		X

Appendix C: Fauna Species List

Class Name	Scientific Name	Common Name
Aves	*Acridotheres tristis*	Common Mynah
	Ardea coromanda	Eastern Cattle Egret
	Columba hodgsonii	Grey-headed Pigeon
	Malurus cyaneus	Superb Fairy Wren
	Manorina melanocephala	Noisy Mynah
	Passer domesticus	Sparrow
	Rhipidura leucophrys	Willie Wagtail
	Spilopelia chinensis	Spotted Dove
	Threskiornis molucca	Australian White Ibis
	Vanellus miles	Masked Lap Wing

Appendix D: Assessment of Significance

Threatened Ecological Communities

Swamp Oak Floodplain Forest of the New South Wales North Coast, Sydney Basin and South East Corner Bioregions – Endangered (BC Act)

Swamp Oak Floodplain Forest of the NSW North Coast, Sydney Basin and South East Corner bioregions (SOFF) is listed as Endangered under the BC Act. SOFF is the name given to the ecological community associated with grey-black clay-loams and sandy loams, where the groundwater is saline or sub-saline, on waterlogged or periodically inundated flats, drainage lines, lake margins and estuarine fringes associated with coastal floodplains. The structure of the community may vary from open forests to low woodlands, scrubs or reedlands with scattered trees. Typically, these forests, woodlands, scrubs and reedlands form mosaics with other floodplain forest communities and treeless wetlands, and often they fringe treeless floodplain lagoons or wetlands with semi-permanent standing water.

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,
Not applicable – not a threatened species.
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
The area of native vegetation within the Subject Land has been subject to significant disturbance from historical and current land use practises. The small size of the patch and high weed cover has greatly reduced the species richness and structural complexity of the TEC. The loss of 0.08 ha of poor condition, highly fragmented SOFF is not considered 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.
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,
The occurrence of SOFF within the Subject Land has very reduced species richness due to historical disturbance. Only 3 native species identified within the Subject Land are characteristic of the TEC. These species are common throughout the locality. As such, the removal of 0.08 ha of SOFF will not substantially modify the composition of the TEC such that its local occurrence is likely to be placed at risk of extinction.
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 because of the proposed development or activity, and
A maximum of 0.08 ha of SOFF is to be removed.
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
The Subject Land, and the SOFF within, is located within a highly modified landscape including agricultural, industrial, and commercial development, and is not connected to any other patches of native vegetation. As such, the removal of 0.08 ha of SOFF within the Subject Land will not fragment or isolate any areas of habitat further than they already have been.

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 existing patch of SOFF is very small and exists within a highly fragmented landscape. The long-term survival of the TEC is not dependant on the retention of this patch.

D. Whether the proposed development or activity is likely to have an adverse effect on any declared area of outstanding value (either directly or indirectly)

There are no Areas of Outstanding Biodiversity Value within the Subject Land with reference to the Areas of Outstanding Biodiversity Value register.

E. Whether the proposed development or activity is part of a key threatening process or is likely to increase the impact of a key threatened process.

The key threatening processes, as listed in Schedule 4 of the BC Act of relevance to the proposed vegetation and habitat clearance are:

- Clearing of native vegetation
- Invasion and establishment of exotic vines and scramblers
- Invasion, establishment and spread of Lantana
- Invasion of native plant communities by exotic perennial grasses

The removal of 0.08 ha of marginal habitat is considered a very small disturbance. The vegetation exists within a highly disturbed landscape and does not significantly contribute to the health of SOFF in the broader landscape. Therefore, it is considered unlikely that the proposed vegetation and habitat removal would exacerbate any key threatening processes to such an extent that they would place the TEC at risk of extinction.

Conclusion

The proposal will directly affect a maximum area of 0.08 ha of SOFF. The vegetation proposed for removal is unlikely to significantly contribute to further recruitment and do not support other ground or mid-stratum species. The vegetation exists within a highly disturbed and fragmented landscape and does not significantly contribute to the health of SHSW in the wider landscape. Therefore, it is considered unlikely that the proposed vegetation removal would place the TEC at risk of extinction.

As such, a BDAR is not recommended with respect to the potentially affected threatened ecological community.

Threatened Birds

Dusky Woodswallow (Artamus cyanopterus cyanopterus) – Vulnerable (BC Act)

The species occurs throughout most of New South Wales, but is sparsely scattered in, or largely absent from, much of the upper western region. Most breeding activity occurs on the western slopes of the Great Dividing Range. Primarily inhabit dry, open eucalypt forests and woodlands, including mallee associations, with an open or sparse understorey of eucalypt saplings, acacias and other shrubs, and groundcover of grasses or sedges and fallen woody debris.

South-eastern Glossy Black-Cockatoo (*Calyptorhynchus lathami lathami*) – Vulnerable BC Act

Inhabits open forest and woodlands of the coast and the Great Dividing Range where stands of sheoak occur. Black Sheoak (Allocasuarina littoralis) and Forest Sheoak (A. torulosa) are important foods. Inland populations feed on a wide range of sheoaks, including Drooping Sheoak, Allocasuaraina diminuta, and A. gymnathera. Belah is also utilised and may be a critical food source for some populations.

Barking Owl (Ninox connivens) - Vulnerable (BC Act)

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.

Powerful Owl (Ninox strenua) - Vulnerable (BC Act)

Large tracts of open or closed sclerophyll forest or woodlands but can occur in fragmented landscapes as well. Gullies consisting of wet to dry sclerophyll forest with a dense understorey.

Masked Owl (Tyto novaehollandiae) - Vulnerable (BC Act)

The masked owl records fall within approximately 90% of NSW, excluding the most arid north-western corner. This species lives in dry eucalypt forests and woodlands (with a sparse mid-storey layer, but with patches of dense low ground cover) from sea level to 1100 m.

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,
The proposed development would result in the removal of a maximum of 0.08 ha of native vegetation representative of PCT 4049 – South Coast Floodplain Grassy Swamp Forest. This vegetation exists as a very small patch in a highly disturbed condition. No hollows or other breeding habitat significant to the above listed species was identified. As such, the vegetation to be removed constitutes marginal foraging habitat only. Therefore, the proposal is not considered to have an adverse effect on the life cycle of the above listed bird species such that a viable population of the species is likely to be placed at risk of extinction.
B. in the case of an endangered ecological community or critically endangered ecological community, whether the proposed development or activity:
i. is likely to have an adverse effect on the extent of the ecological community such that its local occurrence is likely to be placed at risk of extinction, or
Not applicable – not an endangered ecological community.
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,
Not applicable – not an endangered ecological community.
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 because of the proposed development or activity, and

The total maximum clearance is 0.08 ha of native vegetation representative of PCT 4049 – South Coast Floodplain Grassy Swamp Forest.

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

The area of native vegetation within the Subject Land consists of a very small patch within a highly fragmented landscape and has no direct connection to surrounding native vegetation. As such, it does not contribute to any habitat corridors and its removal is not anticipate fragmenting or isolate any areas of habitat further than they already have been. Additionally, the above species are highly mobile and are able to freely move between habitats.

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 remove a relatively small area of native vegetation within the Subject Land which contains marginal foraging habitat only for the above species. This habitat is not preferential habitat due to disturbance associated with industrial development of the surrounding land. No hollows will be removed from the Subject Land.

Due to the above reasons and the highly mobile nature of the listed species, the vegetation proposed for removal is not considered important to the long-term survival of the listed species in the locality.

D. Whether the proposed development or activity is likely to have an adverse effect on any declared area of outstanding value (either directly or indirectly)

There are no Areas of Outstanding Biodiversity Value within the Subject Land with reference to the Areas of Outstanding Biodiversity Value register.

E. Whether the proposed development or activity is part of a key threatening process or is likely to increase the impact of a key threatened process.

Key threatening processes, as listed in Schedule 4 of the BC Act of relevance to the proposed vegetation and habitat clearance:

- Clearing of native vegetation
- Invasion and establishment of exotic vines and scramblers
- Invasion, establishment and spread of Lantana
- Invasion of native plant communities by exotic perennial grasses

The removal of 0.08 ha of marginal foraging habitat is considered a very small disturbance, particularly in relation to the surrounding habitat and high mobility of these species. Therefore, it is considered unlikely that the proposed vegetation and habitat removal would exacerbate any key threatening processes to such an extent that they would place any local populations of the species at risk of extinction.

Conclusion

The proposal will directly affect a maximum area of 0.08 ha of marginal foraging habitat for the listed bird species. Due to the small area of vegetation removal, the high mobility of the listed species, and the disturbance from current land use, the proposed action is unlikely to have a significant impact on the listed bird species such that it would put a local population of any of the species at risk of extinction or substantially isolate any areas of potential habitat.

As such, a BDAR is not recommended with respect to the above listed bird species.

Appendix E: Significant Impact Criteria

Threatened Birds

South-eastern Glossy Black-Cockatoo (*Calyptorhynchus lathami lathami*) – Vulnerable (EPBC Act)

Inhabits open forest and woodlands of the coast and the Great Dividing Range where stands of sheoak occur. Black Sheoak (Allocasuarina littoralis) and Forest Sheoak (A. torulosa) are important foods. Inland populations feed on a wide range of sheoaks, including Drooping Sheoak, Allocasuaraina diminuta, and A. gymnathera. Belah is also utilised and may be a critical food source for some populations.

An action is likely to have a significant impact on a critically endangered or endangered species if there is a real chance or possibility that it will:
Criterion a: lead to a long-term decrease in the size of an important population of a species
The vegetation within the Subject Land is highly disturbed due to agricultural and industrial land use. No hollows or other habitat critical to breeding behaviours was identified within the Subject Land. It is important to note that while the *Casurarina* and *Allocasurarina* species that were identified within the Subject Land do contribute to foraging habitat for the Glossy Black Cockatoo, the area of vegetation is very small and frequently disturbed by people and moving vehicles. As such, the area of vegetation to be removed is not considered preferential compared to other foraging habitat in the broader landscape. The proposal is unlikely to result in direct impacts to individuals and breeding activity or the complete loss of breeding habitat. Therefore, it is unlikely that the proposed action will result in a long-term decrease in the size of the local population as direct mortality of individuals, nor will breeding habitat be impacted.
Criterion b: reduce the area of occupancy of an important population
The proposed development would result in the removal of a maximum of 0.08 ha of native vegetation. The proposed vegetation removal will not fragment or reduce habitat connectivity, and if any individuals utilise the foraging habitat within the proposed impact area they will be able to readily relocate to adjacent habitat. Therefore, the proposed development will not lead to a long-term reduction of the area of occupancy of important population of the above listed bird species.
Criterion c: fragment an existing important population into two or more populations
The vegetation proposed for removal is surrounded by agricultural, commercial, industrial properties within a highly fragmented landscape. Furthermore, the above listed species are highly mobile and can freely move between even distant habitats. Therefore, the proposed development is unlikely to contribute to further population fragmentation of the listed bird species.
Criterion d: adversely affect habitat critical to the survival of a species
No habitat critical for the survival of the above-listed species is listed on the Commonwealth register of critical habitat. As above, the Subject Land is considered to only provide occasional foraging habitat, and no breeding habitat is present within the Subject Land. As such, the proposal is considered unlikely to adversely affect any habitat that the species would be considered dependent on.
Criterion e: disrupt the breeding cycle of an important population
The proposal will not impact any potential breeding habitat for the species.
Criterion f: Adversely affect habitat critical to the survival of a species; modify, destroy, remove or isolate or decrease the availability or quality of habitat to the extent that the species is likely to decline;

The proposal would result in the removal of up to 0.08 ha of marginal foraging habitat for these species. Given the large home range of these species, it is considered unlikely that the species would be dependent on any foraging habitat within the Subject Land. As such, the proposal is unlikely to decrease available foraging habitat to the extent that the species is likely to decline. The proposal will not result in the removal of any breeding habitat for the species.

Criterion g: Result in invasive species that are harmful to a vulnerable species becoming established in the vulnerable species' habitat;

With adequate weed control measures in place, it is unlikely that the proposed development will result in the introduction of weed species.

Criterion h: Introduce disease that may cause the species to decline;

Parrots are susceptible to Psittacine beak and feather disease. The proposal is considered unlikely to introduce any pathogen or disease which could cause the species to decline.

Criterion i: Interfere substantially with the recovery of the species;

The proposal is not considered to interfere with any recovery or conservation efforts that are targeted towards the listed bird species.

Conclusion

The proposed action is not considered to constitute a significant impact on the above-listed bird species. As such, a referral to the Commonwealth is not recommended.