



ECOLOGICAL ASSESSMENT

FOR A
PROPOSED SUBDIVISION
AT
186 Tocal Road,
BOLWARRA HEIGHTS
NSW 2320

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Terms & Abbreviations

Abbreviation	Meaning
API	Aerial Photograph Interpretation
BAM	Biodiversity Assessment Methodology
BC Act	<i>Biodiversity Conservation Act 2016</i>
DCP	Development Control Plan
APZ	Asset Protection Zone
DPIE	Department of Planning, Industry and Environment
DEE	Commonwealth Department of Environment and Energy
EP&A Act	<i>Environmental Planning and Assessment Act 1979</i>
EPBC Act	<i>Environment Protection and Biodiversity Conservation Act 1999</i>
Ha	Hectare
KTP	Key Threatening Process
LHCCREMS	Lower Hunter and Central Coast Regional Environment Management Strategy
MCC	Maitland City Council
LEP	Local Environmental Plan
NPWS	National Parks and Wildlife Service
NP	National Park
PFC	Projected Foliage Cover
OEH	Office of Environment and Heritage
ROTAP	Rare or Threatened Australian Plants
SEPP	State Environmental Planning Policy
TEC	Threatened Ecological Community
WONS	Weed of National Significance



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I INTRODUCTION

I.1 Background

Firebird ecoSultants Pty Ltd has been engaged by HGBE Properties Pty Ltd to provide an ecological assessment for a proposed subdivision ('the proposal') at 186 Tocal Road, Bolwarra Heights NSW 2320 ('the site'). This assessment aims to recognise the relevant requirements of the *Environmental Planning and Assessment Act 1979* (EP&A Act), *Biodiversity Conservation Act 2016* (BC Act) and the *Commonwealth Environmental Protection and Biodiversity Conservation Act 1999* (EPBC Act).

A literature review and desktop research was combined with flora and fauna surveys, and a habitat assessment. Commonwealth, state and local government policies and guidelines formed the basis of project surveying and assessment methodology.

I.2 Site Particulars

Locality:	186 Tocal Road, Bolwarra Heights NSW 2320
LGA:	Maitland City Council
Lot / DP:	Lot 21 / DP 998784
IBRA Region	Sydney Basin
IBRA Subregion	Hunter
Mitchell Landscape	Newcastle Coastal Ramp
Land size:	~6.61 ha
Zoning:	R5 Large Lot Residential
Current Land Use:	Vacant Land

I.3 Site Description

The site is located on Tocal Road, Bolwarra Heights, and is bordered by large residential lots in the North, East and South, and Tocal Road in the West. The site is located in the North-Western portion of the township of Bolwarra Heights. The site is zoned R5 Large Lot Residential under the Maitland City Council Local Environmental Plan 2011 and is approximately 6.61 ha in size. See Figure 1-1 for the site locality.

The site consists of approximately 0.14 ha of a stand of Forest Redgum *Eucalyptus tereticornis*, the remaining vegetation of the site is comprised of ground cover such as Fireweed *Senecio madagascariensis*, White Clover *Trifolium repens*, Lamb's Tongue *Plantago lanceolata* that is less than 15 % native and therefore considered exotic and



not included in the clearing threshold. The depression line is comprised of Spiny Rush *Juncus acutus*. Refer to Photos 1-3.

Figure 1-1: Site Location



Photo 1 Spiny Rush *Juncus acutus*



Photo 2 Stand of Forest Redgum (to be retained)



Photo 3 Ground cover with Spiny Rush in background





I.4 Description of the Proposal

The proposal is for a new 11 allotment subdivision. A dwelling exists on site that will remain on the proposed Lot 101 which forms part of DA 2022/1310- into one (1) into two (2) Torrens Title lots at 186 Tocal Road, Bolwarra Heights, NSW 2320. Refer to Appendix A for site plans.

The proposal will retain the stand of Forest Redgum *E. tereticornis*. This is a highly disturbed form of Hunter Floodplain Red Gum Woodland in the NSW North Coast and Sydney Basin Bioregions. The proposal includes removal of some groundcover that has been determined as non native, and no tree will be removed.

I.4 Purpose and Scope of Study

The scope of this ecological assessment report is to:

- Identify vascular flora species on the site;
- Identify and map existing vegetation communities;
- Identify fauna species for the site through desk-top analysis, assuming presence for some marginal species. Any sightings observed at the site were also noted.
- Identify existing habitat types on the site and assess the habitat potential for threatened species / populations, or Threatened ecological communities (TECs) known from the proximate area;
- Assess the status of identified or potentially occurring flora species, vegetation communities and fauna species under relevant legislation;
- Assess the potential impacts of the proposal on threatened species / populations or TECs, or their habitats;
- Identify the biodiversity values and constraints on the site; and
- Provide recommendations to ensure that the recorded biodiversity values on the site are adequately managed and/or protected.

Survey work has been undertaken wholly within the bounds of the site, as well as in the road reserve where civil works will occur.

The purpose of this report is to:

- Ensure planning, management and development decisions are based on sound scientific information and advice by documenting the presence of any biodiversity components or potential significant impacts that may exist on the site;
- Provide information to enable compliance with applicable assessment requirements contained within the EP&A Act, BC Act, EPBC Act and any other relevant state, regional and local environmental planning instruments; and
- Enable the provision and analysis of ecological data that is comparable with data for other sites within the region to ensure continuity and consistency for survey and results.



I.5 Qualifications and Licensing

Qualifications

Fieldwork and report writing for this project was undertaken by Ollie Bourn, Kurtis Mumford, Sarah Jones, and Lucy Boswell.

Licensing

Research was conducted under the following licences:

- NSW National Parks and Wildlife Service Scientific Investigation Licence SL100533;
- Animal Research Authority (Trim File No: TRIM 11/5655) issued by NSW Department of Primary Industries; and
- Animal Care and Ethics Committee Certificate of Approval (Trim File No: TRIM 11/5655) issued by Department of Primary Industries.

Certification

As the principal author, I, Sarah Jones make the following certification:

- The results presented in the report are, in the opinion of the principal author and certifier, a true and accurate account of the species recorded, or considered likely to occur within the site;
- Commonwealth, state and local government policies and guidelines formed the basis of project surveying methodology, or where the survey work has been undertaken with specified departures from industry standard guidelines, details of which are discussed and justified in Section 2;
- All research workers have complied with relevant laws and codes relating to the conduct of flora and fauna research, including the *Animal Research Act 1995*, *National Parks and Wildlife Act 1974* and the *Australian Code of Practice for the Care and Use of Animals for Scientific Purposes*.



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2 METHODOLOGY

This assessment included a desktop-based analysis of previous records of threatened species in the area, a review of any relevant literature and field-based surveys of the site and surrounding area including the road reserve. Where possible, survey methods have been designed in accordance with the relevant survey and assessment guidelines.

2.1 Desktop Research

2.1.1 Database Searches

The following database searches were undertaken, in order to compile a list of threatened flora and fauna species and Matters of National Environmental Significance (MNES), predicted to occur in the area:

Review of threatened fauna and flora records within a 10 km radius of the site, contained in the OEH Atlas of NSW Wildlife (NSW BioNet).

Review of the Matters of National Environmental Significance (MNES) records within a 10 km radius of the site, using the Commonwealth Department of Environment and Energy (DEE), EPBC Act Protected Matters Search Tool.

2.1.2 Literature Review

Information sources reviewed included, but were not limited to:

- Aerial Photograph Interpretation (API);
- Relevant ecological survey guidelines, including:
 - LHCCREMS Flora and Fauna Survey Guidelines, Lower Hunter Central Coast Region 2002, Volume 1 & Volume 2 (Murray et al. 2002);
 - OEH *Threatened species assessment guidelines: The assessment of significance* (Department of Environment and Climate Change (DECC, 2007)
 - OEH *Threatened Biodiversity Survey and Assessment: Guidelines for Developments and Activities* (Department of Environment and Conservation (DEC) 2004) and *NSW Guide to Surveying Threatened Plants* (OEH 2016)
- Environmental / planning reports relevant to the site / area, including:
 - *Maitland Local Environment Plan (LEP) 2011*
 - *Hunter Regional Plan 2036* (Department of Planning & Environment)
- *Maitland Development Control Plan (DCP) 2011* Any relevant recovery plans.
- OEH Threatened Species, Populations and Ecological Communities website <<http://www.threatenedspecies.environment.nsw.gov.au/tsprofile/>>; and

Collective knowledge gained from previous ecological assessments in the local area.



2.2 Flora Survey and Vegetation Mapping

A flora survey was conducted on 23rd March 2023 and 24th June 2023 . This included, a survey using Cropper's (1993) random meander technique, to record flora species and to determine the boundaries of any vegetation communities.

Opportunistic searches for threatened / significant flora species were undertaken on the site (however largely this search was undertaken via a desktop survey). A list of potentially occurring significant flora species from the locality (10 km radius) was compiled (see Section 2.1); these included threatened species listed under the BC Act, EPBC Act, Rare or Threatened Australian Plants (ROTAP) (Briggs and Leigh 1996), as well as any other species deemed to be of local importance. Targeted searches were then undertaken over the site, whereby the entire site and road reserves were systematically traversed.

2.3 Fauna and Habitat Assessment

An assessment of the relative habitat values of the site was undertaken at the site on the 21st November 2022 and 5 June 2023. The habitat assessment focused on the identification of habitat types and resources favoured by all major guilds of native flora and fauna, including threatened species known from the region. The assessment was based on specific habitat requirements in regards to home range, feeding, roosting, breeding, movement patterns and corridor requirements. Consideration was given to contributing factors including topography, soil, light and hydrology.

2.3.1 Targeted *Phascolarctos cinereus* (Koala) Survey

A targeted survey for *P. cinereus* (Koala) was undertaken on the 5 June 2023. Brief searches were undertaken at the base of potential feed trees within the site, for indirect evidence (scats and scratch marks) and in the tree canopy, for direct sightings.

2.3.2 Diurnal Bird Watching Survey

A diurnal bird watching survey was conducted on 5 June 2023 during peak activity period (dusk). No birds were identified through direct observation or recognition of calls and/or distinctive features such as nests, feathers and owl regurgitation pellets etc.



2.3.3 Herpetofauna Surveys

Herpetofauna (reptiles and amphibians) surveys were undertaken throughout the site on 5 June 2023. These surveys involved searches in leaf litter, fallen timber and rotting logs during daylight hours.

2.4 Survey Limitations

In order to address any potential limitations which are inherent in ecological surveys due to seasonal and weather restrictions, the habitat assessment, and the presence of local records for threatened species were used to assess whether threatened species were likely to be present. Furthermore, where necessary the precautionary principle of 'assumed presence' has been applied.

The survey methods undertaken are unlikely to detect all of the species present within the study area or have potential to occur within the study area due to seasonal and temporal conditions.

3 RESULTS

3.1 Desktop Research

3.1.1 Database Searches

A number of threatened species and TECs have been recorded on the Atlas of NSW Wildlife database and EPBC Act Protected Matters Search Tool, within a 10 km radius of the site. These are listed in Table 3-1. Note that marine species have been excluded. See Appendix B for the full EPBC Protected Matters report.

Table 3-1: Threatened Species and TECs Identified Within a 10 km Radius of the Site by a Search of the NSW Atlas of Wildlife and the EPBC Act Protected Matters Search Tool

Scientific Name	Common Name	BC Act	EPBC Act	Records
Threatened Flora				
<i>Rutidosia heterogama</i>	Heath Wrinklewort	V	V	1
<i>Maundia triglochoides</i>		V		1
<i>Syzygium paniculatum</i>	Magenta Lilly Pilly	E1	V	1
[^] <i>Cymbidium canaliculatum</i>	Cymbidium canaliculatum population in the Hunter Catchment	E2, P,2		2
Threatened Birds				
<i>Anseranas semipalmata</i>	Magpie Goose	V,P		2
<i>Oxyura australis</i>	Blue-billed Duck	V,P		5
<i>Stictonetta naevosa</i>	Freckled Duck	V,P		4
<i>Ephippiorhynchus asiaticus</i>	Black-necked Stork	E1,P		3
<i>Haliaeetus leucogaster</i>	White-bellied Sea-Eagle	V,P		6
^{^^} <i>Pandion cristatus</i>	Eastern Osprey	V,P,3		1
^{^^} <i>Ninox connivens</i>	Barking Owl	V,P,3		1
^{^^} <i>Ninox strenua</i>	Powerful Owl	V,P,3		1
[^] <i>Anthochaera phrygia</i>	Regent Honeyeater	E4A, P,2	CE	3
<i>Epthianura albifrons</i>	White-fronted Chat	V,P		1

Scientific Name	Common Name	BC Act	EPBC Act	Records
<i>Pomatostomus temporalis temporalis</i>	Grey-crowned Babbler (eastern subspecies)	V,P		4
Threatened Mammals				
<i>Dasyurus maculatus</i>	Spotted-tailed Quoll	V,P	E	1
<i>Phascogale tapoatafa</i>	Brush-tailed Phascogale	V,P		8
<i>Phascolarctos cinereus</i>	Koala	E1,P	E	24
<i>Petaurus norfolcensis</i>	Squirrel Glider	V,P		3
<i>Pteropus poliocephalus</i>	Grey-headed Flying-fox	V,P	V	47
<i>Saccolaimus flaviventris</i>	Yellow-bellied Sheath-tail-bat	V,P		1
<i>Micronomus norfolkensis</i>	Eastern Coastal Free-tailed Bat	V,P		6
<i>Falsistrellus tasmaniensis</i>	Eastern False Pipistrelle	V,P		1
<i>Myotis macropus</i>	Southern Myotis	V,P		4
<i>Scoteanax rueppellii</i>	Greater Broad-nosed Bat	V,P		1
<i>Miniopterus australis</i>	Little Bent-winged Bat	V,P		4
<i>Miniopterus orianae oceanensis</i>	Large Bent-winged Bat	V,P		6

Threatened Ecological Communities		
Community Name	BC Act	EPBC Act
Coastal Swamp Sclerophyll Forest of New South Wales and South East Queensland	-	E
Lowland Rainforest in the NSW North Coast and Sydney Basin Bioregions	E	-
Central Hunter Valley eucalypt forest and woodland	-	E



White Box Yellow Box Blakely's Red Gum Woodland	CE	CE
Hunter Valley Weeping Myall Woodland in the Sydney Basin Bioregion	CE	CE
River-Flat Eucalypt Forest on Coastal Floodplains of the New South Wales North Coast, Sydney Basin and South East Corner Bioregions	E	CE
Coastal Swamp Oak (<i>Casuarina glauca</i>) Forest of New South Wales and South East Queensland ecological community	-	E
Central Hunter Grey Box—Ironbark Woodland in the New South Wales North Coast and Sydney Basin Bioregions	E	-
Central Hunter Ironbark—Spotted Gum—Grey Box Forest in the New South Wales North Coast and Sydney Basin Bioregions	E	-
Central Hunter Valley eucalypt forest and woodland	-	CE
Coastal Saltmarsh in the New South Wales North Coast, Sydney Basin and South East Corner Bioregions	E	-
Freshwater Wetlands on Coastal Floodplains of the New South Wales North Coast, Sydney Basin and South East Corner Bioregions	E	-
Hunter Floodplain Red Gum Woodland in the NSW North Coast and Sydney Basin Bioregions	E	-
Hunter Valley Foothills Slaty Gum Woodland in the Sydney Basin Bioregion	V	-
Hunter Valley Vine Thicket in the NSW North Coast and Sydney Basin Bioregions	E	-
Kurri Sand Swamp Woodland in the Sydney Basin Bioregion	E	-
Littoral Rainforest in the New South Wales North Coast, Sydney Basin and South East Corner Bioregions	E	CE
Lower Hunter Spotted Gum Ironbark Forest in the Sydney Basin and NSW North Coast Bioregions	E	-
Lower Hunter Valley Dry Rainforest in the Sydney Basin and NSW North Coast Bioregions	V	-
Lowland Rainforest of Subtropical Australia	-	CE



Lowland Rainforest on Floodplain in the New South Wales North Coast Bioregion	-	-
Quorrobolong Scribbly Gum Woodland in the Sydney Basin Bioregion	E	-

Status: V: Vulnerable, E: Endangered, CE: Critically Endangered, M: Migratory



3.2 Flora Survey and Vegetation Mapping

A flora assessment and site inspection was undertaken at the site on the 11 November 2022 and the 5 June 2023. The following describes the vegetation within the development footprint.

Figure 3-1 provides a distribution map of the site's vegetation community and Appendix D provides a full list of recorded species. The dominant floristic characteristics of the vegetation community are described below.

3.2.1 Forest Red Gum Grassy Open Forest on floodplains of the Lower Hunter

The vegetation within the development footprint is most likely to commensurate with PCT 1598 Forest Red Gum grassy open forest on floodplains of the lower Hunter, due to the presence of species such as *Eucalyptus tereticornis* (Forest Red Gum).

Upper Stratum – 10m high, with a PFC of 15%. The canopy is predominantly regrowth (<20 yrs) and only contains *Eucalyptus tereticornis* (Forest Red Gum).

Mid Stratum – No mid stratum species occur.

Lower Stratum – <1 m high. The stratum is dominated by exotic ground cover species including *Verbena bonariensis* (Purpletop Vervain), *Digitaria didactyla* (Blue Couch), *Plantago lanceolata* (Lamb's Tongues), *Cyperus brevifolius*, *Paspalum dilatatum* (Paspalum), *Conyza spp.* (A Fleabane), *Senecio madagascariensis* (Fireweed), and *Hypochoeris radicata* (Catsear).

Refer to photos 1, 2 and 3 below for photographs of the site's vegetation. The following provides a summary of the dominant flora characteristics within the development footprint:

3.2.2 Exotic Vegetation

The majority of the land is comprised of ground cover such Fireweed *Senecio madagascariensis*, White Clover *Trifolium repens*, Lamb's Tongue *Plantago lanceolata* that is less than 15% native and therefore considered exotic and not included in the clearing threshold. The depression line is comprised of Spiny Rush *Juncus acutus*. Refer to Photos 1-3 above and Figure 301 for Vegetation Map

Figure 3-1 Vegetation Map





3.2.3 Vegetation Integrity

The vegetation within the site is highly altered through land use practices including grazing and maintenance of a garden, and contains only a stand of native canopy species, being *Eucalyptus tereticornis* (Forest Red Gum).

3.2.4 Threatened Ecological Communities and Threatened Flora Species

No threatened flora species were observed on the site. Due to the already disturbed area and exotic nature of the site, it is unlikely that threatened flora species will occur within the development footprint.

3.2.5 Threatened Fauna Species / Populations

The site may provide some marginal habitat for some of the threatened fauna species predicted to occur in the area. The principle of assumed presence has been applied to all potentially occurring threatened fauna species that have potential habitat within the site. See Section 4 of this report for further assessment of these potentially occurring species. Habitat Assessment

The following provides a summary of the site's habitat values:

- The site's trees may provide foraging, nesting, resting and roosting habitat for a wide range of fauna, adapted to both forest and open areas.
- The vegetation within the development footprint lacks any significant understory, which would limit the site's value for species that require dense understory vegetation.
- The site contains limited natural ground timber.
- The site lacks rocky surfaces, outcrops, caves or ledges.

3.2.6 Koala Survey and Habitat Assessment

The targeted survey found no direct or indirect (e.g. scats and scratch marks on trees) evidence of *P. cinereus* (Koala) on or near the site.

3.3 Corridors and Connectivity

The development footprint is not on the periphery of this corridor and it is considered unlikely that the development would impact on the function of a corridor. The stand of *E. tereticornis* will be retained and could serve as stepping stone for more mobile species. The site is also not located within a Biodiversity Corridor as identified in the *Hunter Regional Plan 2036* (Department of Planning and Environment, 2016).



4 THREATENED SPECIES / COMMUNITIES LIKELIHOOD OF OCCURRENCE ASSESSMENT

Several threatened species and TECs were identified in Section 3 of this report, as potentially occurring in the area. An assessment of the likelihood of occurrence for each of these threatened species and TECs was conducted; see Table 4-1. This assessment deals with the following heads of consideration in tabulated form:

'Species / Community' – Lists each threatened species / community known from the vicinity. The status of each, under the BC Act and EPBC Act, are also provided.

'Habitat Description and Known Populations' – Provides a brief account of the preferred habitat attributes required for the existence / survival of each species / community and information on known populations in the area.

'Likelihood of Occurrence' – Assesses the likelihood of each species / community to occur in or within the immediate vicinity of the study area in terms of the aforementioned habitat description and taking into account local habitat preferences, results of current field investigations, data gained from various sources (such as OEH Atlas of NSW Wildlife, herbariums, etc.) and previously gained knowledge via fieldwork undertaken within other ecological assessments in the locality.

'Potential for Impact' – Assesses the likely level / significance of impacts to each species / community that would result from the proposed development, taking into account direct and indirect short and long-term impacts.

Note: Species highlighted in grey will be assessed under section 7.3 of the BC Act (i.e. five-part test) in section 5 of this report.



Table 4-1: Threatened Species Chance of Occurrence & Potential for Impact

Species / Population	Habitat Description & Known Populations	Likelihood of Occurrence	Potential for Impact
Threatened Flora			
<i>Eucalyptus glaucina</i> Slaty Red Gum (V,V*)	Found only on the north coast of NSW and in separate districts: near Casino where it can be locally common, and farther south, from Taree to Broke, west of Maitland. Grows in grassy woodland and dry eucalypt forest (OEH, 2017a).	Low Not recorded within the site.	Low Not recorded on the site.
<i>Rutidosis heterogama</i> Heath Wrinklewort (V,V*)	Recorded from near Cessnock to Kurri Kurri with an outlying occurrence at Howes Valley. On the Central Coast it is located north from Wyong to Newcastle. There are north coast populations between Woolli and Evans Head in Yuraygir and Bundjalung National Parks. It also occurs on the New England Tablelands from Torrington and Ashford south to Wandsworth south-west of Glen Innes. Grows in heath on sandy soils and moist areas in open forest, and has been recorded along disturbed roadsides. Generally flowers in Autumn (OEH, 2017a).	Low Not recorded within the site.	Low Was not recorded on site.
<i>Syzygium paniculatum</i> Magenta Lilly Pilly (E,V*)	A small to medium sized rainforest tree that grows to 8 m tall. Bark is flaky and the leaves are shiny, dark-green above and paler underneath. Leaves can be up to 10 cm long. Plants produce white flower-clusters at the end of each branch, between November and February. This species is found only in NSW, in a narrow, linear coastal strip from Upper Lansdowne to Conjola State Forest. On the central coast it occurs on gravels, sands, silts and clays in riverside gallery rainforests and remnant littoral rainforest communities (OEH, 2017a).	Low No suitable rainforest habitat occurs on site.	Low Was not recorded on site.
<i>Cymbidium canaliculatum</i> - endangered population	An epiphytic orchid (with sympodial growth) which grows in the hollows and forks of eucalypts and wattles, usually occurring singly or as a single clump, typically between two and six metres above the ground. This large epiphytic orchid has a scattered distribution across northern and eastern Australia, extending from Hunter River in NSW to Cape York and across northern NT and Queensland to the Kimberley region in WA. In NSW the species is restricted to the north-eastern quarter of the State, occurring chiefly in inland districts west to New Angledool and Walgett on the north western plains and north of the Hunter River, through the north western slopes, northern tablelands and north coast into south-eastern Queensland. A disjunct population of fewer than 500 individuals though estimated to be as low as 90, which occurs in the Hunter Valley at the south-eastern distributional limit of the species' range.	Low Not recorded within the site.	Low Was not recorded on site.
Threatened Birds			



Species / Population	Habitat Description & Known Populations	Likelihood of Occurrence	Potential for Impact
<i>Anseranas semipalmat</i> Magpie Goose (V)	<p>The Magpie Goose is still relatively common in the Australian northern tropics, but had disappeared from south-east Australia by 1920 due to drainage and overgrazing of reed swamps used for breeding. Since the 1980s there have been an increasing number of records in central and northern NSW. Vagrants can follow food sources to south-eastern NSW</p> <p>Mainly found in shallow wetlands (less than 1 m deep) with dense growth of rushes or sedges.</p> <p>Equally at home in aquatic or terrestrial habitats; often seen walking and grazing on land; feeds on grasses, bulbs and rhizomes.</p> <p>Activities are centred on wetlands, mainly those on floodplains of rivers and large shallow wetlands formed by run-off; breeding can occur in both summer and winter dominated rainfall areas and is strongly influenced by water level; most breeding now occurs in monsoonal areas; nests are formed in trees over deep water; breeding is unlikely in south-eastern NSW.</p> <p>Often seen in trios or flocks on shallow wetlands, dry ephemeral swamps, wet grasslands and floodplains; roosts in tall vegetation.</p>	<p>Low</p> <p>The site lacks the preferred habitat for this species.</p>	<p>Low</p> <p>Not recorded within the site and the site lacks the preferred habitat for this species.</p>
<i>Anthochaera Phrygia</i> Regent Honeyeater (CE, CE*)	<p>Inhabits dry open forest and woodlands that support a high abundance and species richness of birds; these areas have large numbers of mature trees, high canopy cover and abundance of mistletoes. A shrubby understorey is an important source of insects and nesting material. Distributed in NSW is very patchy but mainly confined to breeding areas in the Capertee Valley and the Bundarra-Barraba regions (OEH, 2017a).</p>	<p>Low</p> <p>The site lacks the preferred mature eucalypts and abundance of mistletoes, however potential marginal foraging habitat occurs on site.</p>	<p>Low</p> <p>The site contains some potential marginal foraging habitat for the species, that will be retained as part of the proposal</p>
<i>Ninox connivens</i> Barking Owl (V)	<p>The Barking Owl is found throughout continental Australia except for the central arid regions. Although common in parts of northern Australia, the species has declined greatly in southern Australia and now occurs in a wide but sparse distribution in NSW. 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 on these fertile soils.</p>	<p>Low-Moderate</p> <p>Whilst the species was not recorded on site, some potential hunting habitat occurs on site, but there are no hollows for nesting.</p>	<p>Low</p> <p>The proposal would not impact this species as the site is highly degraded, and higher quality habitat exists elsewhere within the region.</p>
<i>Ninox strenua</i> Powerful Owl (V)	<p>Occurs in coastal and adjacent ranges of eastern Australia in sclerophyll forests and woodlands where suitable prey species occur (being predominantly arboreal mammals such gliders and flying foxes, but also birds). Requires large and specific tree hollow characteristics for nesting. Occupies exclusive territories in the order of 1000 ha in size (OEH, 2017a).</p>	<p>Low – Moderate</p> <p>The site may offer some marginal habitat but there is no nesting habitat within the site.</p>	<p>Low</p> <p>The proposal would not impact this species.</p>



Species / Population	Habitat Description & Known Populations	Likelihood of Occurrence	Potential for Impact
<p><i>Oxyura australis</i> Blue-billed duck (V)</p>	<p>The Blue-billed Duck is endemic to south-eastern and south-western Australia. It is widespread in NSW, but most common in the southern Murray-Darling Basin area. Birds disperse during the breeding season to deep swamps up to 300 km away. It is generally only during summer or in drier years that they are seen in coastal areas.</p> <p>The Blue-billed Duck prefers deep water in large permanent wetlands and swamps with dense aquatic vegetation. The species is completely aquatic, swimming low in the water along the edge of dense cover. It will fly if disturbed, but prefers to dive if approached.</p> <p>Blue-billed Ducks will feed by day far from the shore, particularly if dense cover is available in the central parts of the wetland. They feed on the bottom of swamps eating seeds, buds, stems, leaves, fruit and small aquatic insects such as the larvae of midges, caddisflies and dragonflies.</p> <p>Blue-billed Ducks are partly migratory, with short-distance movements between breeding swamps and overwintering lakes with some long-distance dispersal to breed during spring and early summer.</p> <p>Blue-billed Ducks usually nest solitarily in Cumbungi over deep water between September and February. They will also nest in trampled vegetation in Lignum, sedges or Spike-rushes, where a bowl-shaped nest is constructed. The most common clutch size is five or six. Males take no part in nest-building or incubation.</p> <p>Young birds disperse in April-May from their breeding swamps in inland NSW to non-breeding areas on the Murray River system and coastal lakes.</p>	<p>Low</p> <p>The site lacks the preferred habitat for this species.</p>	<p>Low</p> <p>Not recorded within the site and the site lacks the preferred habitat for this species.</p>
<p><i>Pomatostomus temporalis</i> temporalis Grey-crowned Babbler (eastern subspecies) (V)</p>	<p>The eastern subspecies (<i>temporalis</i>) occurs from Cape York south through Queensland, NSW and Victoria and formerly to the south east of South Australia. This subspecies also occurs in the Trans-Fly Region in southern New Guinea. In NSW, the eastern subspecies occurs on the western slopes of the Great Dividing Range, and on the western plains reaching as far as Louth and Balranald. It also occurs in woodlands in the Hunter Valley and in several locations on the north coast of NSW. Inhabits open Box-Gum Woodlands on the slopes, and Box-Cypress-pine and open Box Woodlands on alluvial plains. Woodlands on fertile soils in coastal regions (OEH, 2017a).</p>	<p>Moderate</p> <p>The species was not recorded on site; however, some potential degraded habitat occurs on site.</p>	<p>Low</p> <p>Whilst the species may occur on site, the proposal would not impact this species as potential foraging habitat is to be retained within the site.</p>



Species / Population	Habitat Description & Known Populations	Likelihood of Occurrence	Potential for Impact
<p><i>Stictonetta naevosa</i> Freckled Duck (V)</p>	<p>The Freckled Duck is found primarily in south-eastern and south-western Australia, occurring as a vagrant elsewhere. It breeds in large temporary swamps created by floods in the Bulloo and Lake Eyre basins and the Murray-Darling system, particularly along the Paroo and Lachlan Rivers, and other rivers within the Riverina. The duck is forced to disperse during extensive inland droughts when wetlands in the Murray River basin provide important habitat. The species may also occur as far as coastal NSW and Victoria during such times.</p> <p>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.</p> <p>Generally rest in dense cover during the day, usually in deep water. Feed at dawn and dusk and at night on algae, seeds and vegetative parts of aquatic grasses and sedges and small invertebrates.</p> <p>Nesting usually occurs between October and December but can take place at other times when conditions are favourable.</p> <p>Nests are usually located in dense vegetation at or near water level.</p>	<p>Low</p> <p>The site lacks the preferred habitat for this species.</p>	<p>Low</p> <p>Not recorded within the site and the site lacks the preferred habitat for this species.</p>
Threatened Mammals			
<p><i>Dasyurus maculatus</i> subsp. <i>maculatus</i> Spotted-tailed Quoll (V, E*)</p>	<p>Found in a variety of forested habitats from sclerophyll forests, rainforests and coastal woodlands. Creates a den in fallen hollow logs or among rocky outcrops and is an opportunistic hunter of a variety of prey. Generally does not occur in otherwise suitable habitats that are in close proximity to urban development. Hunter Region records are largely confined to the surrounding ranges and larger vegetation remnants (OEH, 2017a).</p> <p>Three records occur in the surrounding area of the site; however, none are relatively recent (OEH 2017b).</p>	<p>Low</p> <p>Was not recorded on site. The highly disturbed nature of the site does not provide suitable habitat.</p>	<p>Low</p> <p>The site lacks preferred habitat.</p>
<p><i>Micronomus norfolkensis</i> Eastern Coastal Freetail-bat (V)</p>	<p>Distributed south of Sydney extending north into south-eastern Queensland. No records west of the Great Dividing Range. Most records have been reported from dry eucalypt forest and woodland. It is expected that open forested areas and the cleared land adjacent to bushland, constitutes important habitat. Predominantly a tree-dwelling species, roosting in hollows or behind loose bark in mature <i>Eucalypts</i> (OEH, 2017a).</p>	<p>Moderate to High</p> <p>The site offers foraging habitat but no roosting habitat occur within the site</p>	<p>Low</p> <p>This is a highly mobile species, able to forage over large ranges. The area of vegetation to be removed would represent an insignificant portion of low value foraging habitat, and some foraging habitat would be preserved through the retention of the stand of Forest Redgum.</p>



Species / Population	Habitat Description & Known Populations	Likelihood of Occurrence	Potential for Impact
<i>Miniopterus australis</i> Little Bent-winged bat (V)	Prefers 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. Roosts in caves, tunnels, tree hollows, abandoned mines, stormwater drains, culverts, bridges and sometimes buildings. Forages for small insects beneath the canopy of densely vegetated habitats (OEH, 2017a).	Moderate to High The site offers foraging habitat but no roosting habitat occur within the site	Low This is a highly mobile species, able to forage over large ranges. The area of vegetation to be removed would represent an insignificant portion of low value foraging habitat, and some foraging habitat would be preserved through the retention of the stand of Forest Redgum.
<i>Miniopterus orianae oceanensis</i> Large Bent-winged Bat (V)	Utilises a range of habitats for foraging, including rainforest, wet and dry sclerophyll forests, woodlands and open grasslands. Requires caves or similar structures for roosting habitat (OEH, 2017a).	Moderate to High The site offers foraging habitat but no roosting habitat occur within the site	Low This is a highly mobile species, able to forage over large ranges. The area of vegetation to be removed would represent an insignificant portion of low value foraging habitat, and some foraging habitat would be preserved through the retention of the stand of Forest Redgum.
<i>Myotis Macropus</i> Southern Myotis (V)	Found in the coastal band from the north-west of Australia, across the top-end and south to western Victoria. Rarely found more than 100 km inland, except along major rivers. Roosts in groups of 10-15, close to water in caves, mine shafts, hollow-bearing trees, storm water channels, buildings and under bridges. Forages over streams and pools catching insects and small fish by raking their feet across the water surface (OEH, 2017a).	Moderate There is potential foraging habitat occurs in the dam, however, there is no roosting habitat within the site.	Low This is a highly mobile species, able to forage over large ranges. The area of vegetation to be removed would represent an insignificant portion of low value foraging habitat
<i>Petaurus norfolkensis</i> Squirrel Glider (V)	Occurs in eucalypt forests and woodlands where it feeds on sap exudates and blossoms. Tree hollows are required for nesting. Also requires winter foraging resources when the availability of normal food resources may be limited, such as winter-flowering shrubs and small tree species. Sparsely distributed in eastern Australia, from northern Queensland to western Victoria (OEH, 2017a).	Low The highly disturbed nature of the site is unlikely to support a population of the species.	Low The proposal would not impact this species.
<i>Phascolarctos cinereus</i> Koala (V, V*)	Occurs in forests and woodlands where it requires suitable feed trees (particularly <i>Eucalyptus</i> spp.) and habitat linkages. Will occasionally cross open areas, although it becomes more vulnerable to predator attack and road mortality during these excursions. Within the Greater Hunter Region it is largely confined to the Port Stephens area, the Lake Macquarie hinterland and the Watagan Mountains (OEH, 2017a).	Low Was not recorded on site. Additionally, the site does not constitute Koala Habitat under Koala Habitat Protection SEPP.	Low The proposal would not impact this species.



Species / Population	Habitat Description & Known Populations	Likelihood of Occurrence	Potential for Impact
<i>Pteropus poliocephalus</i> Grey-headed Flying-Fox (V, V*)	Occurs along the east coast from Bundaberg, Queensland to Melbourne, Victoria. Utilises a range of habitats including rainforests, sclerophyll forests and woodlands, heaths, swamps and mangroves. Considered an important pollinator and seed disperser of native trees. Colonies usually formed in gullies with a dense vegetation canopy and a water source nearby (OEH, 2017a).	Moderate Foraging habitat is present in the form of the remnant native trees. However, the species is highly mobile with widespread distribution.	Low The proposal would not impact this species as the foraging habitat will be retained within the site.
<i>Saccolaimus flaviventris</i> Yellow-bellied Sheathtail Bat (V)	A wide-ranging species found across northern and eastern Australia. In the most southerly part of its range - most of Victoria, south-western NSW and adjacent South Australia - it is a rare visitor in late summer and autumn. There are scattered records of this species across the New England Tablelands and North West Slopes. Roosts singly or in groups of up to six, in tree hollows and buildings; in treeless areas they are known to utilise mammal burrows. Forages in most habitats across its very wide range, with and without trees; appears to defend an aerial territory.	Low The site is not located near the New England Tablelands or North West Slope. The site does not contain any hollow-bearing trees.	Low The proposal would not impact this species.
<i>Scoteanax rueppellii</i> Greater Broad-nosed Bat (V)	Forages in moister gullies and wet sclerophyll forests as well as in lightly wooded areas and open spaces / ecotones. Roosts in tree hollows and is relatively widespread within the Lower Hunter Region (OEH, 2017a).	Moderate to High The site offers foraging habitat but no roosting habitat occur within the site	Low This is a highly mobile species, able to forage over large ranges. The area of vegetation to be removed would represent an insignificant portion of low value foraging habitat, and some foraging habitat would be preserved through the retention of the stand of Forest Redgum.
Ecological Communities			
Coastal Swamp Sclerophyll Forest of New South Wales and South East Queensland (E*)	Open to dense tree layer of eucalypts and paperbarks, although some remnants now only have scattered trees. Associated with humic clay loams and sandy loams, on waterlogged or periodically inundated alluvial flats and drainage lines associated with coastal floodplains. (OEH, 2020)	Low Not recorded on or near the site.	Low Would not be impacted as it does not occur on or near the site.
Lowland Rainforest in the NSW North Coast and Sydney Basin Bioregions (E)	An ecological community of subtropical rainforest and some related, structurally complex forms of dry rainforest (OEH, 2017a).	Low Not recorded on or near the site.	Low Would not be impacted as it does not occur on or near the site.
Central Hunter Valley eucalypt forest and woodland (E*)	Comprises eucalypt woodlands and open forests; typically with a shrub layer of variable density and/or a grassy ground layer. Occurs primarily in the Central Hunter, and it is characterised by rolling hills and wide valleys, with a meandering river system on a wide flood plain (OEH, 2022)	Low Not recorded on or near the site.	Low Would not be impacted as it does not occur on or near the site.
White Box Yellow Box Blakely's Red Gum Woodland (CE, CE*)	Remnants generally occur on fertile lower parts of the landscape where resources such as water and nutrients are abundant (OEH, 2017a).	Low Not recorded on or near the site.	Low Would not be impacted as it does not occur on or near the site.



Species / Population	Habitat Description & Known Populations	Likelihood of Occurrence	Potential for Impact
Hunter Valley Weeping Myall Woodland in the Sydney Basin Bioregion (CE, CE*)	Associated with heavy clay soils on depositional landforms in the south-western part of the Hunter River valley floor (OEH, 2017a).	Low Not recorded on or near the site.	Low Would not be impacted as it does not occur on or near the site.
River-Flat Eucalypt Forest on Coastal Floodplains of the New South Wales North Coast, Sydney Basin and South East Corner Bioregions (E, CE*)	Associated with silts, clay-loams and sandy loams, on periodically inundated alluvial flats, drainage lines and river terraces associated with coastal floodplains (OEH, 2017a).	Low Not recorded on or near the site.	Low Would not be impacted as it does not occur on or near the site.
Coastal Swamp Oak (<i>Casuarina glauca</i>) 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 Bermagui in southern New South Wales. The ecological community 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.	Low Not recorded on or near the site.	Low Would not be impacted as it does not occur on or near the site.
Central Hunter Grey Box—Ironbark Woodland in the New South Wales North Coast and Sydney Basin Bioregions (E)	Occurs in areas of relatively low rainfall and high temperatures. It is associated mostly with Permian lithology, and is situated on gently undulating hills, slopes and valleys, or occasionally on rocky knolls (OEH, 2017a).	Low Not recorded on or near the site.	Low Would not be impacted as it does not occur on or near the site.
Central Hunter Ironbark—Spotted Gum—Grey Box Forest in the New South Wales North Coast and Sydney Basin Bioregions (E)	Occupies undulating country including low rises and slopes, occurring on all aspects. It may also occur on alluvial and colluvial soils in valleys (OEH, 2017a).	Low Not recorded on or near the site.	Low Would not be impacted as it does not occur on or near the site.
Coastal Saltmarsh in the New South Wales North Coast, Sydney Basin and South East Corner Bioregions (E)	Occurs in the intertidal zone on the shores of estuaries and lagoons that are permanently or intermittently open to the sea (OEH, 2017a).	Low Not recorded on or near the site.	Low Would not be impacted as it does not occur on or near the site.
Freshwater Wetlands on Coastal Floodplains of the New South Wales North Coast, Sydney Basin and South East Corner Bioregions (E)	Associated with coastal areas subject to periodic flooding and in which standing fresh water persists for at least part of the year in most years. Typically occurs on silts, muds or humic loams in low-lying parts of floodplains, alluvial flats, depressions, drainage lines, backswamps, lagoons and lakes but may also occur in backbarrier landforms where floodplains adjoin coastal sandplains (OEH, 2022)	Low Not recorded on or near the site.	Low Would not be impacted as it does not occur on or near the site.



Species / Population	Habitat Description & Known Populations	Likelihood of Occurrence	Potential for Impact
Hunter Floodplain Red Gum Woodland in the NSW North Coast and Sydney Basin Bioregions (E)	Associated with coastal areas subject to periodic flooding and in which standing fresh water persists for at least part of the year in most years. Typically occurs on silts, muds or humic loams in low-lying parts of floodplains, alluvial flats, depressions, drainage lines, backswamps, lagoons and lakes but may also occur in backbarrier landforms where floodplains adjoin coastal sandplains. Generally occur below 20 m elevation on level areas. They are dominated by herbaceous plants and have very few woody species. The structure and composition of the community varies both spatially and temporally depending on the water regime (OEH, 2017a).	Low	Low The majority of this vegetation is to be retained surrounding the forested wetland. Any potential impacts on the community will be assessed.
Hunter Valley Footslopes Slaty Gum Woodland in the Sydney Basin Bioregion (V)	Occurs on colluvial soils derived from Triassic sandstones and conglomerates that has covered the underlying Permian (OEH, 2017a).	Low Not recorded on or near the site.	Low Would not be impacted as it does not occur on or near the site.
Hunter Valley Vine Thicket in the NSW North Coast and Sydney Basin Bioregions (E)	Mainly occurs on rocky slopes on Carboniferous sediments and volcanics, occasionally with limestone (OEH, 2017a).	Low Not recorded on or near the site.	Low Would not be impacted as it does not occur on or near the site.
Kurri Sand Swamp Woodland in the Sydney Basin Bioregion (E)	Occurs on soils developed on poorly-drained Tertiary sand deposits that blanket Permian sediments (OEH, 2017a).	Low Not recorded on or near the site.	Low Would not be impacted as it does not occur on or near the site.
Littoral Rainforest in the New South Wales North Coast, Sydney Basin and South East Corner Bioregions (E, CE*)	Occurs on sand dunes and on soil derived from underlying rocks (OEH, 2017a).	Low Not recorded on or near the site.	Low Would not be impacted as it does not occur on or near the site.
Lower Hunter Spotted Gum Ironbark Forest in the Sydney Basin and NSW North Coast Bioregions (E)	Occurs principally on Permian geology in the central to lower Hunter Valley. The Permian substrates most commonly supporting the community belong to the Dalwood Group, the Maitland Group and the Greta and Tomago Coal Measures, although smaller areas of the community may also occur on the Permian Singleton and Newcastle Coal Measures and the Triassic Narrabeen Group (OEH, 2017a).	Low Not recorded on or near the site.	Low Would not be impacted as it does not occur on or near the site.
Lower Hunter Valley Dry Rainforest in the Sydney Basin and NSW North Coast Bioregions (V)	Mainly occurs on the Barrington footslopes along the northern rim of the Hunter Valley Floor, where it occupies gullies and steep hillslopes with south facing aspects	Low Not recorded on or near the site.	Low Would not be impacted as it does not occur on or near the site.
Lowland Rainforest on Floodplain in the New South Wales North Coast Bioregion	Lowland Rainforest on Floodplain generally occupies riverine corridors and alluvial flats with rich, moist silts often in subcatchments dominated by basic volcanic substrates.	Low Not recorded on or near the site.	Low Would not be impacted as it does not occur on or near the site.



Species / Population	Habitat Description & Known Populations	Likelihood of Occurrence	Potential for Impact
Quorrobolong Scribbly Gum Woodland in the Sydney Basin Bioregion (E)	Currently known from only a small area between Quorrobolong and Mulbring in the Cessnock local government area, but may also occur elsewhere within the Hunter Valley. The current known extent is about 70 hectares; the pre-European extent is estimated to have been only 160 hectares, reflecting the limited area of the sand deposit on which it occurs. Not known to occur within any conservation reserves (OEH, 2017a).	Low Not recorded on or near the site.	Low Would not be impacted as it does not occur on or near the site.

Notes: **V** = Vulnerable (BC Act), **V*** = Vulnerable (EPBC Act), **E** = Endangered (BC Act), **E*** = Endangered (EPBC Act), **CE** = Critically Endangered (BC Act), **CE*** = Critically, **M** = Migratory (EPBC Act)



5 IMPACT ASSESSMENTS

5.1 Avoidance and Minimisation

The following measures of avoidance have been or are required to be undertaken (and will be conditioned as part of any development consent);

- The stand of *E. tereticornis* will be retained.
- A pre-clearance survey should be undertaken to check the development footprint for nests
- Landscaping / habitat revegetation within the site is to use locally indigenous flora;
- All rubbish is to be removed from the site.
- Materials, plant and equipment must not be stored within the drip-lines of any retained trees.
- To prevent damage to vegetation outside the boundaries of the development footprint, vehicles and machinery would be restricted to the designated development area.

5.2 Biodiversity Conservation Act 2016

The site is not mapped as having high biodiversity value, in the Biodiversity Values Map and any vegetation removal associated with the proposal would be under the relevant clearing threshold (i.e. 0.25 ha). Ground cover species that has been assessed as non native as less than 15% is native.

An assessment under section 7.3 of the BC Act (i.e. five-part test) has been undertaken to identify whether the proposal will significantly impact on the following threatened species and TECs. The threatened species test of significance is used to determine if a development or activity is likely to significantly affect threatened species or ecological communities, or their habitats. It is applied as part of the Biodiversity Offsets Scheme entry requirements and for Part 5 activities under the Environmental Planning and Assessment Act 1979. In this case no 5 part test has been undertaken as assessment in section 4 of this report has shown any impact to threatened species and TECs would be low.

5.2.1 Biodiversity Offset Scheme

The BC Act sets out the Biodiversity Offsets Scheme (BOS) framework, which aims to avoid, minimise and offset impacts on biodiversity from development and clearing, and to ensure land that is used to offset impacts is secured in-perpetuity. The types of developments that the BOS applies to, include local development (under Part 4 of the



EP&A Act) that is likely to significantly affect threatened species / TECs, as determined by:

- BOS development threshold; or
- Assessment of Significance; or
- Development on Areas of Outstanding Biodiversity Value (AOBV) (note, at this stage AOBVs include areas of declared critical habitat under the *Threatened Species Conservation Act 1995*. This site does not contain any such areas).

The BOS development threshold has two elements:

- Area Criteria – whether the amount of native vegetation being cleared exceeds a threshold area set out below; and
- Biodiversity Values Map (BVM) – whether the impacts occur on an area mapped on the BVM.

Consideration of the site, under the BOS development threshold is discussed below.

5.2.2 Area Criteria

The threshold for vegetation in accordance with the BOS is 0.25 ha or more. The proposed development will remove < than 0.25ha. Thus, the proposal would not trigger the area clearing threshold of 0.25 ha. Refer to Appendix C for the Biodiversity Values Map and Threshold (BMAT) Report.

5.2.3 Biodiversity Values Map

The development footprint is not mapped as having high biodiversity value in the BVM. Refer to Figure 5-1 below.



5.2.4 BC Act Conclusion

The development footprint being less than 0.25 ha of clearing and would not trigger the BOS development threshold (based on the area criteria) and has not been mapped on the BV Map. Furthermore, the proposed development will not trigger a significant impact to any threatened species or threatened ecological communities.

Legend

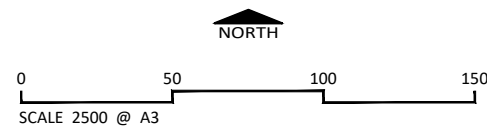
- ▭ Subject Site
- ▭ Building Envelope
- Eucalyptus tereticornis



Google
Nearmap

FIGURE X-X: SURVEY

CLIENT Client
SITE DETAILS No.186 Tocal Road Bolwarra Heights
DATE 20 July 2023



Firebird ecoSultants Pty Ltd
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5.3 SEPP – ‘Koala Habitat Protection’ 2021

Development assessment process—no approved koala plan of management for land

- (1) This clause applies to land to which this Policy applies if the land—
 - (a) has an area of at least 1 hectare (including adjoining land within the same ownership), and
 - (b) does not have an approved koala plan of management applying to the land.
- (2) Before a council may grant consent to a development application for consent to carry out development on the land, the council must assess whether the development is likely to have any impact on koalas or koala habitat.
- (3) If the council is satisfied that the development is likely to have low or no impact on koalas or koala habitat, the council may grant consent to the development application.
- (4) If the council is satisfied that the development is likely to have a higher level of impact on koalas or koala habitat, the council must, in deciding whether to grant consent to the development application, take into account a koala assessment report for the development.
- (5) However, despite subclauses (3) and (4), the council may grant development consent if the applicant provides to the council—
 - (a) information, prepared by a suitably qualified and experienced person, the council is satisfied demonstrates that the land subject of the development application—
 - (i) does not include any trees belonging to the koala use tree species listed in Schedule 2 for the relevant koala management area, or
 - (ii) is not core koala habitat, or
 - (b) information the council is satisfied demonstrates that the land subject of the development application—
 - (i) does not include any trees with a diameter at breast height over bark of more than 10 centimetres, or
 - (ii) includes only horticultural or agricultural plantations.

Koala Feed Tree species listed in Schedule 2 of the SEPP were recorded in the site, being: *Eucalyptus tereticornis* (Forest red gum), however the site is not Core Koala Habitat.

The Koala Habitat Protection SEPP 2021 defines Core Koala Habitat as:

- (a) *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 of the land as highly suitable koala habitat, or*
- (b) *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 field survey undertaken found no evidence of *P. cinereus* (Koala) occurring in the site. The isolated nature of the site, lack of scats and scratches and no recordings of Koala's suggest that the site would not constitute 'Core Koala Habitat' as defined by SEPP. No further provisions of the Koala Habitat Protection SEPP apply.



5.4 Environment Protection and Biodiversity Conservation Act 1999

The EPBC Act focuses Commonwealth interests on MNES. The MNES identified in the EPBC Act, which require assessment and approval by the Commonwealth, include:

- World Heritage Properties;
- National Heritage Places;
- Wetlands of International Importance (declared Ramsar wetlands);
- Listed threatened species and ecological communities;
- Listed migratory species;
- Commonwealth marine areas;
- Commonwealth land; and
- The Great Barrier Reef Marine Park.

The assessment and approval process applies to any action that has, will have, or is likely to have, a significant impact on MNES. The MNES and study area-specific responses are as follows.

World Heritage Areas

The study area is not a World Heritage area, and is not in close proximity to any such area.

National Heritage Places

The study area is not part of a National Heritage Place, and is not in close proximity to any such area.

Wetlands of International Importance (declared Ramsar wetlands)

The study area is not part of RAMSAR Wetland area, and is not in close proximity to any such area.

Listed Threatened Species and Ecological Communities

As detailed in previous Table 4.1, the following threatened species, listed under the EPBC Act, may potentially occur on the site:

Threatened Ecological Communities

- Hunter Floodplain Red Gum Woodland in the NSW North Coast and Sydney Basin Bioregions

The proposal is unlikely to have any significant impacts on any of the EPBC Act listed species.

Listed Migratory Species

The proposal will not have a significantly adverse effect on any Listed migratory species, as these do not occur within the region.



Commonwealth Marine Area

The proposal will not have a significantly adverse effect on any Commonwealth marine area, as there are no such marine areas occur within the region.

Commonwealth Land

The proposal will not have a significantly adverse effect on any Commonwealth lands, as there are no such lands occur within the region.

The Great Barrier Reef Marine Park

The proposal will not have a significantly adverse effect on any Great Barrier Reef Marine Park, as there are no such parks occur within the region.

EPBC Act Assessment Conclusion

Based on the above, it is considered the current proposal would be unlikely to impact on any MNES under the EPBC Act. Refer to Thus referral to the Commonwealth DoE is not considered necessary.



6 CONCLUSION/RECOMMENDATIONS

This assessment aims to recognise the relevant requirements of the *Environmental Planning and Assessment Act 1979* (EP&A Act), *Biodiversity Conservation Act 2016* (BC Act) and the Commonwealth *Environmental Protection and Biodiversity Conservation Act 1999* (EPBC Act).

A literature review and desktop research was combined with flora and fauna surveys, and a habitat assessment. Commonwealth, state and local government policies and guidelines formed the basis of project surveying and assessment methodology.

Assessments have acknowledged that the proposal will not have a significant impact on threatened species or TEC's and, provided that the recommendations below are adhered to, is unlikely to place any viable local populations / communities at risk of extinction.

It is concluded that the BOS is not required. It is also concluded that an EPBC Act Referral and approval of DEE is not required. Finally, the provisions of Koala Habitat Protection SEPP 2021 have also been considered and it is concluded that the site does not constitute 'Core Koala Habitat'.

The following recommendations should be considered as conditions for the development consent;

- Landscaping / habitat revegetation within the site is to use locally indigenous flora.
- All rubbish is to be removed from the site.
- Materials, plant and equipment must not be stored within the drip-lines of any retained trees.
- To prevent damage to vegetation outside the boundaries of the development footprint, vehicles and machinery would be restricted to the designated development area.



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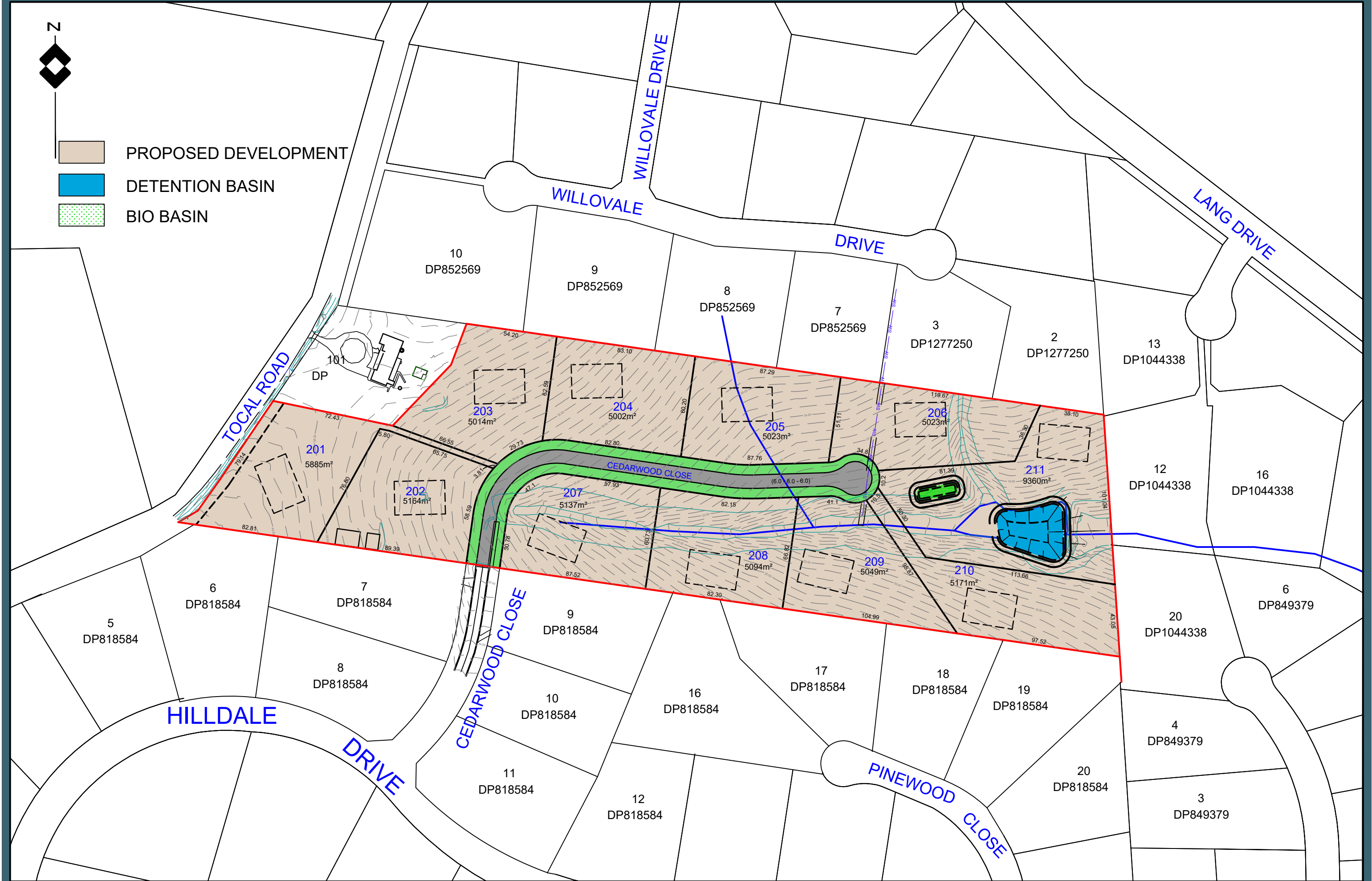
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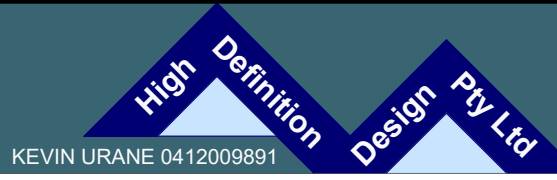
APPENDIX A SITE PLANS



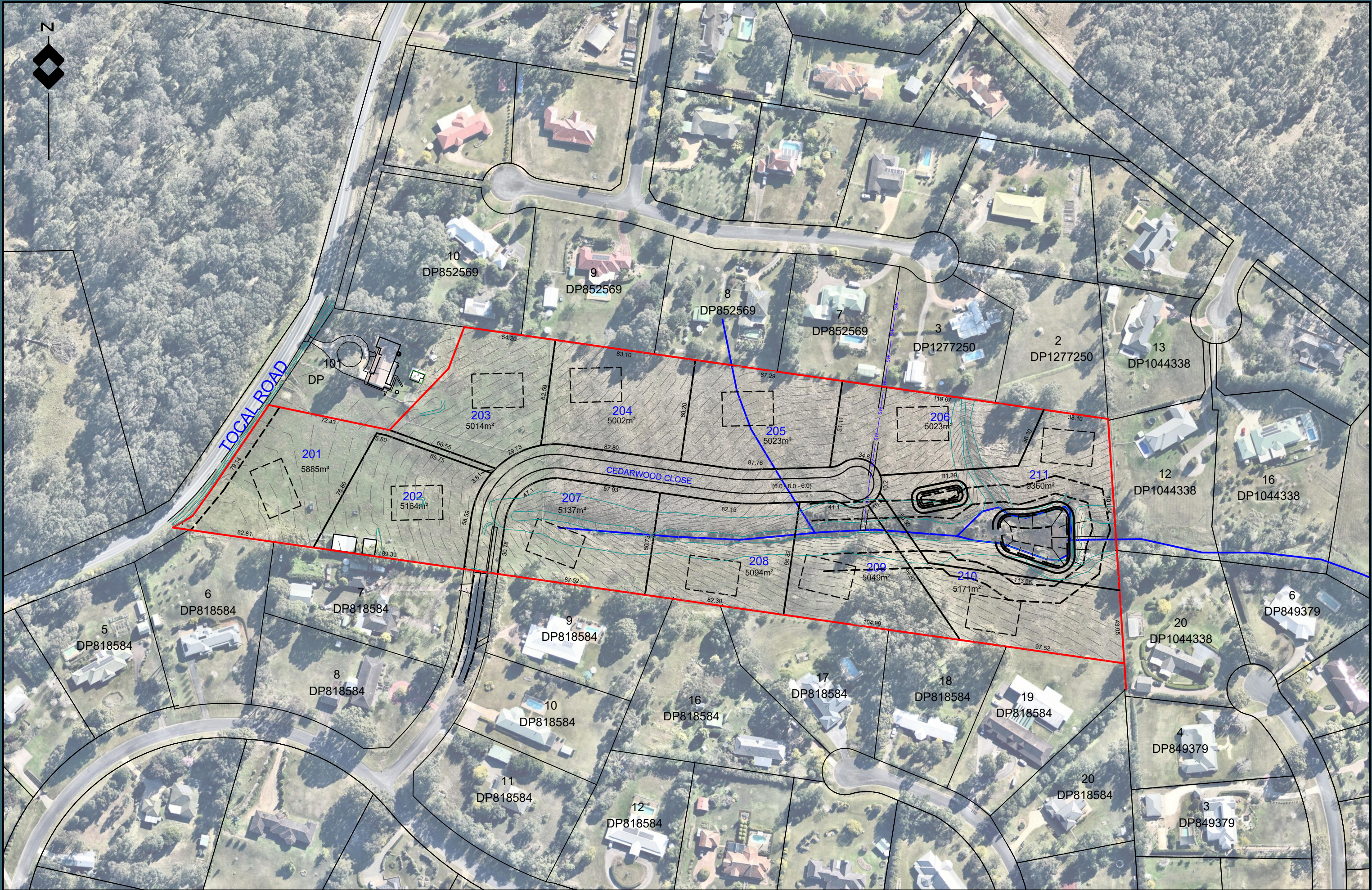
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- DETENTION BASIN
- BIO BASIN



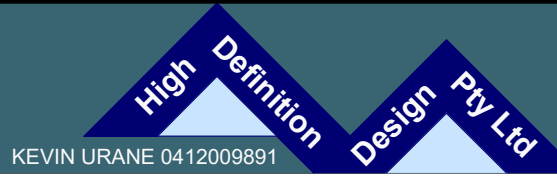
TITLE: PROPOSED SUBDIVISION OF LOT 102 (UNREGISTERED)
 OF LOT 21 DP998784
 186 TOTAL ROAD BOLWARRA



Date: 29.10.22		Scale: 1:2000 A3		Designed: KU		Project No: HD360	
Cad Ref: HD360 r5 LOT 102							
3	AMEND BOUNDARIES	KU	02.02.23	Drawing No		Revision	
5	REMOVE STAGE 1	KU	12.07.23	HD01		5	
4	AMEND LAYOUT	KU	02.06.23				
No	Amendment	Drawn	Date				



TITLE: PROPOSED SUBDIVISION OF LOT 102 (DP UNREGISTERED)
 OF LOT 21 DP998784
 186 TOTAL ROAD BOLWARRA
 AERIAL OVERLAY



Date:	29.10.22	Scale:	1:2000 A3	Designed:	KU	Project No	HD360	
Cad Ref:	HD360 r5	LOT	102			Drawing No	Revision	
3	AMEND BOUNDARIES			KU	15.02.23	HD03	5	
5	REMOVE STAGE 1			KU	12.07.23			
4	AMEND LAYOUT			KU	02.06.23			
No	Amendment			Drawn	Date			



APPENDIX B

EPBC PROTECTED MATTERS SEARCH

Listed Threatened Species

[Res

Species ID	Scientific Name	Common Name	Class	Simple Presence	Presence Text
4325	<i>Euphrasia arguta</i>	null	Plant	May	Species or species
81964	<i>Prasophyllum sp.</i>	a leek-orchid	Plant	May	Species or species
744	<i>Lathamus discolor</i>	Swift Parrot	Bird	Known	Species or species
856	<i>Calidris ferruginea</i>	Curlew Sandpiper	Bird	Known	Species or species
15763	<i>Rhodamnia rubescens</i>	Scrub Turpentine,	Plant	Known	Species or species
19162	<i>Rhodomirtus psidioides</i>	Native Guava	Plant	Known	Species or species
82338	<i>Anthochaera phrygia</i>	Regent Honeyeater	Bird	Known	Species or species
847	<i>Numenius</i>	Eastern Curlew, Far	Bird	Likely	Species or species
85104	<i>Phascolarctos cinereus</i>	Koala (combined	Mammal	Known	Species or species
11768	<i>Rhizanthella slateri</i>	Eastern Underground	Plant	May	Species or species
768	<i>Callocephalon</i>	Gang-gang Cockatoo	Bird	Known	Species or species
75184	<i>Dasyurus maculatus</i>	Spot-tailed Quoll,	Mammal	Known	Species or species
67093	<i>Melanodryas cucullata</i>	South-eastern Hooded	Bird	May	Species or species
254	<i>Petauroides volans</i>	Greater Glider (southern	Mammal	Likely	Species or species
4562	<i>Pterostylis gibbosa</i>	Illawarra Greenhood,	Plant	May	Species or species
1001	<i>Botaurus poiciloptilus</i>	Australasian Bittern	Bird	Known	Species or species
12533	<i>Cynanchum elegans</i>	White-flowered Wax	Plant	Likely	Species or species
942	<i>Erythroriorchis radiatus</i>	Red Goshawk	Bird	May	Species or species
77037	<i>Rostratula australis</i>	Australian Painted Snipe	Bird	Known	Species or species
19533	<i>Cryptostylis hunteriana</i>	Leafless Tongue-orchid	Plant	May	Species or species
5670	<i>Eucalyptus glaucina</i>	Slaty Red Gum	Plant	Known	Species or species
89289	<i>Notamacropus parma</i>	Parma Wallaby	Mammal	May	Species or species
66645	<i>Potorous tridactylus</i>	Long-nosed Potoroo	Mammal	May	Species or species
877	<i>Charadrius leschenaultii</i>	Greater Sand Plover,	Bird	May	Species or species
21407	<i>Tetradlea juncea</i>	Black-eyed Susan	Plant	Likely	Species or species
20307	<i>Syzygium paniculatum</i>	Magenta Lilly Pilly,	Plant	Known	Species or species
2119	<i>Caladenia tessellata</i>	Thick-lipped Spider-	Plant	Likely	Species or species
56148	<i>Eucalyptus</i>	Earp's Gum, Earp's Dirty	Plant	May	Species or species
186	<i>Pteropus poliocephalus</i>	Grey-headed Flying-fox	Mammal	Known	Roosting known to occur
86380	<i>Limosa lapponica</i>	Nunivak Bar-tailed	Bird	Known	Species or species
525	<i>Pycnoptilus floccosus</i>	Pilotbird	Bird	May	Species or species
64910	<i>Grevillea parviflora</i>	Small-flower Grevillea	Plant	Likely	Species or species

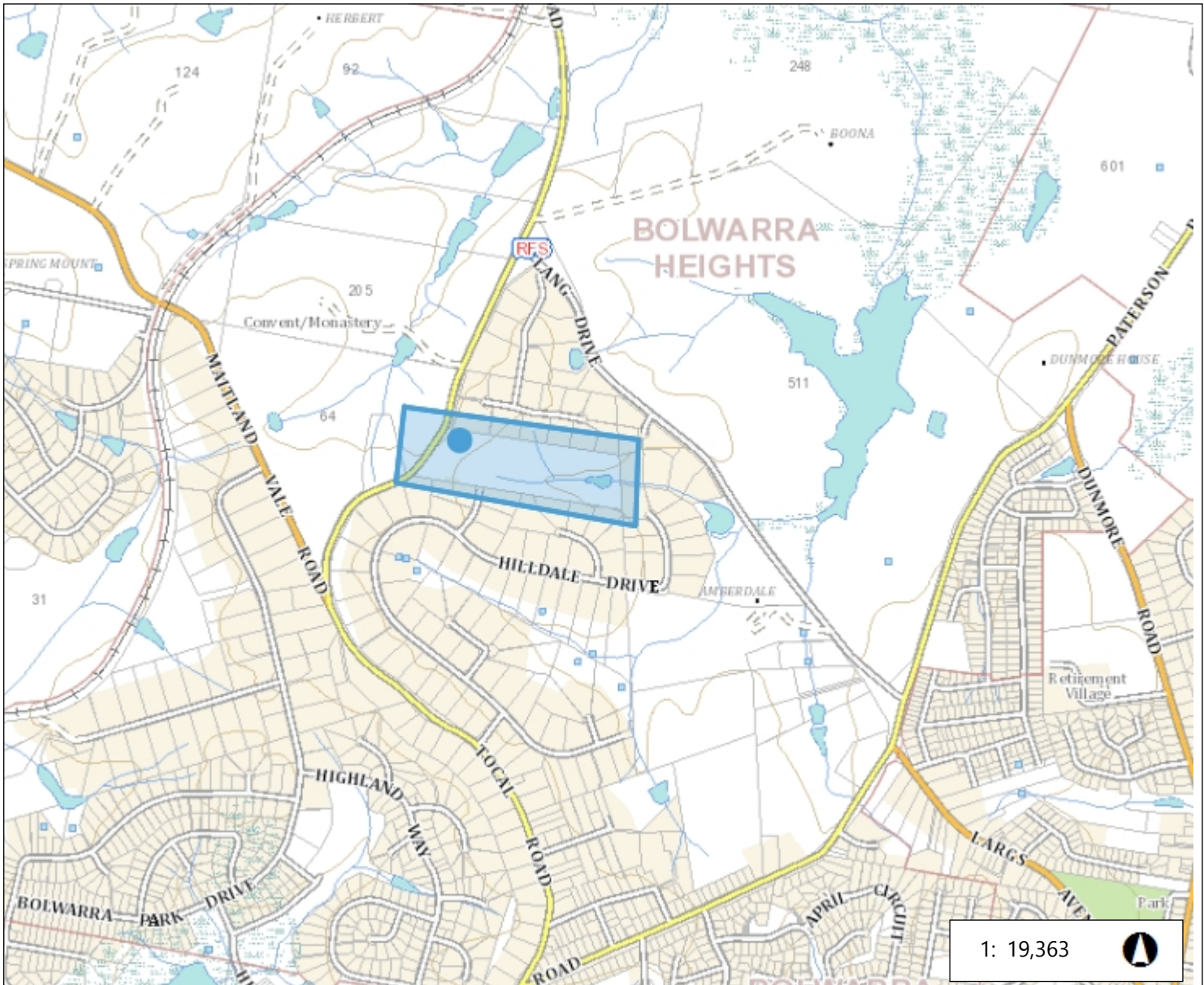
9338	<i>Arthraxon hispidus</i>	Hairy-joint Grass	Plant	May	Species or species
1649	<i>Delma impar</i>	Striped Legless Lizard,	Reptile	May	Species or species
87600	<i>Petaurus australis</i>	Yellow-bellied Glider	Mammal	Likely	Species or species
16845	<i>Pomaderris brunnea</i>	Rufous Pomaderris,	Plant	May	Species or species
14159	<i>Dichanthium setosum</i>	bluegrass	Plant	Likely	Species or species
1942	<i>Mixophyes balbus</i>	Stuttering Frog,	Frog	May	Species or species
15202	<i>Thesium australe</i>	Austral Toadflax,	Plant	Likely	Species or species
1870	<i>Litoria aurea</i>	Green and Golden Bell	Frog	Known	Species or species
470	<i>Grantiella picta</i>	Painted Honeyeater	Bird	Likely	Species or species
13132	<i>Rutidosis heterogama</i>	Heath Wrinklewort	Plant	Likely	Species or species
682	<i>Hirundapus caudacutus</i>	White-throated	Bird	Known	Species or species
67036	<i>Calyptorhynchus</i>	South-eastern Glossy	Bird	Likely	Species or species
5831	<i>Persicaria elatior</i>	Knotweed, Tall	Plant	Likely	Species or species
67062	<i>Climacteris picumnus</i>	Brown Treecreeper	Bird	Likely	Species or species
726	<i>Neophema</i>	Blue-winged Parrot	Bird	May	Species or species
929	<i>Falco hypoleucos</i>	Grey Falcon	Bird	Likely	Species or species
183	<i>Chalinolobus dwyeri</i>	Large-eared Pied Bat,	Mammal	Known	Species or species
59398	<i>Stagonopleura guttata</i>	Diamond Firetail	Bird	Known	Species or species
225	<i>Petrogale penicillata</i>	Brush-tailed Rock-	Mammal	May	Species or species
96	<i>Pseudomys</i>	New Holland Mouse,	Mammal	Likely	Species or species
8575	<i>Acacia bynoeana</i>	Bynoe's Wattle, Tiny	Plant	Likely	Species or species

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APPENDIX C BMAT REPORT

Biodiversity Values Map



983.7 0 491.83 983.7 Metres

WGS_1984_Web_Mercator_Auxiliary_Sphere

This map is a user generated static output from an Internet mapping site and is for reference only. Data layers that appear on this map may or may not be accurate, current, or otherwise reliable.

THIS MAP IS NOT TO BE USED FOR NAVIGATION

Legend

- Biodiversity Values that have been mapped for more than 90 days
- Biodiversity Values added within last 90 days

Notes
 © NSW Department of Planning and Environment

Biodiversity Values Map and Threshold Report

Results Summary

Date of Calculation	02/02/2023 12:32 PM	BDAR Required*
Total Digitised Area	136,289.7 sqm	
Minimum Lot Size Method	LEP	
Minimum Lot Size 10,000sqm = 1ha	5,000 sqm	
Area Clearing Threshold 10,000sqm = 1ha	2,500 sqm	
Area clearing trigger Area of native vegetation cleared	Unknown #	Unknown #
Biodiversity values map trigger Impact on biodiversity values map(not including values added within the last 90 days)?	no	no
Date of the 90 day Expiry	N/A	

*If BDAR required has:

- at least one 'Yes': you have exceeded the BOS threshold. You are now required to submit a Biodiversity Development Assessment Report with your development application. Go to <https://customer.lmbc.nsw.gov.au/assessment/AccreditedAssessor> to access a list of assessors who are accredited to apply the Biodiversity Assessment Method and write a Biodiversity Development Assessment Report
- 'No': you have not exceeded the BOS threshold. You may still require a permit from local council. Review the development control plan and consult with council. You may still be required to assess whether the development is "likely to significantly affect threatened species' as determined under the test in s. 7.3 of the Biodiversity Conservation Act 2016. You may still be required to review the area where no vegetation mapping is available.

Where the area of impact occurs on land with no vegetation mapping available, the tool cannot determine the area of native vegetation cleared and if this exceeds the Area Threshold. You will need to work out the area of native vegetation cleared - refer to the BMAT user guide for how to do this.

On and after the 90 day expiry date a BDAR will be required.

Disclaimer

This results summary and map can be used as guidance material only. This results summary and map is not guaranteed to be free from error or omission. The State of NSW and Department of Planning and Environment and its employees disclaim liability for any act done on the information in the results summary or map and any consequences of such acts or omissions. It remains the responsibility of the proponent to ensure that their development application complies will all aspects of the *Biodiversity Conservation Act 2016*.

The mapping provided in this tool has been done with the best available mapping and knowledge of species habitat requirements. This map is valid for a period of 30 days from the date of calculation (above).

Acknowledgement

I as the applicant for this development, submit that I have correctly depicted the area that will be impacted or likely to be impacted as a result of the proposed development.

Signature _____ Date: 02/02/2023 12:32 PM