ECOLOGICAL ASSESSMENT FOR PROPOSED SUBDIVISION – LOT 17 CRESCENT HEAD ROAD

NOVEMBER 2021

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Revision History

Revision	Date	Prepared By	Reviewed By	Description
0	3/11/2021	Iris Bleach	Will Steggall	Final Report

Authorisation

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1. BACKGROUND INFORMATION

1.1 Site Description and Location

The subject land comprises Lot 17 DP818185 located on Crescent Head Road. The property is 8.6ha in area and has an existing dwelling in the northeast. Land in the surrounding area comprises rural properties, with Maria National Park adjoining the western boundary. The location of the site is shown in Figure 1.

1.2 Development Proposal

The proposal is to subdivide the property into two Lots and establish a building envelope, APZ and new driveway access on the new Lot. The building envelope and driveway has been located within a cleared area, thus will only require the removal of native and exotic grassland. The development layout plan is shown in Figure 2.

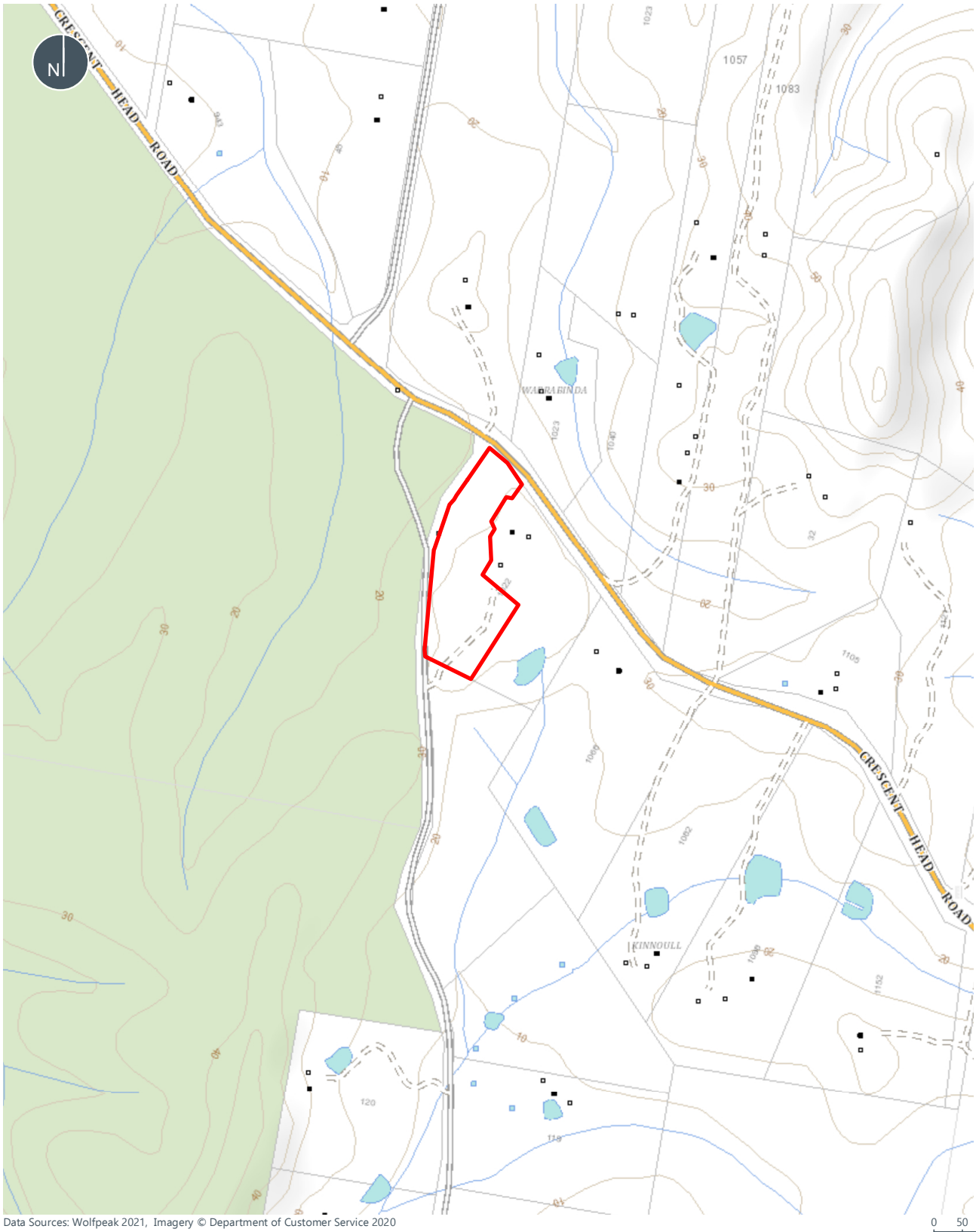
Photos of the site and location of the development footprint are shown in Photos 1-2.

1.3 Key Definitions

The development footprint is defined as the area of land directly affected by the development comprising the building envelope and driveway. This covers an area of 0.2ha. The subject site comprises the whole of the proposed new Lot which is 3.9ha. The study area is land within 20 metres of the subject site. The locality is land within a ten-kilometre radius of the site.

Photo 1: View of the development envelope

Photo 2: Location of the driveway access to Beranghi Road in canopy gap



Data Sources: Wolfpeak 2021, Imagery © Department of Customer Service 2020

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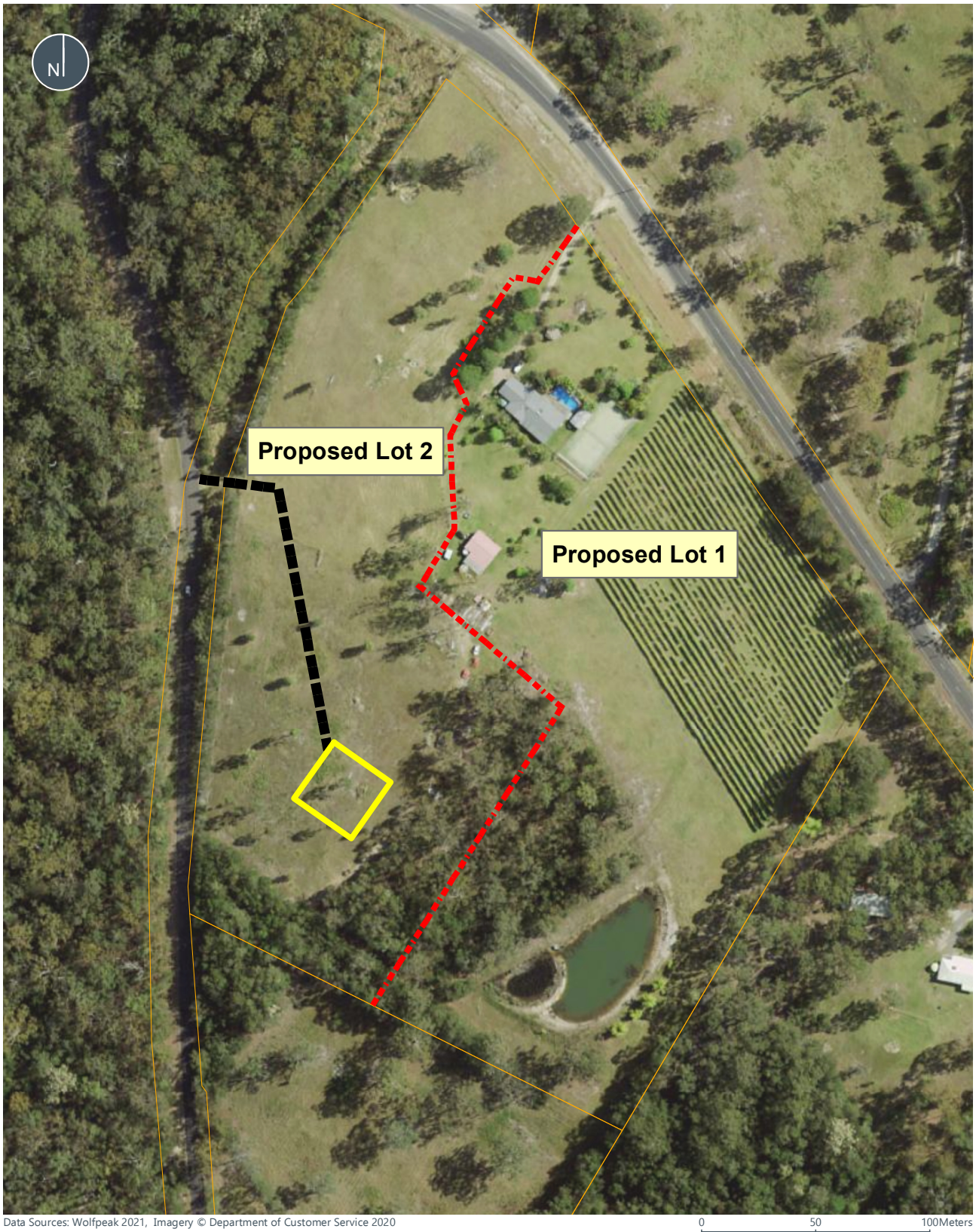
GDA2020 MGA Zone 56 1:10,000 @ A4

Legend

Subject Site

Figure 1 | Locality



Data Sources: Wolfpeak 2021, Imagery © Department of Customer Service 2020

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Legend

- Driveway
- New Lot Boundary
- Building Enveope
- Cadastral

Figure 2 | Development Layout Plan

2. METHODS

2.1 Desktop Study and Literature Review

A desktop study was carried out prior to the field survey to gather relevant information and data. The following databases and Geographic Information System (GIS) layers were searched/obtained:

- Department of Agriculture, Water and Environment Protected Matters Search Tool (DAWE 2021).
- NSW BioNet/Atlas of Wildlife (DPIE 2021a).
- NSW Threatened Biodiversity Data Collection (OEH 2019b).
- Coastal Management SEPP Map Viewer (DPE 2021).
- Coastal Quaternary Geology – North and South Coast of NSW digital data layer (Troedson & Hashimoto 2008).

2.2 Flora Survey

The flora survey consisted of the following:

- Identification, description and mapping of the vegetation communities on the site.
- Searches for threatened species listed under the Biodiversity Conservation Act 2016 (BC Act) and Environment Protection and Biodiversity Conservation Act 1999 (EPBC Act) undertaken in accordance with the NSW Guide to Surveying Threatened Plants (OEH 2016).
- Identification, mapping and condition assessment of any Endangered Ecological Communities listed under the BC Act, and EPBC Act.

Flora surveys were carried out by WolfPeak's Senior Ecologist on the 29th October 2021.

2.2.1 Vegetation Classification and Mapping

The vegetation communities were described from data collected during transect surveys. The site vegetation communities are classified as per the NSW Plant Community Type (PCT) Classification.

Identification of possible EECs was based on the data collected in the survey and review of the relevant listings on the Department of Planning, Industry and Environment (DPIE) website (www.environment.nsw.gov.au) and Department of Agriculture, Water and Environment MNES SPRAT website (DAWE 2021).

Plant species were identified to species or subspecies level and nomenclature conforms to that currently recognised by the Royal Botanic Gardens via PlantNET (Royal Botanic Gardens 2021).

2.2.2 Threatened Flora Species

2.2.2.1 Searches

Searches for the locally recorded threatened flora were carried out over the survey period.

Threatened plant searches consisted of undertaking walking transects throughout the study area targeting habitat most likely to support threatened flora. Opportunistic searches for threatened flora species were also undertaken during other activities. Given the small site area, the combination of these methods allowed a thorough search of its entire extent.

2.2.3 Potential Occurrence Assessment

Potential occurrence assessment of threatened flora species is provided in Appendix B. This section assesses threatened species for their potential to occur on site.

2.3 Fauna Survey

2.3.1 Habitat Evaluation

Habitats on and adjacent to the subject site were defined and assessed according to parameters such as:

- Structural and floristic characteristics of the vegetation
- Degree and extent of disturbance
- Availability of water
- Size and abundance of tree hollows and fallen timber
- Surface rocks and outcrops
- Vegetation connectivity
- Presence of mistletoe, nectar, gum, seed and sap sources.

2.3.2 Secondary Evidence Searches

Habitat searches involved inspection and assessment of potentially suitable habits for potentially occurring threatened species: Searches generally involved:

- Inspection under fallen timber, rocks and debris
- Inspection of dense vegetation, aquatic habitats and leaf litter for frogs and reptiles
- Inspection of trees for Koalas and claw markings
- Searches for Glider sap incisions
- Searches for nests and dreys
- Searches for scats, owl regurgitation pellets, tracks and feeding signs

2.3.3 Direct Observation

This involved passive and active observation of any fauna on or directly adjacent to the subject site during survey activities. Birds and reptiles were the main focus of the surveys. Searches for Koalas in the crowns of trees over the site were also undertaken. A total of two hours was spent on this activity over one day in conjunction with the overall site survey.

2.3.4 Hollow-bearing Tree and Koala Food Tree Survey

Searches for hollow-bearing trees and preferred Koala food trees were carried out over the development footprint.

3. RESULTS

3.1 Desktop Search Results

3.1.1 Locally Recorded Threatened Species

The following table lists the threatened flora and fauna species identified in database and literature searches of the locality.

Table 1: Locally recorded threatened species

Common Name	Scientific Name	BC Act	EPBC Act	Source
Flora				
Sand Spurge	*Chamaesyce psammogeton*	E	-	NSW Bionet
White-flowered Wax Plant	*Cynanchum elegans*	E	E	NSW Bionet
-	*Maundia triglochinoides*	V	-	NSW Bionet
Coast Headland Pea	*Pultenaea maritima*	V	-	NSW Bionet
Scrub Turpentine	*Rhodamnia rubescens*	CE	-	NSW Bionet
Native Guava	*Rhodomyrtus psidioides*	CE	-	NSW Bionet
Silverbush	*Sophora tomentosa*	E	-	NSW Bionet
Austral Toadflax	*Thesium australe*	V	V	NSW Bionet
Amphibians				
Green and Golden Bell Frog	*Litoria aurea*	E	V	NSW Bionet
Birds				
Dusky Woodswallow	*Artamus cyanopterus cyanopterus*	V	-	NSW Bionet
Glossy Black-Cockatoo	*Calyptorhynchus lathami*	V	-	NSW Bionet
White-eared Monarch	*Carterornis leucotis*	V	-	NSW Bionet
Varied Sittella	*Daphoenositta chrysoptera*	V	-	NSW Bionet

Common Name	Scientific Name	BC Act	EPBC Act	Source
Black-necked Stork	*Ephippiorhynchus asiaticus*	E	-	NSW Bionet
Little Lorikeet	*Glossopsitta pusilla*	V	-	NSW Bionet
White-bellied Sea-Eagle	*Haliaeetus leucogaster*	V	-	NSW Bionet
White-throated Needletail	*Hirundapus caudacutus*	-	V	NSW Bionet
Comb-crested Jacana	*Irediparra gallinacea*	V	-	NSW Bionet
Swift Parrot	*Lathamus discolor*	E	CE	NSW Bionet
Square-tailed Kite	*Lophoictinia isura*	V	-	NSW Bionet
Eastern Osprey	*Pandion cristatus*	V	-	NSW Bionet
Wompoo Fruit-Dove	*Ptilinopus magnificus*	V	-	NSW Bionet
Rose-crowned Fruit-Dove	*Ptilinopus regina*	V	-	NSW Bionet
Masked Owl	*Tyto novaehollandiae*	V	-	NSW Bionet
Mammals				
Spotted-tailed Quoll	*Dasyurus maculatus*	V	E	NSW Bionet
Eastern False Pipistrelle	*Falsistrellus tasmaniensis*	V	-	NSW Bionet
Eastern Coastal Free-tailed Bat	*Micronomus norfolkensis*	V	-	NSW Bionet
Little Bent-winged Bat	*Miniopterus australis*	V	-	NSW Bionet
Large Bent-winged Bat	*Miniopterus orianae oceanensis*	V	-	NSW Bionet
Southern Myotis	*Myotis macropus*	V	-	NSW Bionet
Eastern Long-eared Bat	*Nyctophilus bifax*	V	-	NSW Bionet
Greater Glider	*Petauroides volans*	-	V	NSW Bionet
Squirrel Glider	*Petaurus norfolcensis*	V	-	NSW Bionet

Common Name	Scientific Name	BC Act	EPBC Act	Source
Koala	*Phascolarctos cinereus*	V	V	NSW Bionet
Grey-headed Flying-fox	*Pteropus poliocephalus*	V	V	NSW Bionet
Yellow-bellied Sheathtail-bat	*Saccolaimus flaviventris*	V	-	NSW Bionet
Greater Broad-nosed Bat	*Scoteanax rueppellii*	V	-	NSW Bionet
Common Blossom-bat	*Syconycteris australis*	V	-	NSW Bionet
Eastern Cave Bat	*Vespadelus troughtoni*	V	-	NSW Bionet
Key: Critically Endangered (CE), Endangered (E), Vulnerable (V), Migratory (M).				

3.1.2 Matters of National Environmental Significance

The results of the MNES search are provided in Section 6. The search was undertaken using a ten-kilometre search radius from the subject site.

3.2 Flora Survey Results

3.2.1 Site Vegetation Communities

Vegetation within the study area has been disturbed in the past as a result of logging and clearing and grazing. The development footprint comprises native and exotic grassland with scattered trees and dry sclerophyll open forest occurs in the south of the subject site.

Table 2 and 3 provide detailed descriptions of the vegetation communities identified on site. See photos following.

3.2.1.1 Dry Sclerophyll Open Forest

Table 2: Vegetation community description

Vegetation Community	Dry Sclerophyll Open Forest
NSW Plant Community Type (PCT)	No 1135: Scribbly Gum - Needlebark Stringybark heathy open forest of coastal lowlands of the northern NSW North Coast Bioregion
EEC Status	Not an EEC
Location and Area	Located in the south and south-east ends of the site.

Description	**Canopy:** *Structure and Species*: The canopy layer is dominated by Needlebark Stringybark (*Eucalyptus planchoniana*), Scribbly Gum (*Eucalyptus signata*) and White Stringybark (*Eucalyptus globoidea*). Height to 25m. **Understorey/shrub layer:** *Structure and Species:* Open layer of shrubs and small trees present including Black Oak (*Allocasuarina littoralis*), Broad-leaved Geebung (*Persoonia levis*) and Notched Bush Pea (*Pultenaea retusa*). **Ground layer:** *Structure and Species*: A dense layer (95% cover) comprising native grasses including Kangaroo Grass (*Themeda triandra*), Wiry Panic *(Entolasia stricta)* and Blady Grass *(Imperata cylindrica*).
Condition	Good condition with very few weeds present.

Photo 3: Dry Sclerophyll Open Forest

3.2.1.2 Mixed Native and Exotic Grassland with Scattered Trees

Table 3: Vegetation community description

Vegetation Community	Mixed Native and Exotic Grassland with Scattered Trees
NSW Plant Community Type (PCT)	NA
EEC Status	Not an EEC
Location and Area	Occurs across two-thirds of the site in the northern and central area of the site.
Description	a) **Canopy:** Has a few scattered trees including Willow Bottlebrush (*Callistemon salignus)*, Pink Bloodwood (*Corymbia intermedia*) and White Stringybark (*Eucalyptus globoidea).* Height ranges from 15 – 20 metres with canopy cover of approximately 5%. b) **Understory:** Absent c) **Shrub layer:** Occasional shrubs present, however are supressed by slashing. Species include Geebung, Notched Bush Pea, Hibbertia and Mick Olive. **d) Ground layer:** *Structure and Species:* Consists of a mix of native and exotic and forbs including Wiry Panic, Kangaroo Grass, Rock Fern, Slelder Rice Flower, Parramatta Grass, South African Pigeon Grass, Catsear, White Clover, Fireweed and Paspalum. Regularly mown and has a height of about 5-30cm.
Condition	This community is generally highly modified with various levels of weed cover. Low biodiversity value.

Photo 4: Grassland community with scattered trees in background

3.2.2 Threatened Flora

3.2.2.1 Site Survey and Potential Occurrences

No threatened flora species were detected on site during the field survey.

Searches of relevant literature and databases (DPIE 2021) found records of 8 threatened flora species in the locality. The Protected Matters Search Tool also produced a list of additional potential occurrences in the locality. Given the modified habitats on site and lack of nearby records, no threatened flora species are considered to be potential occurrences.

3.2.3 Endangered Ecological Communities and Populations

3.2.3.1 Biodiversity Conservation Act 2016

Review of the site vegetation community has determined that it does not qualify as an EEC listed under the BC Act.

3.2.3.2 Environment Protection and Biodiversity Conservation Act 1999

Review of the site vegetation has determined that it does not qualify as an EEC listed under the EPBC Act.

3.3 Fauna and Habitat Survey Results

3.3.1 Habitat Evaluation

The following table summarises the survey findings for habitat within the development footprint and the constraints/opportunities it provides for potentially occurring threatened species.

Table 4: Habitat constraints/opportunities for threatened species

Habitat/Attribute Type	Development footprint	Potential Values to Threatened Species Occurrence
Groundcover	Groundcover comprises managed lawns and weeds with some areas dominated by native species.	No significance for any threatened species.
Logs and Debris	Absent	No significance for any threatened species.
Hollows	Absent in development footprint. A few occur ion adjoining bushland.	Development footprint has no potential nesting/denning habitat for hollow-obligate species.
Nectar Sources	Some trees within the subject site would provide a minor nectar source.	Eucalypts in study area could potentially be used when flowering by Grey-headed Flying Fox and Little Lorikeet.
Preferred Koala use Trees	No preferred Koala food trees occur in the development footprint. Tallowwood and Scribbly Gum occur in the adjoining bushland.	No preferred habitat for the Koala in development footprint but occurs on the site.
Allocasuarinas	Absent in the development footprint but very common in adjoining bushland.	No potential foraging resource for the Glossy-black Cockatoo in footprint but good habitat in adjoining forested areas.
Aquatic habitats	Absent	N/A
Fruiting species	Absent	No fruiting resource for fruvigorous birds.
Caves, cliffs, culverts, bridges	Absent	Absence of potential roosts for obligate Microchiropteran bats.

Habitat/Attribute Type	Development footprint	Potential Values to Threatened Species Occurrence
Habitat Linkages	The vegetation in the south of the subject site extends offsite and links to large areas of forest, however is bisected by an existing road. Scattered trees in the development footprint have poor connectivity to adjacent habitat for terrestrial and arboreal species.	Site would be accessibly by the Koala, however it would have to cross roads, cleared land and residential areas. Highly mobile species (e.g. birds and bats) would be able to access the site vegetation.

3.3.2 Observed Fauna

The main fauna species detected during the survey consisted of common bird species including Red Wattlebird, Scarlet Honeyeater, Sacred Kingfisher, Rufous Whistler and Rainbow Lorikeet.

The following table lists the fauna species recorded during the field survey.

Table 5: Fauna species detected

Common Name	Scientific Name	Method of Detection
Birds		
Red Wattlebird	*Anthochaera carunculata*	HC
Yellow-faced Honeyeater	*Caligavis chrysops*	HC
Black-faced Cuckoo-shrike	*Coracina novaehollandiae*	HC
Australian Raven	*Corvus coronoides*	HC
White-throated Gerygone	*Gerygone olivacea*	HC
Australian Magpie	*Gymnorhina tibicen*	HC
Superb Fairy-wren	*Malurus cyaneus*	Vis
Scarlet Honeyeater	*Myzomela sanguinolenta*	HC
Golden Whistler	*Pachycephala pectoralis*	HC

Common Name	Scientific Name	Method of Detection
Rufous Whistler	*Pachycephala rufiventris*	HC
Noisy Friarbird	*Philemon corniculatus*	HC
Grey Fantail	*Rhipidura albiscapa*	HC
Weebill	*Smicrornis brevirostris*	HC
Sacred Kingfisher	*Todiramphus sanctus*	HC
Rainbow Lorikeet	*Trichoglossus haematodus*	HC

Key: Vulnerable under BC Act (bold), Vulnerable under EPBC Act (^), Introduced species (*)

Observation Key: PIR Camera (Cam), Drey (Dr), Heard Calling (HC), Feeding Signs (FS), Scats (SC), Visual Observation (Vis).

3.3.3 Potential Occurrence Assessment

Review of literature and databases found 3 records of threatened fauna species in the locality. No threatened species were recorded on site during the survey. In consideration of the habitats present on site, the following species are considered to be potentially occurring on the subject site:

- Koala
- Powerful Owl
- Masked Owl
- Square-tailed Kite
- Little Lorikeet
- Glossy Black Cockatoo
- Grey-headed Flying Fox
- Large Bent-wing Bat
- Little Bent-wing Bat
- Greater Broad-nosed Bat
- Yellow-bellied Sheathtail Bat
- Eastern Free-tail Bat

4. IMPACT ASSESSMENT AND MITIGATION

4.1 Avoidance and Minimisation

The development will aim to minimise impacts on native vegetation and habitat by locating the development footprint in an existing cleared area. The access road will also be aligned to avoid removal of trees. Any new fences or other infrastructure associated with the development is to avoid tree removal.

4.2 Direct Impacts

Due to the avoidance and minimisation measures applied to the proposal, direct impacts will be very limited. Establishing the development will only require the removal of mixed native and exostic grassland.

One regrowth White Stringybark (*Eucalyptus globoidea)* of approximately 18m height and 35cm trunk diameter occurs very close to the development envelope and is recommended to be retained.

4.3 Indirect Impacts

The following potential impacts may be associated with the proposal:

- **Injury/mortality during clearing**: Unlikely to be a risk as no hollow trees will be removed.
- **Inadvertent impacts on retained or adjoining vegetation:** If not properly demarcated and protected, it is possible that retained trees and vegetation adjacent to the construction site could be impacted by clearing, earthworks and construction vehicle movements. Recommendations are provided to reduce this risk.
- **Erosion and sedimentation**: Standard mechanisms and controls should ensure the prevention of erosion and sedimentation during construction and post-development and such impacts do not extend beyond the development footprint.
- **Predation of Native Fauna**: New owners may wish to keep cats and dogs which can prey on native wildlife. Recommendations are provided to keep pets restricted to yard and not roam adjacent bushland.
- **Weed invasion:** Weeds currently occur throughout the site. The proposal is unlikely to introduce any new weed species, however may increase the potential for spread of weeds within the site through vegetation modification.
- **Noise and vibration:** Currently, noise is derived from traffic and nearby rural areas, hence fauna are likely to have some tolerance to anthropogenic noise. During the development's establishment, noise would be highest during construction, but limited to daytime hence would only impact diurnal birds and mammals. Post-development, noise levels are expected to return to levels which occurred prior to construction.

4.4 Mitigation Measures

4.4.1 Avoiding Vegetation Removal

Vegetation removal is to be limited to the minimum extent required to establish the development and not greater than what has been assessed in this report. Any new roads, fencelines or infrastructure is to avoid removal of mature trees and native vegetation.

4.4.2 Clearing Measures

The area to be cleared/modified should be clearly marked (e.g. with stakes and bunting) before clearing in order to prevent inadvertent clearance beyond what is required and has been assessed. Trees to be removed should be clearly marked with flagging tape or spray paint.

Site induction is to specify that no clearing is to occur beyond the marked area, and vehicles are only to be parked in designated areas. Similarly, any materials are to be stored outside the retained vegetation. Clearing and earthworks is to avoid damage to root zones of the retained trees.

4.4.3 Domestic Pets

Cats and dogs should be restrained to the vicinity of the residence as far as practicable to avoid potential injury to native fauna. Ideally, dogs should be restricted within a fence which prevents fauna access, but permits their escape (eg by a wooden post).

4.4.4 Sedimentation and Erosion Controls

Standard soil and sedimentation control measures will be required throughout the clearing and construction works to ensure that habitats on the site and in the study area, as well as any downstream aquatic habitats are not substantially affected by erosion and sedimentation.

4.4.5 Weed control

Disturbance of the sites soils during vegetation removal and construction has potential to encourage weed invasion. Hence, it is recommended that:

- Disturbance of vegetation and soils on the site should be limited to the areas of the proposed work and should not extend into adjacent vegetation;
- To assist in reducing the spread of exotic species, all vehicles and machinery are to be inspected for the presence of weeds prior to entering the site;
- Any new weed infestations that arise within the works area during construction are to be treated and removed.

5. KEMPSEY KPOM ASSESSMENT

5.1 Site Classification

The Comprehensive Koala Plan of Management for the Eastern Portion of Kempsey Shire LGA (CKPoM) is a comprehensive Koala plan of management covering the whole of the eastern part of the Kempsey Shire Local Government Area. The Koala habitat mapping provided in the CKPoM shows that the subject site is mapped as 'Unknown'. This map is shown in Figure 3.

Field survey determined that the cleared areas of the site where the development footprint will be located do not contain preferred Koala food trees, and therefore would be classified as 'Other'.

Forest vegetation in the south of the site contains some preferred Koala food trees such as Tallowwood, Scribbly Gum and White Stringybark and would fall into the category of 'Secondary A' habitat.

No evidence of the Koala was identified on the site during the field survey.

5.2 Compliance Assessment

In accordance with Section 4.2 of the CKPoM, the proposed development footprint is on land that does not contain preferred Koala Habitat. No further assessment under the CKPoM is required.

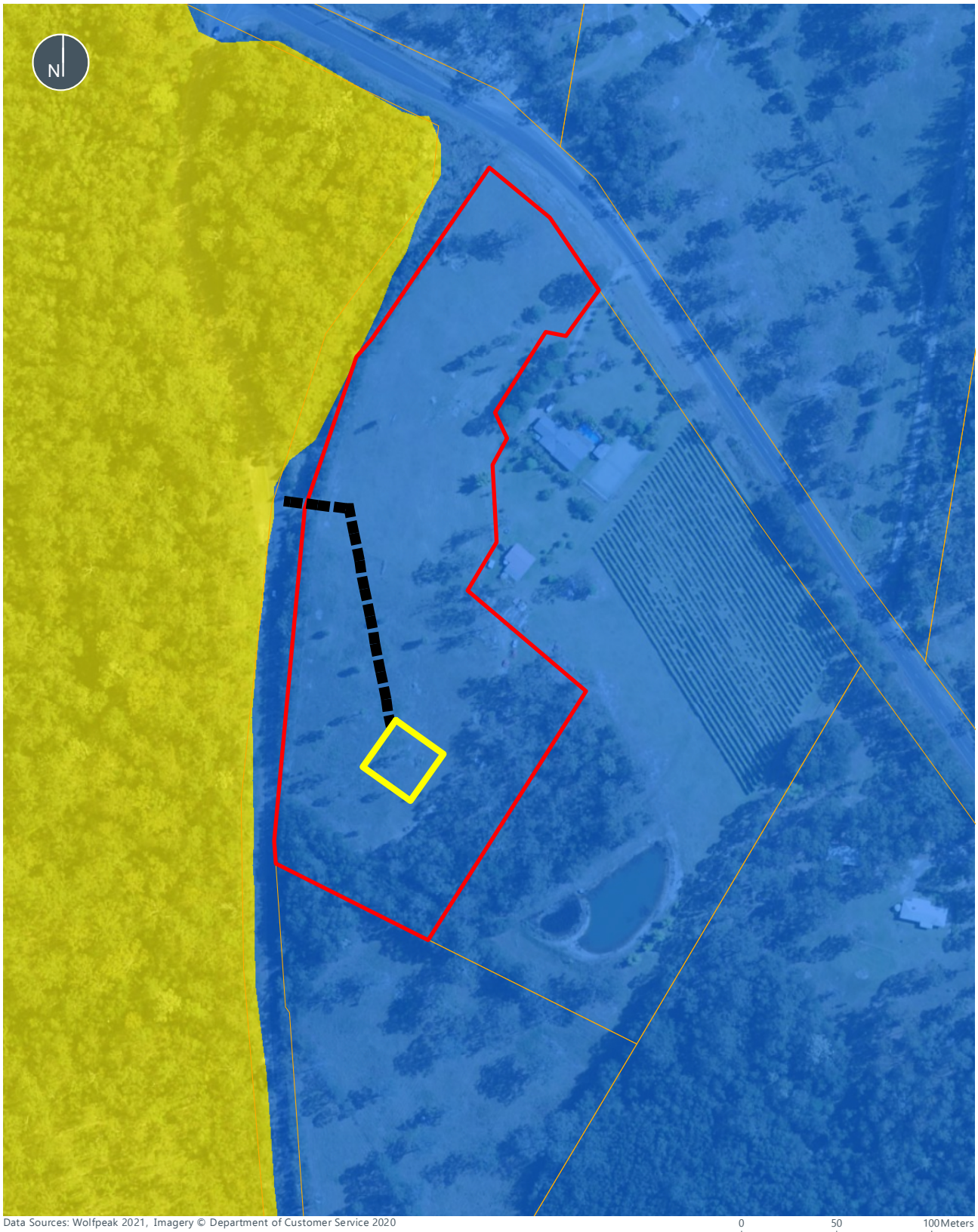

Figure 3 | Preferred Koala Habitat Mapping

6. TESTS OF SIGNIFICANCE

6.1 Biodiversity Conservation Act 2016 Test of Significance

6.1.1 Assessment Pathways

Under the NSW Biodiversity Conservation Act 2016 and Biodiversity Conservation Regulation 2017, Part 4 developments under the Environmental Planning & Assessment Act 1979 (other than State Significant Development) are assessed to determine if they trigger the Biodiversity Offset Scheme (BOS). For developments which trigger the BOS, a Biodiversity Development Assessment Report (BDAR) will be required. This assesses the impact using the Biodiversity Assessment Method (BAM) and determines the offset obligations required.

There are three triggers to the BOS:

- **Clearing Threshold** – Section 7.1 of the Biodiversity Regulation 2017 sets out a clearing threshold based on minimum Lot size.
- **Biodiversity Values Map** – The Biodiversity Values Map provides mapping of areas of high biodiversity value such as riparian zones, critical habitat for threatened species and Core Koala Habitat. Any impact on a mapped area will trigger the BOS.
- **Significant Impact as determined by Test of Significance** - Developments which fall below the clearing threshold and do not impact on sensitive biodiversity values must be assessed under the new five-part test of significance. If the test determines that a significant impact is likely, a BDAR will be required.

6.1.2 Assessment Pathway Determination

The site is not mapped on the Biodiversity Values Map. The Biodiversity Offset and Threshold Tool Map is provided in Appendix B. The clearing threshold for the development site is 0.5ha. Analysis of the required clearing for the development has determined that less than 0.2ha of native vegetation removal is required which is below the threshold.

The development has been assessed via the Test of Significance in Section 7.1.3 below.

6.1.3 Test of Significance

The Test of Significance is prescribed in Part 7, Division 1, Section 7.2 of the Biodiversity Conservation Act 2016. The purpose of the Test of Significance is to determine whether a proposed development or activity is likely to significantly affect threatened species or ecological communities, or their habitats.

If it is determined that a development or activity will have a significant effect, a Biodiversity Development Assessment Report will be required if the proponent so elects, or if not, a Species Impact Statement must be prepared.

The Test of Significance has been prepared in consideration of the Threatened Species Test of Significance Guidelines (OEH 2018).

6.1.4 Entities to be Assessed

The Koala was recorded on site and automatically requires assessment. The potential occurrence assessments have determined that the following species are considered to be potentially occurring in the study area and are subject to the Test of Significance:

- Koala
- Powerful Owl;
- Masked Owl;
- Square-tailed Kite
- Little Lorikeet
- Glossy Black Cockatoo
- Grey-headed Flying Fox;
- Large Bent-wing Bat;
- Little Bent-wing Bat;
- Greater Broad-nosed Bat;
- Yellow-bellied Sheathtail Bat;
- Eastern Free-tail Bat;

6.1.5 Responses

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 proposal is for the subdivision of a rural property into two lots and the establishment of a building envelope, APZ and new driveway access. Areas of native and exotic grassland will require removal. One secondary Koala food tree (White Stringybark) occurs in proximity to the envelope, but this is recommended to be retained. No hollow-bearing trees or other habitat features require removal. Connectivity across the site will not be reduced. There is some potential for minor indirect impacts such as noise, edge effects and further weed invasion. Cats and dogs may also be kept on the new property, however this is not a new threat. Predation of wildlife could be increased if pets are not restrained to yards.

No preferred Koala food trees will require removal, and the works would not reduce local connectivity for Koalas. Given that no Koalas have been recorded on site and no KFTs will require removal, the development is unlikely to have any significant adverse impacts on the local population.

As such, removal of this habitat would be highly unlikely to place a viable population of the subject species at risk of extinction.

b) In the case of an endangered ecological community or critically endangered ecological community, whether the proposed development or activity:

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

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

No EECs are present on the subject site.

c) In relation to the habitat of a threatened species or ecological community:

(iii) The extent to which habitat is likely to be removed or modified as a result of the proposed development or activity, and

(iv) 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

(v) 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.

Habitat to be removed comprises approximately 0.2ha of native and exotic grassland which would not be of importance to any threatened species.

The site offers potential habitat for some threatened fauna species however given the extent of modification and limitations of the site habitats, these species would be reliant on adjacent and nearby habitats to fulfil their lifecycle requirements and the site would not be of any key importance.

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

The proposed development will not directly or indirectly affect an area of outstanding biodiversity value.

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

A Key Threatening Process (KTP) is defined as a process that threatens, or may have the capability to threaten, the survival or evolutionary development of species, populations or ecological communities.

The following table lists the relevant KTP's listed under the BC Act and whether the proposed activity is recognised a threatening process.

Table 6: Key Threatening processes

KTP	Extent/manner which proposal affects KTP	Mitigable?
Clearing of native vegetation	Loss of native grassland for site development.	N/A
Human induced climate change	Use of fossil fuels during civil and construction works.	No options available.

KTP	Extent/manner which proposal affects KTP	Mitigable?
Invasion of native plant communities by exotic perennial grasses	Exotic grasses currently present.	N/A

6.1.6 Conclusion

The Test of Significance has determined that the proposed development would not result in a significant impact on threatened species or ecological communities. A BDAR or Species Impact Statement is not required for the development proposal.

6.2 EPBC Act MNES Assessment

6.2.1 Assessment Summary

The provisions of the EPBC Act require determination of whether the proposal has, will or is likely to have a significant impact on a Matter of National Environmental Significance (MNES). These matters are listed and addressed in summary as follows:

Table 7: MNES Assessment Summary

Category	Relevance	Significant Impact Likely?
World Heritage Properties	The site is not listed as a World Heritage area	N/A
National Heritage Places	The site is not listed as a National Heritage Place	N/A
Wetlands of International Importance	The site does not contain important wetlands	N/A
Great Barrier Reef Marine Park	The proposal does not affect the Great Barrier Reef Marine Park.	N/A
Commonwealth Marine Environment (CME)	The site is not within the CME.	N/A
Listed Threatened Ecological Communities	No TEC's occur on the site.	No TEC is likely to be significantly affected by the proposal.

Category	Relevance	Significant Impact Likely?
Listed Threatened Species	The Koala and Grey-headed Flying Fox are considered potential occurrences in the study area.	No threatened species is likely to be significantly affected by the proposal given that no tree removal is required and potential indirect threats would be minor.
Listed Migratory Species	Several migratory birds are considered potential occurrences in the study area.	No Migratory species is likely to be significantly affected by the proposal.
Nuclear Actions	The proposal is not a nuclear action	N/A
A water resource, in relation to coal seam gas development and large coal mining development	The proposal is not a mining development.	N/A
World Heritage Properties	The site is not listed as a World Heritage area	N/A
National Heritage Places	The site is not listed as a National Heritage Place	N/A
Wetlands of International Importance	The site does not contain important wetlands	N/A

7. CONCLUSION

This report has assessed the impact of the proposed subdivision and establishment of a development envelope at Lot 17 Crescent Head Road. The proposed building footprint has been previously cleared and is vegetated with mixed native and exotic grassland. Trees that occur in close proximity to the development envelope are recommended to be retained. No hollow-bearing trees or preferred Koala food trees require removal.

No threatened flora species were detected in the study area, and none are considered potential occurrences. The site vegetation does not qualify as an Endangered Ecological Community.

No threatened fauna species were detected on the site. A total of 11 threatened fauna species were identified as having potential to use the site as a small part of a larger range. Assessment of these species concluded they were unlikely to be significantly impacted by the proposal due to their ecology, the historical disturbance of the site and the mitigation measures proposed. Hence neither a referral to the DAWE or a Biodiversity Development Assessment Report is required.

A number of mitigation measures have been developed to reduce the impacts of the proposal on flora, fauna and ecological communities. These include vegetation and habitat avoidance, domestic pet restrictions and weed control.

LIMITATIONS

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APPENDIX A – SITE VEGETATION LIST

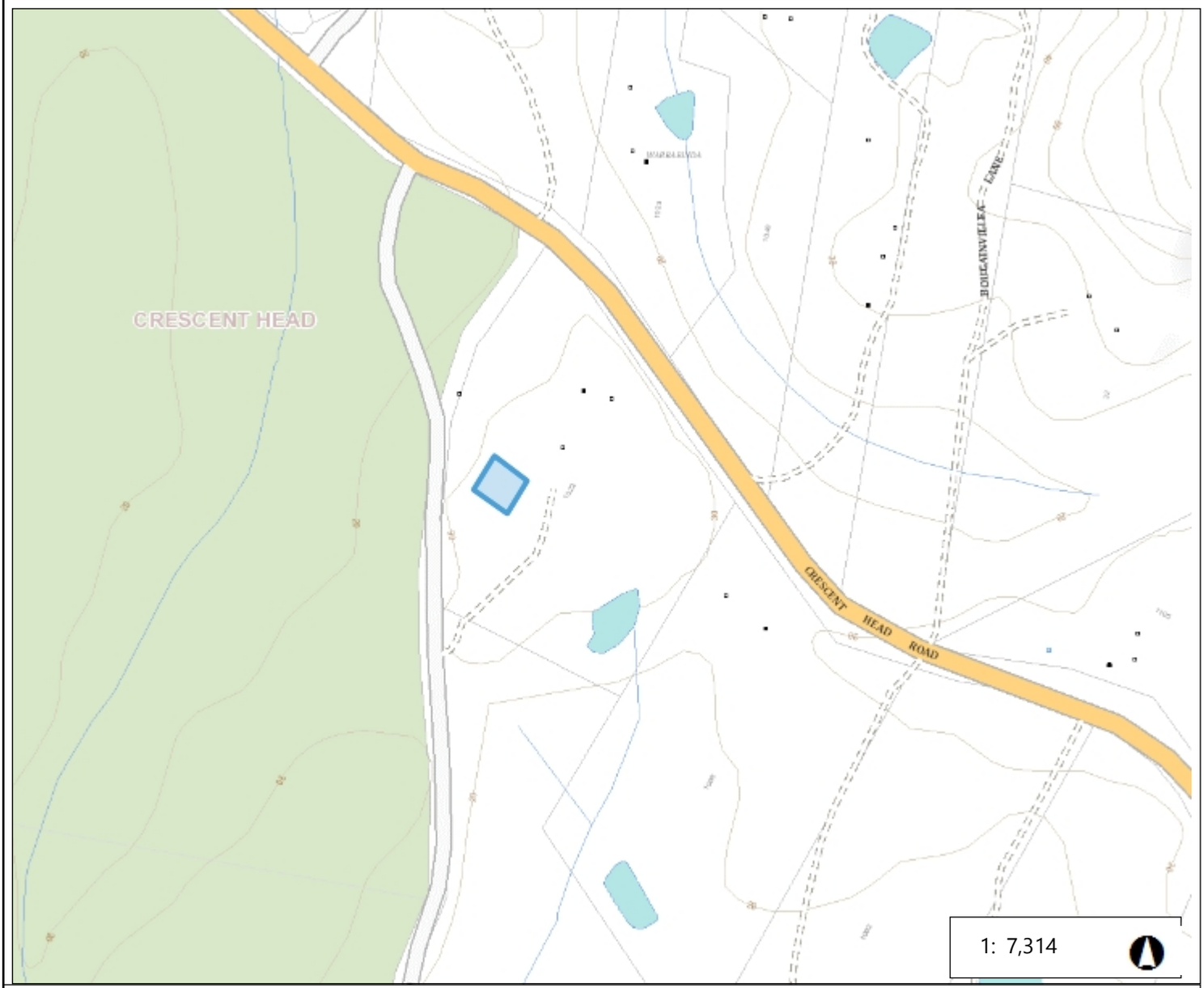
Table 8: Vegetation list

Common Name	Scientific Name	Frequency
Canopy Trees		
Willow Bottlebrush	*Callistemon salignus*	U
Red Bloodwood	*Corymbia gummifera*	U
White Stringybark	*Eucalyptus globoidea*	U
Tallowwood	*Eucalyptus microcorys*	R
Needlebark Stringybark	*Eucalyptus planchoniana*	D
Scribbly Gum	*Eucalyptus signata*	O
Broad-leaved Paperbark	*Melaleuca quinquenervia*	U
Understory Trees and Shrubs		
Black She-Oak	*Allocasuarina littoralis*	C
Gorse Bitter Pea	*Daviesia ulicifolia*	O
Coral Heath	*Epacris microphylla*	O
Rough Guinea Flower	*Hibbertia aspera*	U
Large Mock-olive	*Notelaea longifolia*	U
White Dogwood	*Ozothamnus diosmifolius*	U
Broad-leaved Geebung	*Persoonia levis*	R
Notched Bush-pea	*Pultenaea retusa*	U
Grasses		
Whisky Grass*	*Andropogon virginicus*	U
Quaking Grass*	*Briza maxima*	U
Common Couch	*Cynodon dactylon*	C
Wiry Panic	*Entolasia stricta*	C
Brown's Lovegrass	*Eragrostis brownii*	O
Purple Lovegrass	*Eragrostis lacunaria*	O
Blady Grass	*Imperata cylindrica*	O
Weeping Grass	*Microlaena stipoides*	U
Two-colour Panic	*Panicum simile*	O
Paspalum*	*Paspalum dilatatum*	O
Bahia Grass*	*Paspalum notatum*	O
Ditch Millet	*Paspalum orbiculare*	O
South African Pigeon Grass*	*Setaria sphacelata*	U
Parramatta Grass*	*Sporobolus africanus*	O

Common Name	Scientific Name	Frequency
Kangaroo Grass	*Themeda triandra*	D
Groundcovers		
Scarlet pimpernel*	*Anagallis spp.*	O
Rock Fern	*Cheilanthes sieberi*	R
Slender Celery*	*Cyclospermum leptophyllum*	U
Common Fringe-sedge	*Fimbristylis dichotoma*	U
Purple Cudweed*	*Gamochaeta purpurea*	C
Creeping Raspwort	*Gonocarpus micranthus subsp. micranthus*	O
Ivy Goodenia	*Goodenia hederacea*	O
Small St John's Wort	*Hypericum gramineum*	C
Catsear*	*Hypochaeris radicata*	C
Prickly Beard-heath	*Leucopogon juniperinus*	U
Coastal Beard-heath	*Leucopogon parviflorus*	O
Wattle Matt-rush	*Lomandra filiformis*	U
Slender Rice Flower	*Pimelea linifolia*	O
Lamb's Tongues*	*Plantago lanceolata*	O
Fireweed*	*Senecio madagascariensis*	O
Ladies' Tresses	*Spiranthes australis*	O
Snake vine	*Stephania japonica*	U
White Clover*	*Trifolium repens*	U
-	*Xanthorrhoea macronema*	U
Key: Introduced species (*), Dominant (D), Common (C), Occasional (O), Uncommon (U), Rare (R).		

APPENDIX B – BOSET REPORT

Biodiversity Offset Scheme (BOS) Entry Threshold Map



371.5 0 185.77 371.5 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

Biodiversity Values Map and Threshold Report

Results Summary

Date of Calculation	03/11/2021 11:57 AM		**BDAR Required***
Total Digitised Area	0.17	ha	
Minimum Lot Size Method	LEP		
Minimum Lot Size	8	ha	
Area Clearing Threshold	0.5	ha	
Area clearing trigger Area of native vegetation cleared	no		no
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 BOSET 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 Office of Environment and Heritage 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:03/11/2021 11:57 AM