

1 Kendall Street, Byron Bay, NSW, 2481

## Ecological Assessment – Alterations & additions to multi-dwelling housing

Client:	Kollective Kendall Pty Ltd
Prepared by:	Biodiversity Assessments & Solutions Pty Ltd
Date:	19 <sup>th</sup> February 2024

## Project Control

Project name: 1 Kendall Street, Byron Bay, NSW, 2481

Ecological Assessment – Alterations & additions to multi-dwelling housing

Job number: 230203

Client: Kollektive Kendall Pty Ltd

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## 1. Introduction and Background

Biodiversity Assessments & Solutions Pty Ltd has completed an ecological assessment for the land at 1 Kendall Street, Byron Bay, NSW 2481 (Figure 1). The assessment has been undertaken to accompany a submission to Byron Shire Council (BSC) which seeks consent for alterations and additions to a multi-dwelling residential development.

The land at 1 Kendall Street, Byron Bay (i.e., Lot o SP 96105) is defined as the 'subject land' (Figure 1). The area identified as accommodating the proposal is defined as the 'development footprint', which for the purposes of this assessment includes those parts of the subject land to be directly impacted by the proposal for alterations and additions to an existing development (Figure 2).

The subject land is partially cleared and developed for residential use (Plate 1) with current vegetation being represented by managed lawns, isolated native trees, and an area of consolidated Swamp Oak forest in the southwestern portion, beyond the existing approved asset protection zone (APZ) (Figure 2). The portion of the subject land which would accommodate the proposal has been cleared and managed for several decades (Plate 2). No trees require removal to accommodate the proposal.

The development footprint contains an area mapped on the Biodiversity Values Map and as Coastal Wetlands (Figure 5); however, these mapping layers contain obvious spatially erroneous elements.



*Plate 1: View of subject land and approx. boundary.*

### 1.1 Subject land

The subject land is:

- comprised of one ( $n = 1$ ) lot (i.e., Lot o SP 96105) covering a total area of approx. 0.61 ha;
- split zoned lot with R2 Low Density Residential, C3 Environmental Management, and C2 Environmental Conservation. The proposal occurs entirely on the R2 portion of the zoned land;

- partially vegetated, with isolated individual native trees (e.g., Swamp Oak (*Casuarina glauca*), Tuckeroo (*Cupaniopsis anacardioides*)), scattered within the currently managed area, and more consolidated Swamp Oak forest vegetation in the southwestern portion of the subject land, beyond the existing approved asset protection zone (APZ);
- flat and low-lying, with elevation ranging from a height of approx. 1.1 to 2.4 m AHD;
- bounded to the north by Ewingsdale Road, to the east by Kendall Street, and to the south and west by the Cumbebin Swamp Nature Reserve; and
- partially developed with two ( $n = 2$ ) primary buildings containing 12 ( $n = 12$ ) dwellings, a managed Asset Protection Zone (APZ), as well as parking and managed open space (Plate 1).

## 1.2 The proposal

The proposal seeks consent for further development of the R2 zoned portion of the subject land for alterations and additions to an existing multi-dwelling residential development. The existing development, approved in accordance with DA 10.2015.398.1 on 19 October 2015, comprises 12 dwellings across two ( $n = 2$ ) primary buildings. The proposal to which this assessment applies seeks consent for an additional 8 dwellings comprising 6 x 1-bedroom dwellings and 2 x 2-bedroom dwellings across two ( $n = 2$ ) buildings. Resident and visitor car parking for an additional 13 vehicles is also provided (Figure 2). The proposed strata subdivision of the new dwellings is also proposed.

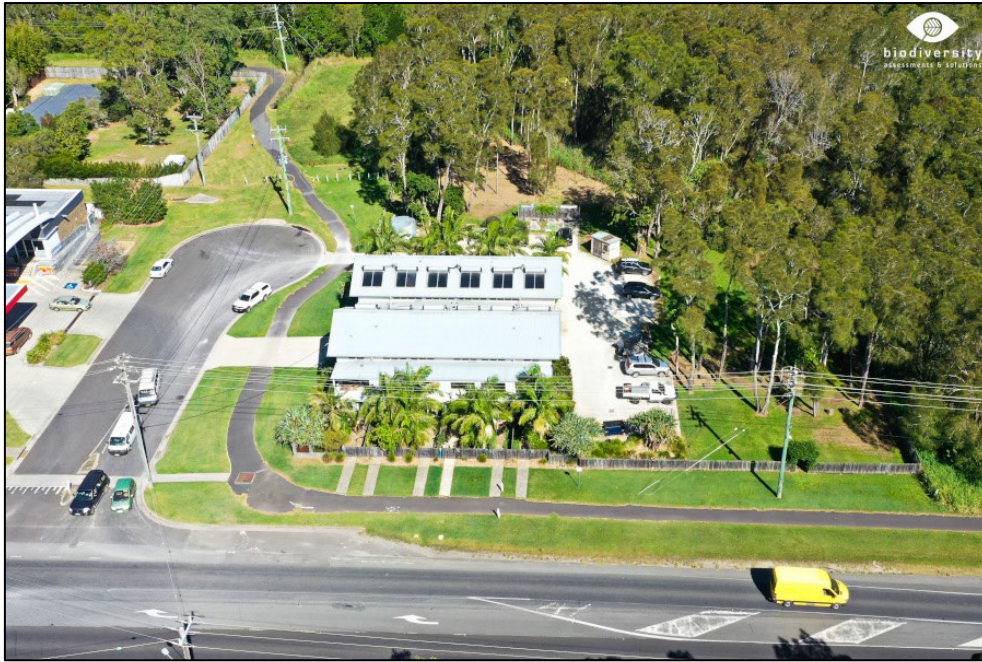
The area identified to accommodate the proposal (herein referred to as the “development footprint”) occurs primarily on already developed hard surfaces and a small area of low constraint managed grassland. Several isolated native trees are scattered adjacent to the proposal (Figure 4). The development footprint can accommodate the proposal with negligible impacts to vegetation and habitat. No trees or protected vegetation would require removal to accommodate the proposal.

The proposed site plan is provided in Appendix B, with a full design set provided separately.



Plate 2: The subject land in 2012, with the development footprint area regularly managed.





*Plate 3: The subject land contains existing multi-dwelling housing at the intersection of Kendall St and Ewingsdale Rd.*










*Plate 4: The development footprint contains a managed and unmanaged section, with the managed residential area containing isolated native trees, which would all be retained.*



Figure 1: Subject land and location - 1 Kendall St, Byron Bay

### Legend

-  Subject Land - 1 Kendall St, Byron Bay
-  Lot
-  Road Corridor
-  Railway
-  Water Feature
-  Hydroline
-  NPWS Reserve



0 100 200 300 m

#### Attribution Parties












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Figure 2: Proposed concept design and land zoning.

**Legend**

-  Subject Land - 1 Kendall St
  -  Lot
  -  Road Corridor
  -  Contours\_0.10m Intervals
  -  NPWS Reserve
  -  Hydroline
  -  Approved Asset Protection Zone
  -  Proposal additions & alterations
- Land Zoning\_Byron LEP 2014**
-  C2 - Environmental Conservation
  -  C3 - Environmental Management
  -  R2 - Low Density Residential



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## 2. Methods and results

### 2.1 Desktop assessment

A search of the BioNet Atlas of NSW Wildlife was conducted, based on an area within 1.5 km of the subject land boundary. This search returned a record of thirty-eight ( $n = 38$ ) threatened fauna species, and six ( $n = 6$ ) threatened flora species listed under Schedule 1 of the BC Act (Table 1 and Figure 3).

A search of the BioNet Atlas of NSW Wildlife also returned thirteen ( $n = 13$ ) Threatened Ecological Communities (TEC) listed under Schedule 2 of the BC Act that occur within the Byron Local Government Area (LGA) (Table 2).

Class	Family	Scientific name	Common Name	NSW Status	Cth Status
Amphibia	Hylidae	<i>Litoria olongburensis</i>	Olongburra Frog	V,P	V
Amphibia	Myobatrachidae	<i>Crinia tinnula</i>	Wallum Froglet	V,P	
Aves	Accipitridae	<i>Haliaeetus leucogaster</i>	White-bellied Sea-Eagle	V,P	
Aves	Accipitridae	<i>Pandion cristatus</i>	Eastern Osprey	V,P,3	
Aves	Alcedinidae	<i>Todiramphus chloris</i>	Collared Kingfisher	V,P	
Aves	Apodidae	<i>Hirundapus caudacutus</i>	White-throated Needletail	P	V,C,J,K
Aves	Ardeidae	<i>Ixobrychus flavicollis</i>	Black Bittern	V,P	
Aves	Burhinidae	<i>Burhinus grallarius</i>	Bush Stone-curlew	E1,P	
Aves	Burhinidae	<i>Esacus magnirostris</i>	Beach Stone-curlew	E4A,P	
Aves	Cacatuidae	<i>Calyptorhynchus lathami lathami</i>	South-eastern Glossy Black-Cockatoo	V,P,2	V
Aves	Ciconiidae	<i>Ephippiorhynchus asiaticus</i>	Black-necked Stork	E1,P	
Aves	Columbidae	<i>Ptilinopus magnificus</i>	Wompoo Fruit-Dove	V,P	
Aves	Columbidae	<i>Ptilinopus regina</i>	Rose-crowned Fruit-Dove	V,P	
Aves	Columbidae	<i>Ptilinopus superbus</i>	Superb Fruit-Dove	V,P	
Aves	Haematopodidae	<i>Haematopus longirostris</i>	Pied Oystercatcher	E1,P	
Aves	Laridae	<i>Sternula albifrons</i>	Little Tern	E1,P	C,J,K
Aves	Rallidae	<i>Amaurornis moluccana</i>	Pale-vented Bush-hen	V,P	
Aves	Scolopacidae	<i>Calidris tenuirostris</i>	Great Knot	V,P	CE,C,J,K
Aves	Scolopacidae	<i>Numenius madagascariensis</i>	Eastern Curlew	P	CE,C,J,K
Aves	Strigidae	<i>Ninox strenua</i>	Powerful Owl	V,P,3	
Aves	Tytonidae	<i>Tyto longimembris</i>	Eastern Grass Owl	V,P,3	

Table 1: BioNet Atlas of NSW Wildlife records of threatened species within 1.5 km of the subject land.

Class	Family	Scientific name	Common Name	NSW Status	Cth Status
Aves	Tytonidae	<i>Tyto novaehollandiae</i>	Masked Owl	V,P,3	
Gastropoda	Camaenidae	<i>Thersites mitchellae</i>	Mitchell's Rainforest Snail	E1	CE
Mammalia	Dasyuridae	<i>Dasyurus maculatus</i>	Spotted-tailed Quoll	V,P	E
Mammalia	Dasyuridae	<i>Planigale maculata</i>	Common Planigale	V,P	
Mammalia	Emballonuridae	<i>Saccolaimus flaviventris</i>	Yellow-bellied Sheath-tail-bat	V,P	
Mammalia	Miniopteridae	<i>Miniopterus australis</i>	Little Bent-winged Bat	V,P	
Mammalia	Miniopteridae	<i>Miniopterus orianae oceanensis</i>	Large Bent-winged Bat	V,P	
Mammalia	Muridae	<i>Pseudomys gracilicaudatus</i>	Eastern Chestnut Mouse	V,P	
Mammalia	Phascolarctidae	<i>Phascolarctos cinereus</i>	Koala	E1,P	E
Mammalia	Pteropodidae	<i>Pteropus poliocephalus</i>	Grey-headed Flying-fox	V,P	V
Mammalia	Pteropodidae	<i>Syconycteris australis</i>	Common Blossom-bat	V,P	
Mammalia	Vespertilionidae	<i>Myotis macropus</i>	Southern Myotis	V,P	
Mammalia	Vespertilionidae	<i>Nyctophilus bifax</i>	Eastern Long-eared Bat	V,P	
Mammalia	Vespertilionidae	<i>Scoteanax rueppellii</i>	Greater Broad-nosed Bat	V,P	
Reptilia	Cheloniidae	<i>Caretta caretta</i>	Loggerhead Turtle	E1,P	E
Reptilia	Cheloniidae	<i>Chelonia mydas</i>	Green Turtle	V,P	V
Reptilia	Cheloniidae	<i>Eretmochelys imbricata</i>	Hawksbill Turtle	P	V
Flora	Apocynaceae	<i>Marsdenia longiloba</i>	Slender Marsdenia	E1	V
Flora	Fabaceae (Mimosoideae)	<i>Archidendron hendersonii</i>	White Lace Flower	V	
Flora	Lauraceae	<i>Cryptocarya foetida</i>	Stinking Cryptocarya	V	V
Flora	Myrtaceae	<i>Syzygium moorei</i>	Durobby	V	V
Flora	Orchidaceae	<i>Phaius australis</i>	Southern Swamp Orchid	E1,P,2	E
Flora	Rutaceae	<i>Acronychia littoralis</i>	Scented Acronychia	E1	E

**Notes**

NSW Status: V = Vulnerable; P = Protected; 2 = Category 2 sensitive species; 3 = Category 3 sensitive species.

Commonwealth (Cth) Status: V = Vulnerable.

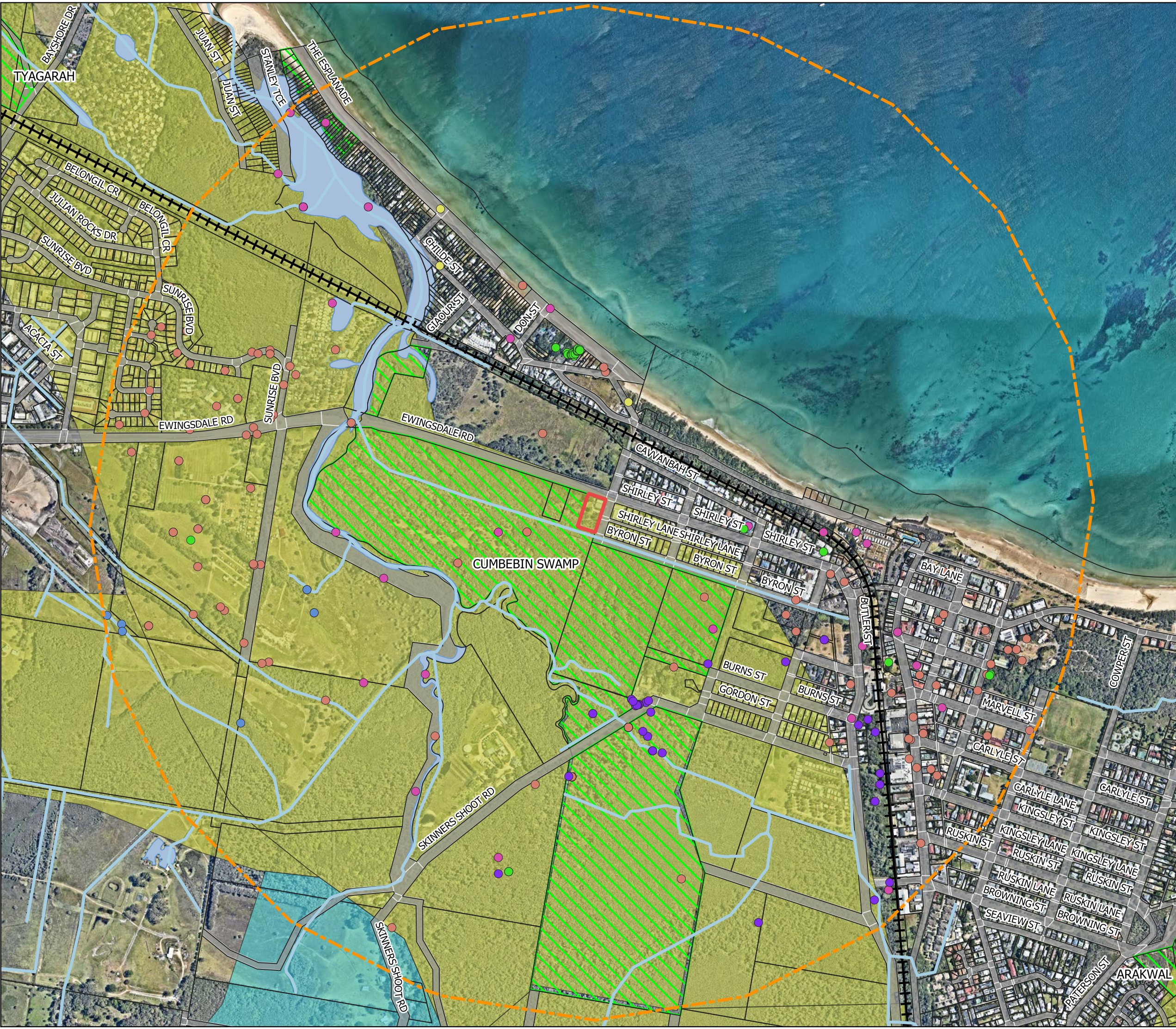


*Table 2: Threatened Ecological Communities known to occur in the Byron Local Government Area.*

Threatened ecological community	NSW status	Cth status
Byron Bay Dwarf Graminoid Clay Heath Community	E3	
Coastal Cypress Pine Forest in the New South Wales North Coast Bioregion	E3	
Coastal Saltmarsh in the New South Wales North Coast, Sydney Basin and South East Corner Bioregions	E3	V
Freshwater Wetlands on Coastal Floodplains of the New South Wales North Coast, Sydney Basin and South East Corner Bioregions	E3	
Grey Box–Grey Gum Wet Sclerophyll Forest in the NSW North Coast Bioregion	E3	
Littoral Rainforest in the New South Wales North Coast, Sydney Basin and South East Corner Bioregions	E3	CE
Lowland Rainforest in the NSW North Coast and Sydney Basin Bioregions	E3	CE
Lowland Rainforest on Floodplain in the New South Wales North Coast Bioregion	E3	CE
Subtropical Coastal Floodplain Forest of the New South Wales North Coast Bioregion	E3	
Swamp Oak Floodplain Forest of the New South Wales North Coast, Sydney Basin and South East Corner Bioregions	E3	E
Swamp Sclerophyll Forest on Coastal Floodplains of the New South Wales North Coast, Sydney Basin and South East Corner Bioregions	E3	
Themeda grassland on seacliffs and coastal headlands in the NSW North Coast, Sydney Basin and South East Corner Bioregions	E3	
White Gum Moist Forest in the NSW North Coast Bioregion	E3	
<b>Notes</b> NSW Status: E3 = Endangered Ecological Community. Commonwealth (Cth) Status: CE = Critically Endangered, E = Endangered, V= Vulnerable		



Figure 3: Threatened species within 1.5 km, protected areas, and habitat corridors.



**Legend**

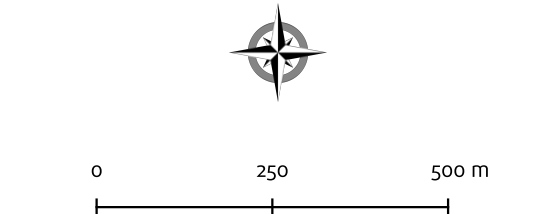
- Subject Land - 1 Kendall St
- 1,500m Subject Land Buffer
- Lot
- Road Corridor
- Railway
- Hydroline
- Water Feature
- NPWS Reserve

**BSC TS Atlas Records\_clipped 1.5km**

- Amphibia
- Aves
- Flora
- Gastropoda
- Mammalia
- Reptilia

**Fauna Corridors NE NSW**

- regional
- subregional



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## 2.2 Subject land assessment

The on-ground assessment involved several site visits including a meandering habitat survey of the subject land to assess habitat suitability and habitat features, with specific regard for the suitability of the habitat for threatened species, particularly those recorded within 1.5 km of the subject land (see section 2.1), and others with the potential to occur.

Additionally, coverage of the subject land targeted threatened flora, and specifically for groundlayer species with the potential to occur in close proximity to the development footprint.

The development footprint contains little habitat that could be considered significant for threatened species, as it consists almost entirely of hard surfaces previously developed (approx. 450 m<sup>2</sup>), and a small area (approx. 50 m<sup>2</sup>) of low constraint managed lawn. Isolated native trees (e.g., Swamp Oak (*Casuarina glauca*) and Tuckeroo (*Cupaniopsis anacardioides*)) occur in proximity to the development footprint, however, no native trees would require removal for the proposal.

Isolated tree species present in the managed lawn area are of significance from a vegetation community description perspective (e.g., Swamp Oak (*Casuarina glauca*)), as they are representative species of known EECs (e.g., Swamp Oak Floodplain Forest of the New South Wales North Coast, Sydney Basin and South East Corner Bioregions), however, have less significance when isolated or fragmented, which vegetation adjacent to the development footprint partially is.

And while areas of habitat with significance (e.g., vegetation communities listed in Table 2), occur in the southwestern portion of the subject land and in the wider locality (e.g., Cumbebin Swamp Nature Reserve), no significant habitat would be impacted directly or indirectly by the proposal.



Plate 5: The subject land is located adjacent to the Cumbebin Swamp Nature Reserve.

## 2.3 Discussion

As a result of the small size of the subject land, the historical impacts (i.e., clearing, development, and continued vegetation management), and the existing land use (multi-dwelling residential development), the managed portion of the land, including the small area within the proposed

development footprint, represents negligible potential habitat for native flora or fauna, particularly those threatened species with the potential to occur in the locality.

No threatened flora species were recorded within the proposed development footprint, and none are likely to occur. No threatened fauna species or evidence of utilisation was recorded, and the habitat suitability or significance of the habitat for threatened species with the potential to occur is considered very low. A lack of significant habitat features (e.g., hollows, fallen logs, dense understorey vegetation, permanent freshwater), most notably within and immediately adjacent to the development footprint, indicates that most threatened fauna species are highly unlikely to occur on the residential portion of the subject land. Ecological attribute features of isolated native trees such as Cockatoo feed tree species (*Casuarina glauca*), and frugivore feed tree species (*Cupaniopsis anacardioides*) do provide some foraging resources. However, these trees would not be impacted.

High-quality terrestrial habitat occurs in the wider locality, particularly to the south and west, which includes the protected area within the Cumbebin Swamp Nature Reserve. However, quite clearly, these areas would not be impacted by the proposal. Marine habitat also occurs in the wider locality, with the subject land being approx. 350 m south of Main Beach Byron Bay. There is also a small, constructed drain south of the subject land (approx. 25 m), which is connected to Belongil Creek, and does contain marine vegetation such as Grey Mangrove (*Avicennia marina*) along the narrow channel. However, there is no likelihood that marine habitat or threatened species associated with the marine environment would be impacted directly or indirectly by the proposal.

The suitability of the subject land for threatened flora and fauna species previously recorded in the 1.5 km assessment area or with their potential to occur, and their likelihood of occurrence, is included in Table 3. This suitability assessment has been undertaken following a desktop spatial analysis, subject land habitat assessment and review of the Office of Environment and Heritage (OEH) Threatened Species Profiles.

A *Test of Significance* (ToS) was then undertaken for those threatened fauna species considered to have some potential to occur on the subject land and potentially be impacted by the proposal.

The following five ( $n = 5$ ) fauna species were identified for further assessment:

- Bush Stone-curlew (*Burhinus grallarius*)
- South-eastern Glossy Black-Cockatoo (*Calyptorhynchus lathami lathami*)
- Pale-vented Bush Hen (*Amaurornis moluccana*)
- Common Planigale (*Planigale maculata*)
- Koala (*Phascolarctos cinereus*)

The ToS undertaken concluded that the proposal for alterations and additions to an existing multi-dwelling residential development would not result in a significant impact for those species (Appendix A).

Table 3: Threatened species recorded within 1.5 km or with the potential to occur, and subject land suitability assessment.

Common name (Scientific name)	Habitat requirements of the species	Likelihood of occurrence	Test of Significance	Rationale for whether a Test of Significance is undertaken
<b>Amphibia</b>				
Olongburra Frog ( <i>Litoria olongburensis</i> )	<p>The Olongburra Frog is an "acid" frog confined to the coastal sandplain wallum swamps. Their life-cycle is adapted to the acidic pH (2.8-5.5) of these wetlands. Frogs are highest in abundance in relatively undisturbed wallum swamps.</p> <p>Breeding habitat is characterised by the presence of emergent sedges, with upright species such as <i>Baumea</i> spp. and <i>Schoenus</i> spp. preferred by adult frogs for perching. Frogs can be found in breeding habitat all year. However, little is known about habitat use when breeding is not occurring and drier areas adjacent to primary habitat may also be utilised.</p> <p>Breeding occurs mainly in spring, summer and autumn after rain. Eggs are laid singly in water at the base of sedges.</p>	Unlikely	No	<p>The development footprint does not contain preferred specific habitat requirements of 'acid' frogs, nor does any suitable habitat occur proximal to the subject land. The nearby estuarine influence of hydrology is also likely to reduce the suitability of the surrounding habitat for this species.</p> <p>The lack of identified preferred habitat for this species, and the absence of records within close proximity to the site, provides a high level of confidence that the proposal would not significantly impact on potential food or habitat resources for the Olongburra Frog.</p>
Wallum Froglet ( <i>Crinia tinnula</i> )	<p>Wallum Froglets are found in a wide range of habitats, usually associated with acidic swamps on coastal sand plains. They typically occur in sedgelands and wet heathlands. They can also be found along drainage lines within other vegetation communities and disturbed areas, and occasionally in swamp sclerophyll forests.</p> <p>The species breeds in swamps with permanent water as well as shallow ephemeral pools and drainage ditches. Breeding is thought to peak in the colder months but can occur throughout the year following rain. Eggs of 1.1-1.2mm are deposited in water with a pH of &lt;6 and tadpoles take 2-6 months to develop into frogs.</p>	Unlikely	No	<p>The development footprint does not contain preferred specific habitat requirements of 'acid' frogs, nor does any suitable habitat occur proximal to the subject land. The nearby estuarine influence of hydrology is also likely to reduce the suitability of the surrounding habitat for this species.</p> <p>The lack of identified preferred habitat for this species, and the absence of records within close proximity to the</p>

Table 3: Threatened species recorded within 1.5 km or with the potential to occur, and subject land suitability assessment.

Common name (Scientific name)	Habitat requirements of the species	Likelihood of occurrence	Test of Significance	Rationale for whether a Test of Significance is undertaken
	Wallum Froglets shelter under leaf litter, vegetation, other debris or in burrows of other species. Shelter sites are wet or very damp and often located near the water's edge. Males may call throughout the year and at any time of day, peaking following rain.			site, provides a high level of confidence that the proposal would not significantly impact on potential food or habitat resources for the Wallum Froglet.
<b>Aves</b>				
White-bellied Sea-Eagle ( <i>Haliaeetus leucogaster</i> )	<p>Habitats are characterised by the presence of large areas of open water including larger rivers, swamps, lakes, and the sea.</p> <p>Occurs at sites near the sea or sea-shore, such as around bays and inlets, beaches, reefs, lagoons, estuaries and mangroves; and at, or in the vicinity of freshwater swamps, lakes, reservoirs, billabongs and saltmarsh.</p> <p>Terrestrial habitats include coastal dunes, tidal flats, grassland, heathland, woodland, and forest (including rainforest).</p> <p>Breeding habitat consists of mature tall open forest, open forest, tall woodland, and swamp sclerophyll forest close to foraging habitat. Nest trees are typically large emergent eucalypts and often have emergent dead branches or large dead trees nearby which are used as 'guard roosts'. Nests are large structures built from sticks and lined with leaves or grass.</p> <p>Feed mainly on fish and freshwater turtles, but also waterbirds, reptiles, mammals and carrion.</p> <p>Hunts its prey from a perch or whilst in flight (by circling slowly, or by sailing along 10–20 m above the shore). Prey is usually carried to a feeding platform or (if small) consumed in flight, but some items are eaten on the ground.</p> <p>May be solitary, or live in pairs or small family groups consisting of a</p>	Unlikely	No	<p>The development footprint does not represent nesting or foraging habitat for this species. No stick nests or potentially suitable trees are present, and potential foraging areas in the locality would not be impacted.</p> <p>The absence of suitable habitat for this species provides a level of confidence that the proposal would not significantly impact on potential food or habitat resources for the White-bellied Sea-Eagle.</p>

Table 3: Threatened species recorded within 1.5 km or with the potential to occur, and subject land suitability assessment.

Common name (Scientific name)	Habitat requirements of the species	Likelihood of occurrence	Test of Significance	Rationale for whether a Test of Significance is undertaken
	pair of adults and dependent young. Typically lays two eggs between June and September with young birds remaining in the nest for 65-70 days.			
Eastern Osprey ( <i>Pandion cristatus</i> )	<p>Favour coastal areas, especially the mouths of large rivers, lagoons and lakes where they feed on fish over clear, open water.</p> <p>Breed from July to September in NSW. Nests are made high up in dead trees or in dead crowns of live trees, usually within one kilometre of the sea.</p> <p>Incubation of 2-3 eggs, usually by the female, is about 40 days. Female remains with young almost until they fly, usually after about nine weeks in the nest.</p>	Unlikely	No	<p>The development footprint does not represent nesting or foraging habitat for this species. No stick nests or potentially suitable trees are present, and potential foraging areas in the locality would not be impacted.</p> <p>The absence of suitable habitat for this species provides a level of confidence that the proposal would not significantly impact on potential food or habitat resources for the Osprey.</p>
Collared Kingfisher ( <i>Todiramphus chloris</i> )	<p>Collared Kingfishers are virtually restricted to mangrove associations of estuaries, inlets, sheltered bays and islands, and the tidal flats and littoral zone bordering mangroves.</p> <p>They sometimes occur in terrestrial forests or woodlands bordering mangroves, where they will nest in holes in trees or in arboreal termitaria. They are sometimes seen in streets or gardens in built-up areas bordering mangrove vegetation.</p> <p>Nests are usually in holes in trunks of large, live or dead mangrove trees, though they sometimes nest in hollows or in arboreal termite nests in large eucalypts or paperbarks adjacent to mangroves or estuarine foraging habitats.</p> <p>They are often seen perched on rock walls, jetties, piles or on the</p>	Unlikely	No	<p>Only one (<math>n = 1</math>) record for the Collared Kingfisher occurs in the 1.5km assessment circle. The subject land does not represent preferred or typical habitat for this species, and the small size of the land limits any potential significance for species such as the Collared Kingfisher.</p> <p>Potential habitat occurs along the constructed drainage channel to the south of the subject land which transports estuarine water to/from Belongil Creek and contains a narrow band of mangroves (<i>Avicennia marina</i>).</p>



Table 3: Threatened species recorded within 1.5 km or with the potential to occur, and subject land suitability assessment.

Common name (Scientific name)	Habitat requirements of the species	Likelihood of occurrence	Test of Significance	Rationale for whether a Test of Significance is undertaken
	<p>ground on tidal flats. They also sometimes occur in parks and gardens along foreshores.</p> <p>Mostly take food from the ground, from the surface of mud and sand, mainly along seaward fringe of mangroves. Sometimes take food from shallow water or from air.</p> <p>The diet consists mostly of crustaceans, especially crabs, but they also take insects, small fish, and lizards. They have also been reported to occasionally take young birds.</p> <p>Breeding is usually in spring and summer, with clutches observed in NSW in September to December, and young birds from October to January. Birds usually lay three eggs, but clutches of two to four recorded. Young leave the nest about 1 month after hatching.</p>			<p>This area is approx. 60m from the development footprint and buffered by vegetation, with no direct or indirect impacts to occur.</p> <p>The project therefore would not result in any significant impacts for typical or preferred habitat or resources for the Collared Kingfisher.</p>
White-throated Needletail ( <i>Hirundapus caudacutus</i> )	<p>Migratory and usually seen in eastern Australia from October to April. Breeds in forests in south-eastern Siberia, Mongolia, the Korean Peninsula and northern Japan June-August. Most often seen in eastern Australia before storms, low pressure troughs and approaching cold fronts and occasionally bushfire. These conditions are often used by insects to swarm (e.g. termites and ants) or tend to lift insects away from the surface which favours sighting of White-throated Needletails as they feed. More common in coastal areas, less so inland.</p>	Unlikely	No	<p>The subject land does not contain any suitable habitat for this species.</p> <p>Therefore, the proposal would not impact on any habitat or habitat values for this species.</p>
Black Bittern ( <i>Ixobrychus flavicollis</i> )	<p>Inhabits both terrestrial and estuarine wetlands, generally in areas of permanent water and dense vegetation. Where permanent water is present, the species may occur in flooded grassland, forest, woodland, rainforest and mangroves.</p> <p>Feeds on frogs, reptiles, fish and invertebrates, including snails, dragonflies, shrimps and crayfish, with most feeding done at dusk and</p>	Unlikely	No	<p>The development site and managed areas immediately adjacent to it do not contain preferred or suitable habitat for the Black Bittern, and the area within the managed portion of the subject land is unlikely to be utilised by such species.</p>

Table 3: Threatened species recorded within 1.5 km or with the potential to occur, and subject land suitability assessment.

Common name (Scientific name)	Habitat requirements of the species	Likelihood of occurrence	Test of Significance	Rationale for whether a Test of Significance is undertaken
	<p>at night.</p> <p>During the day, roosts in trees or on the ground amongst dense reeds. When disturbed, freezes in a characteristic bittern posture (stretched tall, bill pointing up, so that shape and streaked pattern blend with upright stems of reeds), or will fly up to a branch or flush for cover where it will freeze again.</p> <p>Generally solitary, but occurs in pairs during the breeding season, from December to March.</p> <p>Like other bitterns, but unlike most herons, nesting is solitary. Nests, built in spring are located on a branch overhanging water and consist of a bed of sticks and reeds on a base of larger sticks. Between three and five eggs are laid and both parents incubate and rear the young.</p>			<p>Potentially suitable habitat does occur in the southern portion of the subject land, beyond the managed portion which includes the APZ, however this area and other potentially suitable areas in the locality (including Cumbebin Swamp Nature Reserve), would not be impacted by the proposal.</p> <p>Therefore, the proposal would not result in any impacts on habitat or habitat values for this species.</p>
Bush Stone-curlew ( <i>Burhinus grallarius</i> )	<p>Inhabits open forests and woodlands with a sparse grassy groundlayer and fallen timber.</p> <p>Largely nocturnal, being especially active on moonlit nights.</p> <p>Feed on insects and small vertebrates, such as frogs, lizards and snakes.</p> <p>Nest on the ground in a scrape or small bare patch. Two eggs are laid in spring and early summer.</p>	Low	Yes	<p>No records occur on the subject land nor in any proximity to it, however, several records for the Bush Stone-curlew are present within the 1.5km assessment area, with most records occurring from within the township.</p> <p>The development site contains negligible suitable habitat and lacks requisite identified features for this species. Given the small size of the subject land and its existing land-use, and as no suitable habitat would be impacted on the subject land nor in the locality, it is considered that the proposal would not significantly impact on potential food or</p>

Table 3: Threatened species recorded within 1.5 km or with the potential to occur, and subject land suitability assessment.

Common name (Scientific name)	Habitat requirements of the species	Likelihood of occurrence	Test of Significance	Rationale for whether a Test of Significance is undertaken
				<p>habitat resources for the Bush Stone-curlew.</p> <p>However, as this species is known to occur in a range of urban environments, and in consideration of the precautionary principle, this species has undergone additional assessment by way of a ToS.</p>
Beach Stone-curlew ( <i>Esacus magnirostris</i> )	<p>Beach Stone-curlews are found exclusively along the coast, on a wide range of beaches, islands, reefs and in estuaries, and may often be seen at the edges of or near mangroves. They forage in the intertidal zone of beaches and estuaries, on islands, flats, banks and spits of sand, mud, gravel or rock, and among mangroves. Beach Stone-curlews breed above the littoral zone, at the backs of beaches, or on sandbanks and islands, among low vegetation of grass, scattered shrubs or low trees; also among open mangroves.</p> <p>Beach Stone-curlews are usually seen alone or in pairs, but sometimes occur in small groups. Birds forage by stalking slowly like a heron or with quicker dashes after prey.</p> <p>The diet consists of crabs and other marine invertebrates.</p> <p>They are mainly active at dawn, dusk and at night, but birds are often seen when they shift or move about sedately during the day. Less strictly nocturnal than the related Bush Stone-curlew (<i>Burhinus grallarius</i>).</p> <p>In NSW, clutches have been recorded from early October to late March, but elsewhere in temperate Australia, breeding has been recorded from September. Their nests are just a shallow scrape in sand or gravel,</p>	Unlikely	No	<p>The subject land does not contain any suitable or preferred habitat for the Beach Stone-curlew, and none occurs in close proximity. The nearest suitable habitat occurs along the coastal stretch located approx. 350m north of the subject land.</p> <p>Therefore, the proposal would not be expected to result in any impacts on potential habitat or food resources for this species.</p>

Table 3: Threatened species recorded within 1.5 km or with the potential to occur, and subject land suitability assessment.

Common name (Scientific name)	Habitat requirements of the species	Likelihood of occurrence	Test of Significance	Rationale for whether a Test of Significance is undertaken
	<p>above the tidal zone at the backs of beaches, or on sandbanks and islands or among open mangroves.</p> <p>Only one egg is laid, but birds will re-lay after the failure of a breeding attempt. Both parents defend the nest and care for the young. The young are precocial but appear not to be independent until they are 7-12 months old.</p>			
<p>South-eastern Glossy Black-Cockatoo (<i>Calyptorhynchus lathamii lathamii</i>)</p>	<p>Inhabits open forest and woodlands of the coast and the Great Dividing Range where stands of sheoak occur. Black Sheoak (<i>Allocasuarina littoralis</i>) and Forest Sheoak (<i>A. torulosa</i>) are important foods.</p> <p>Inland populations feed on a wide range of sheoaks, including Drooping Sheoak, <i>Allocasuarina diminuta</i>, and <i>A. gymnathera</i>. Belah is also utilised and may be a critical food source for some populations.</p> <p>In the Riverina, birds are associated with hills and rocky rises supporting Drooping Sheoak, but also recorded in open woodlands dominated by Belah (<i>Casuarina cristata</i>).</p> <p>Feeds almost exclusively on the seeds of several species of she-oak (<i>Casuarina</i> and <i>Allocasuarina</i> species), shredding the cones with the massive bill.</p> <p>Dependent on large hollow-bearing eucalypts for nest sites. A single egg is laid between March and May.</p>	Low	Yes	<p>The subject land contains foraging resources for the South-eastern Glossy Black-Cockatoo, i.e. isolated and consolidated areas of Swamp Oak (<i>Casuarina glauca</i>) vegetation. The development footprint does not contain such vegetation, and no such habitat requires removal to accommodate the proposal. However, isolated individuals of Swamp Oak occur in close proximity to the proposal.</p> <p>Only one (<math>n = 1</math>) record for this species from 2013 occurs within the 1.5km assessment circle. Despite the scarcity of records, suitable potential habitat occurs in the locality, including in large areas of protected habitat.</p> <p>Given the small size of the subject land and its existing land-use, and as no suitable habitat would be impacted on the subject land nor in the locality, it is</p>

Table 3: Threatened species recorded within 1.5 km or with the potential to occur, and subject land suitability assessment.

Common name (Scientific name)	Habitat requirements of the species	Likelihood of occurrence	Test of Significance	Rationale for whether a Test of Significance is undertaken
				considered that the proposal would be unlikely to significantly impact on potential food or habitat resources for the South-eastern Glossy Black-Cockatoo.  However, due to the proximity of potential habitat to the proposal, and in consideration of the precautionary principle, the South-eastern Glossy Black-Cockatoo has undergone additional assessment by way of a ToS.
Black-necked Stork ( <i>Ephippiorhynchus asiaticus</i> )	<p>Floodplain wetlands (swamps, billabongs, watercourses and dams) of the major coastal rivers are the key habitat in NSW for the Black-necked Stork. Secondary habitat includes minor floodplains, coastal sandplain wetlands and estuaries.</p> <p>Storks usually forage in water 5-30cm deep for vertebrate and invertebrate prey. Eels regularly contribute the greatest biomass to their diet, but they feed on a wide variety of animals, including other fish, frogs and invertebrates (such as beetles, grasshoppers, crickets and crayfish).</p> <p>Black-necked Storks build large nests high in tall trees close to water. Trees usually provide clear observation of the surroundings and are at low elevation (reflecting the floodplain habitat).</p> <p>In NSW, breeding activity occurs May - January; incubation May - October; nestlings July - January; fledging from September. Parents share nest duties and in one study about 1.3-1.7 birds were fledged per nest.</p>	Unlikely	No	<p>There are several records of Black-necked Stork occurring within the 1.5km assessment circle, however, the most recent records available are from 2005. Some potentially suitable habitat occurs within the 1.5 km assessment circle, however, vegetation growth in certain areas of the locality, including within the Cumbebin Swamp Nature Reserve in recent decades, has likely reduced the suitability of habitat in any proximity to the subject land.</p> <p>The development footprint does not contain areas of shallow wetland or swamp suitable for this bird species to forage, nor does any preferred habitat</p>

Table 3: Threatened species recorded within 1.5 km or with the potential to occur, and subject land suitability assessment.

Common name (Scientific name)	Habitat requirements of the species	Likelihood of occurrence	Test of Significance	Rationale for whether a Test of Significance is undertaken
	The NSW breeding population has been estimated at about 75 pairs. Territories are large and variable in size. They have been estimated to average about 9,000ha, ranging from 3,000-6,000ha in high quality habitat and 10,000-15,000ha in areas where habitat is poor or dispersed.			occur on the subject land.  Therefore, the proposal would not result in any impacts on potential habitat or food resources for this species.
Wompoo Fruit-Dove ( <i>Ptilinopus magnificus</i> )	Occurs in, or near rainforest, low elevation moist eucalypt forest and brush box forests.  Feeds on a diverse range of tree and vine fruits and is locally nomadic - following ripening fruit. Thought to be an effective medium to long-distance vector for seed dispersal.  Feeds alone, or in loose flocks at any height in the canopy.  Despite its plumage, can be remarkably cryptic as it feeds, with the call and falling fruit being an indication of its presence.  The nest is a typical pigeon nest - a flimsy platform of sticks on a thin branch or a palm frond, often over water, usually 3 - 10 m above the ground. Breeds in spring and early summer; a single white egg is laid.  Most often seen in mature forests, but also found in remnant and regenerating rainforest.  Aspects of its behaviour such as social behaviour and structure, movements and breeding biology have not been well-studied.	Low	No	The development site does not contain preferred habitat for fruit doves; being largely developed, however, isolated foraging tree species are present both in the managed residential area and occasionally within more consolidated Swamp Oak forest vegetation in the southwestern portion of the subject land.  Cryptic fruit doves are unlikely to use habitat within the managed residential area of the subject land, being a relatively busy and noisy environment. The proposal represents a slight intensification of use only. Expanses of preferred and far more sheltered habitat are available in the locality which is likely more suitable.  As no loss of fruit dove habitat would occur, and as no change of use of the site would occur as a result of the proposal, it is considered that no impacts

Table 3: Threatened species recorded within 1.5 km or with the potential to occur, and subject land suitability assessment.

Common name (Scientific name)	Habitat requirements of the species	Likelihood of occurrence	Test of Significance	Rationale for whether a Test of Significance is undertaken
				to potential habitat would occur, and the proposal wouldn't negatively impact this species.
Rose-crowned Fruit-Dove ( <i>Ptilinopus regina</i> )	<p>Rose-crowned Fruit-doves occur mainly in sub-tropical and dry rainforest and occasionally in moist eucalypt forest and swamp forest, where fruit is plentiful.</p> <p>They are shy pigeons, not easy to see amongst the foliage, and are more often heard than seen.</p> <p>They feed entirely on fruit from vines, shrubs, large trees and palms, and are thought to be locally nomadic as they follow the ripening of fruits.</p> <p>Some populations are migratory in response to food availability - numbers in north-east NSW increase during spring and summer then decline in April or May.</p>	Low	No	<p>The development site does not contain preferred habitat for fruit doves; however, isolated foraging species are present both in the managed residential area and occasionally within more consolidated Swamp Oak forest vegetation in the southwestern portion of the subject land.</p> <p>Cryptic fruit doves are considered to be already unlikely to use habitat within the managed residential area of the subject land, being a relatively busy and noisy environment. The proposal represents a slight intensification of use only.</p> <p>Expanses of preferred and far more sheltered habitat are available in the locality.</p> <p>As no loss of fruit dove habitat would occur, and as no change of use of the site would occur, it is considered that no impacts to potential habitat would occur as a result of the proposal.</p>
Superb Fruit-Dove	Inhabits rainforest and similar closed forests where it forages high in the canopy, eating the fruits of many tree species such as figs and	Low	No	The development site does not contain preferred habitat for fruit doves;



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Common name (Scientific name)	Habitat requirements of the species	Likelihood of occurrence	Test of Significance	Rationale for whether a Test of Significance is undertaken
<i>(Ptilinopus superbus)</i>	<p>palms. It may also forage in eucalypt or acacia woodland where there are fruit-bearing trees.</p> <p>Part of the population is migratory or nomadic. There are records of single birds flying into lighted windows and lighthouses, indicating that birds travel at night. At least some of the population, particularly young birds, moves south through Sydney, especially in autumn.</p> <p>Breeding takes place from September to January. The nest is a structure of fine interlocked forked twigs, giving a stronger structure than its flimsy appearance would suggest, and is usually 5-30 metres up in rainforest and rainforest edge tree and shrub species.</p> <p>The male incubates the single egg by day, the female incubates at night.</p>			<p>however, isolated foraging species are present both in the managed residential area and occasionally within more consolidated Swamp Oak forest vegetation in the southwestern portion of the subject land.</p> <p>Cryptic fruit doves are considered to be already considered unlikely to use habitat within the managed residential area of the subject land, being a relatively busy and noisy environment. The proposal represents a slight intensification of use only in the residential zoned portion of the subject land. Expanses of preferred and far more sheltered habitat are available in the locality.</p> <p>As no loss of fruit dove habitat would occur, and as no change of use of the site would occur, it is considered that no impacts to potential habitat for this species would occur as a result of the proposal.</p>
Pied Oystercatcher <i>(Haematopus longirostris)</i>	<p>Favours intertidal flats of inlets and bays, open beaches and sandbanks.</p> <p>Forages on exposed sand, mud and rock at low tide, for molluscs, worms, crabs and small fish. The chisel-like bill is used to pry open or break into shells of oysters and other shellfish.</p>	Unlikely	No	The subject land does not contain any suitable or preferred habitat for the Pied Oystercatcher, and none occurs in proximity. Suitable potential habitat is

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Common name (Scientific name)	Habitat requirements of the species	Likelihood of occurrence	Test of Significance	Rationale for whether a Test of Significance is undertaken
	<p>Nests mostly on coastal or estuarine beaches although occasionally they use saltmarsh or grassy areas. Nests are shallow scrapes in sand above the high tide mark, often amongst seaweed, shells and small stones.</p> <p>Two to three eggs are laid between August and January. The female is the primary incubator, and the young leave the nest within several days.</p>			<p>entirely separate from the subject land, being located along the coastal stretch approx. 350m north of the subject land.</p> <p>Therefore, the proposal would not be expected to result in any impacts on potential habitat or food resources for this species.</p>
Little Tern ( <i>Sternula albifrons</i> )	<p>Almost exclusively coastal, preferring sheltered environments; however, may occur several kilometres from the sea in harbours, inlets and rivers (with occasional offshore islands or coral cay records).</p> <p>Nests in small, scattered colonies in low dunes or on sandy beaches just above high tide mark near estuary mouths or adjacent to coastal lakes and islands.</p> <p>The nest is a scrape in the sand, which may be lined with shell grit, seaweed or small pebbles.</p> <p>Both parents incubate up to three well-camouflaged eggs for up to 22 days, aggressively defending the nest against intruders until the young fledge at 17 - 19 days.</p> <p>Often seen feeding in flocks, foraging for small fish, crustaceans, insects, worms and molluscs by plunging in the shallow water of channels and estuaries, and in the surf on beaches, or skipping over the water surface with a swallow-like flight.</p>	Unlikely	No	<p>The subject land does not represent nesting or foraging habitat for this species. Suitable potential habitat does occur along the coastal stretch located approx. 350m north of the subject land.</p> <p>The proposal would not result in any significant impacts on this separated area, and the proposal would not deleteriously impact on potential food or habitat resources for the Little Tern.</p>
Pale-vented Bush-hen ( <i>Amaurornis moluccana</i> )	<p>The Pale-vented Bush-hen inhabits tall dense understorey or ground-layer vegetation on the margins of freshwater streams and natural or artificial wetlands, usually within or bordering rainforest, rainforest remnants or forests.</p>	Low	Yes	<p>The development footprint, nor the managed portion of the subject land, represent preferred or highly suitable habitat for the Pale-vented Bush-hen.</p>

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Common name (Scientific name)	Habitat requirements of the species	Likelihood of occurrence	Test of Significance	Rationale for whether a Test of Significance is undertaken
	<p>Also occur in secondary forest growth, rank grass or reeds, thickets of weeds, such as Lantana (<i>Lantana camara</i>), and pastures, crops or other farmland, such as crops of sugar cane, and grassy or weedy fields, or urban gardens where they border forest and streams or wetlands, such as farm dams. Can also occur in and around mangroves, though rarely do so, if at all, in NSW.</p> <p>Key elements of their habitat are dense undergrowth 2 to 4 metres tall and within 300 metres of water.</p> <p>The diet consists of seeds, plant matter, earthworms, insects and some frogs, taken from ground cover or by wading at edges of streams or wetlands.</p> <p>The breeding season is from spring to early autumn, October to April.</p> <p>The nest is a shallow bowl or cup of grass stems, often partly hooded, built close to water in thick ground vegetation such as dense Blady Grass (<i>Imperata cylindrica</i>), mat rush (<i>Lomandra</i>) or reeds, often under or growing through shrubs or vine or beneath a tree.</p> <p>Birds lay 4 to 7 eggs in a clutch and will re-lay after a successful breeding attempt and make multiple attempts after nesting failures.</p> <p>The incubation period is about 3 weeks. The hatchlings are precocial and can run soon after hatching; they are probably dependent on their parents for 4 to 5 weeks after hatching.</p>			<p>However, areas in the southwestern portion of the subject land could be considered as potentially suitable, given the presence of undergrowth and reed vegetation.</p> <p>The proposal would not impact on any significant potential habitat either on the subject land or beyond, and the current likelihood of occurrence in proximity to the proposal footprint is considered low given the general open-ness and busy-ness of the developed portion of the subject land.</p> <p>However, as the species may occur in proximity to the development footprint, and in consideration of the precautionary principle, the Pale-vented Bush-hen has undergone additional assessment by way of a ToS.</p>
Great Knot ( <i>Calidris tenuirostris</i> )	<p>Occurs within sheltered, coastal habitats containing large, intertidal mudflats or sandflats, including inlets, bays, harbours, estuaries and lagoons.</p> <p>Often recorded on sandy beaches with mudflats nearby, sandy spits and islets and sometimes on exposed reefs or rock platforms.</p>	Unlikely	No	<p>The subject land does not represent resting or foraging habitat for this species.</p> <p>The proposal would not result in any impacts on areas of potentially suitable</p>

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Common name (Scientific name)	Habitat requirements of the species	Likelihood of occurrence	Test of Significance	Rationale for whether a Test of Significance is undertaken
	<p>Migrates to Australia from late August to early September, although juveniles may not arrive until October-November.</p> <p>Most birds return north in March and April, however some individuals may stay over winter in Australia.</p> <p>Forages for food by methodically thrusting its bill deep into the mud to search for invertebrates, such as bivalve molluscs, gastropods, polychaete worms and crustaceans.</p>			habitat in the locality, and the proposal would not deleteriously impact on potential food or habitat resources for the Great Knot.
Eastern Curlew ( <i>Numenius madagascariensis</i> )	<p>It generally occupies coastal lakes, inlets, bays and estuarine habitats, and in New South Wales is mainly found in intertidal mudflats and sometimes saltmarsh of sheltered coasts.</p> <p>Occasionally, the species occurs on ocean beaches (often near estuaries), and coral reefs, rock platforms, or rocky islets.</p> <p>It forages in or at the edge of shallow water, occasionally on exposed algal mats or waterweed, or on banks of beach-cast seagrass or seaweed.</p> <p>It roosts on sandy spits and islets, especially on dry beach sand near the high-water mark, and among coastal vegetation including low saltmarsh or mangroves. May also roost on wooden oyster leases or other similar structures.</p> <p>The Eastern Curlew is carnivorous, mainly eating crustaceans (including crabs, shrimps and prawns), small molluscs, as well as some insects.</p> <p>The birds may delay breeding until three to four years of age. Within Australia, immature birds, which do not migrate, move northward in winter.</p>	Unlikely	No	<p>The subject land does not represent resting or foraging habitat for this species.</p> <p>The proposal would not result in any impacts on areas of potentially suitable habitat in the locality, and the proposal would not deleteriously impact on potential food or habitat resources for the Eastern Curlew.</p>
Powerful Owl	The Powerful Owl inhabits a range of vegetation types, from woodland and open sclerophyll forest to tall open wet forest and rainforest.	Unlikely	No	One (1) record from 2022 occurs within the assessment circle, and large areas of

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Common name (Scientific name)	Habitat requirements of the species	Likelihood of occurrence	Test of Significance	Rationale for whether a Test of Significance is undertaken
( <i>Ninox strenua</i> )	<p>The Powerful Owl requires large tracts of forest or woodland habitat but can occur in fragmented landscapes as well. The species breeds and hunts in open or closed sclerophyll forest or woodlands and occasionally hunts in open habitats. It roosts by day in dense vegetation comprising species such as Turpentine <i>Syncarpia glomulifera</i>, Black She-oak <i>Allocasuarina littoralis</i>, Blackwood <i>Acacia melanoxylon</i>, Rough-barked Apple <i>Angophora floribunda</i>, Cherry Ballart <i>Exocarpus cupressiformis</i> and a number of eucalypt species.</p> <p>The main prey items are medium-sized arboreal marsupials, particularly the Greater Glider, Common Ringtail Possum and Sugar Glider. There may be marked regional differences in the prey taken by Powerful Owls. For example in southern NSW, Ringtail Possum make up the bulk of prey in the lowland or coastal habitat. At higher elevations, such as the tableland forests, the Greater Glider may constitute almost all of the prey for a pair of Powerful Owls. Flying-foxes are important prey in some areas; birds comprise about 10-50% of the diet depending on the availability of preferred mammals. As most prey species require hollows and a shrub layer, these are important habitat components for the owl.</p> <p>Pairs of Powerful Owls demonstrate high fidelity to a large territory, the size of which varies with habitat quality and thus prey densities. In good habitats a mere 400 ha can support a pair when prey are dense. Where hollow trees and prey have been depleted, the owls need up to 4000 ha.</p> <p>Powerful Owls nest in large tree hollows (at least 0.5 m deep), in large eucalypts (diameter at breast height of 80-240 cm) that are at least 150 years old. While the female and young are in the nest hollow the male Powerful Owl roosts nearby (10-200 m) guarding them, often choosing</p>			<p>suitable potential habitat occurs more broadly through the local area.</p> <p>The development footprint is however unlikely to represent any form of preferred habitat and the species is unlikely to occur on the subject land with local young age class habitat unlikely to be utilised.</p> <p>The proposal would not result in any impacts on areas of potentially suitable habitat in the locality, and the proposal would not deleteriously impact on potential food or habitat resources for the Powerful Owl.</p>

Table 3: Threatened species recorded within 1.5 km or with the potential to occur, and subject land suitability assessment.

Common name (Scientific name)	Habitat requirements of the species	Likelihood of occurrence	Test of Significance	Rationale for whether a Test of Significance is undertaken
	<p>a dense "grove" of trees that provide concealment from other birds that harass him.</p> <p>Powerful Owls are monogamous and mate for life. Nesting occurs from late autumn to mid-winter, but is slightly earlier in north-eastern NSW (late summer - mid autumn). Clutches consist of two dull white eggs and incubation lasts approximately 38 days.</p>			
Eastern Grass Owl ( <i>Tyto longimembris</i> )	<p>Eastern Grass Owls are found in areas of tall grass, including grass tussocks, in swampy areas, grassy plains, swampy heath, and in cane grass or sedges on flood plains.</p> <p>They rest by day in a 'form' - a trampled platform in a large tussock or other heavy vegetative growth.</p> <p>If disturbed they burst out of cover, flying low and slowly, before dropping straight down again into cover.</p> <p>Always breeds on the ground. Nests are found in trodden grass, and often accessed by tunnels through vegetation.</p> <p>Breeding season is highly variable and dependent on environmental conditions, but in NSW nesting most typically occurs in autumn or winter.</p>	Unlikely	No	<p>Two (2) records occur from suitable potential habitat within the 1.5 km assessment area.</p> <p>The development footprint is unlikely to represent any form of preferred habitat due to its developed and managed state. Additionally, the species is unlikely to occur on the subject land, with a likely preference of utilising more suitable habitat available in areas adjacent to the subject land, including protected areas such as Cumbebin Swamp Nature Reserve.</p> <p>The proposal would not result in any impacts on areas of potentially suitable habitat in the locality, and the proposal would not deleteriously impact on potential food or habitat resources for the Eastern Grass Owl.</p>
Masked Owl	Lives in dry eucalypt forests and woodlands from sea level to 1100 m.	Unlikely	No	Two (2) records occur within suitable potential habitat from within the 1.5 km

Table 3: Threatened species recorded within 1.5 km or with the potential to occur, and subject land suitability assessment.

Common name (Scientific name)	Habitat requirements of the species	Likelihood of occurrence	Test of Significance	Rationale for whether a Test of Significance is undertaken
( <i>Tyto novaehollandiae</i> )	<p>A forest owl, but often hunts along the edges of forests, including roadsides.</p> <p>The typical diet consists of tree-dwelling and ground mammals, especially rats.</p> <p>Pairs have a large home-range of 1000 hectares or more, depending on prey availability.</p> <p>Roosts and breeds in moist eucalypt forested gullies, using large tree hollows or sometimes caves for nesting.</p>			<p>assessment circle.</p> <p>The development footprint is however unlikely to represent any form of preferred habitat and the species is unlikely to occur on the subject land with local young age class habitat unlikely to be utilised.</p> <p>The proposal would not result in any impacts on areas of potentially suitable habitat in the locality, and the proposal would not deleteriously impact on potential food or habitat resources for the Masked Owl.</p>
<b>Gastropoda</b>				
<p>Mitchell's Rainforest Snail</p> <p>(<i>Thersites mitchellae</i>)</p>	<p>Remnant areas of lowland subtropical rainforest and swamp forest on alluvial soils. Slightly higher ground around the edges of wetlands with palms and fig trees are particularly favoured habitat.</p> <p>Typically found amongst leaf litter on the forest floor, and occasionally under bark in trees.</p> <p>Active at night and feeds on leaf litter, fungi and lichen.</p>	Unlikely	No	<p>Numerous records occur in the locality, including the 1.5 km assessment circle, however, these are all from areas with more suitable habitat, such as Swamp Sclerophyll Forest. The nearby estuarine influence of hydrology is likely to reduce the suitability of the surrounding habitat for this species.</p> <p>The lack of suitable habitats, and absence of records from the surrounding area, provides a level of confidence that the species is unlikely to occur on or</p>



Table 3: Threatened species recorded within 1.5 km or with the potential to occur, and subject land suitability assessment.

Common name (Scientific name)	Habitat requirements of the species	Likelihood of occurrence	Test of Significance	Rationale for whether a Test of Significance is undertaken
				<p>near the subject land.</p> <p>The proposal would not result in any significant impacts on any areas of potential or preferred habitat in the locality, and therefore, the proposal would not deleteriously impact on potential food or habitat resources for Mitchell's Rainforest Snail.</p>
<b>Mammalia</b>				
Spotted-tailed Quoll ( <i>Dasyurus maculatus</i> )	<p>Recorded across a range of habitat types, including rainforest, open forest, woodland, coastal heath and inland riparian forest, from the sub-alpine zone to the coastline.</p> <p>Quolls use hollow-bearing trees, fallen logs, other animal burrows, small caves and rock outcrops as den sites.</p> <p>Mostly nocturnal, although will hunt during the day; spend most of the time on the ground, although also an excellent climber and will hunt possums and gliders in tree hollows and prey on roosting birds.</p> <p>Use communal 'latrine sites', often on flat rocks among boulder fields, rocky cliff-faces or along rocky stream beds or banks. Such sites may be visited by multiple individuals and can be recognised by the accumulation of the sometimes characteristic 'twisty-shaped' faeces deposited by animals.</p> <p>A generalist predator with a preference for medium-sized (500g-5kg) mammals. Consumes a variety of prey, including gliders, possums, small wallabies, rats, birds, bandicoots, rabbits, reptiles and insects. Also eats carrion and takes domestic fowl.</p>	Unlikely	No	<p>Only two (<math>n = 2</math>) records for the Spotted-tailed Quoll occur within the 1.5km assessment circle, a record from 2004 and 2006 respectively. With the extent of development and urbanisation over the past 20 years, the suitability and likely occurrence of this species in the area is likely diminishing.</p> <p>The small size of the subject land, the lack of requisite habitat features, and the negligible size and potential impacts of the proposal, indicates no significant impacts on any areas of potential or preferred habitat in the locality, and therefore, the proposal would not deleteriously impact on potential food or habitat resources for the Spotted-tailed Quoll.</p>

Table 3: Threatened species recorded within 1.5 km or with the potential to occur, and subject land suitability assessment.

Common name (Scientific name)	Habitat requirements of the species	Likelihood of occurrence	Test of Significance	Rationale for whether a Test of Significance is undertaken
	<p>Females occupy home ranges of 200-500 hectares, while males occupy very large home ranges from 500 to over 4000 hectares. Are known to traverse their home ranges along densely vegetated creeklines.</p> <p>Average litter size is five; both sexes mature at about one year of age. Life expectancy in the wild is about 3-4 yrs.</p>			
Common Planigale ( <i>Planigale maculata</i> )	<p>Common Planigales inhabit rainforest, eucalypt forest, heathland, marshland, grassland and rocky areas where there is surface cover, and usually close to water.</p> <p>They are active at night and during the day shelter in saucer-shaped nests built in crevices, hollow logs, beneath bark or under rocks.</p> <p>They are fierce carnivorous hunters and agile climbers, preying on insects and small vertebrates, some nearly their own size.</p> <p>They breed from October to January.</p> <p>The female builds a nest lined with grass, eucalypt leaves or shredded bark.</p>	Low	Yes	<p>Only one (<math>n = 1</math>) record of the Common Planigale occurs in the 1.5km assessment circle, from 2020, however, the BioNet location is not considered to be represented of the record.</p> <p>The managed portion of the subject land lacks the requisite habitat features required by this species, with a general absence of leaf litter, ground covers, and woody debris indicating no adequate areas of shelter necessary for the Common Planigale.</p> <p>However, marginal potential habitat occurs in the southwestern portion of the subject land and more broadly through the locality, that may be suitable for the species.</p> <p>The proposal would not be expected to impact on any foraging or habitat resources for this species. However, in consideration of the precautionary</p>

Table 3: Threatened species recorded within 1.5 km or with the potential to occur, and subject land suitability assessment.

Common name (Scientific name)	Habitat requirements of the species	Likelihood of occurrence	Test of Significance	Rationale for whether a Test of Significance is undertaken
				principle, the Common Planigale has undergone additional assessment by way of a ToS.
Yellow-bellied Sheathtail-bat ( <i>Saccolaimus flaviventris</i> )	<p>Roosts singly or in groups of up to six, in tree hollows and buildings; in treeless areas they are known to utilise mammal burrows.</p> <p>When foraging for insects, flies high and fast over the forest canopy, but lower in more open country.</p> <p>Forages in most habitats across its very wide range, with and without trees; appears to defend an aerial territory.</p> <p>Breeding has been recorded from December to mid-March, when a single young is born.</p> <p>Seasonal movements are unknown; there is speculation about a migration to southern Australia in late summer and autumn.</p>	Low	No	<p>Only one (<math>n = 1</math>) record of the Yellow-bellied Sheathtail-bat occurs within the 1.5 km assessment circle. Only seven (<math>n = 7</math>) records occur within the Byron Shire.</p> <p>The subject land does not contain any suitable roosting habitat; however, it would be considered that the subject land could represent potential foraging habitat for this aerial feeder. However, it is expected that with consideration of the small size of the development footprint, and the subject land, it is likely to be of little significance in the local context for this species. Furthermore, as no areas of potential habitat would be impacted, the proposal would not result in any significant impacts on any areas of potential or preferred habitat in the locality, and therefore, the proposal would not deleteriously impact on potential food or habitat resources for the Yellow-bellied Sheathtail-bat.</p>
Little Bent-winged Bat	Moist eucalypt forest, rainforest, vine thicket, wet and dry sclerophyll	Low	No	Twelve ( $n = 12$ ) records of Little Bent-

Table 3: Threatened species recorded within 1.5 km or with the potential to occur, and subject land suitability assessment.

Common name (Scientific name)	Habitat requirements of the species	Likelihood of occurrence	Test of Significance	Rationale for whether a Test of Significance is undertaken
<i>(Miniopterus australis)</i>	<p>forest, Melaleuca swamps, dense coastal forests and banksia scrub. Generally found in well-timbered areas.</p> <p>Little Bentwing-bats roost in caves, tunnels, tree hollows, abandoned mines, stormwater drains, culverts, bridges and sometimes buildings during the day, and at night forage for small insects beneath the canopy of densely vegetated habitats.</p> <p>They often share roosting sites with the Common Bentwing-bat and, in winter, the two species may form mixed clusters.</p> <p>In NSW the largest maternity colony is in close association with a large maternity colony of Eastern Bentwing-bats (<i>Miniopterus schreibersii</i>) and appears to depend on the large colony to provide the high temperatures needed to rear its young.</p> <p>Maternity colonies form in spring and birthing occurs in early summer. Males and juveniles disperse in summer. Only five nursery sites /maternity colonies are known in Australia.</p>			<p>winged Bat occur within the 1.5km assessment circle.</p> <p>The development site is not as described for preferred habitat for this species, either for roosting or foraging. However, the species is known to forage widely, and more suitable potential habitat does occur in the southwestern portion of the subject land and more broadly in the locality.</p> <p>As all important potential habitats would be retained, the proposal would not be expected to result in any significant impacts on potential habitat or food resources for the Little Bent-winged Bat.</p>
Large Bent-winged Bat <i>(Miniopterus orianae oceanensis)</i>	<p>Caves are the primary roosting habitat, but also use derelict mines, storm-water tunnels, buildings and other man-made structures.</p> <p>Form discrete populations centred on a maternity cave that is used annually in spring and summer for the birth and rearing of young.</p> <p>Maternity caves have very specific temperature and humidity regimes.</p> <p>At other times of the year, populations disperse within about 300 km range of maternity caves.</p> <p>Cold caves are used for hibernation in southern Australia.</p> <p>Breeding or roosting colonies can number from 100 to 150,000 individuals.</p> <p>Hunt in forested areas, catching moths and other flying insects above</p>	Low	No	<p>Only one (<math>n = 1</math>) record of the Large Bent-winged Bat occur within the 1.5km assessment circle.</p> <p>The development footprint is not as described for preferred habitat for this species, either for roosting or foraging. However, the species is known to forage widely, and potential habitat does occur in the southwestern portion of the subject land and more broadly in the locality.</p>

Table 3: Threatened species recorded within 1.5 km or with the potential to occur, and subject land suitability assessment.

Common name (Scientific name)	Habitat requirements of the species	Likelihood of occurrence	Test of Significance	Rationale for whether a Test of Significance is undertaken
	the tree tops.			As all important potential habitats would be retained, the proposal would not be expected to result in any significant impacts on potential habitat or food resources for the Large Bent-winged Bat.
Eastern Chestnut Mouse ( <i>Pseudomys gracilicaudatus</i> )	<p>In NSW the Eastern Chestnut Mouse is mostly found, in low numbers, in heathland and is most common in dense, wet heath and swamps. In the tropics it is more an animal of grassy woodlands.</p> <p>Optimal habitat appears to be in vigorously regenerating heathland burnt from 18 months to four years previously. By the time the heath is mature, the larger Swamp Rat becomes dominant, and Eastern Chestnut Mouse numbers drop again.</p> <p>Feeds at night via runways through the grassy and sedge understorey, within an area of less than half a hectare. It has a broad diet of grass stems, invertebrates, fungi and seeds, with the relative significance of each component varying seasonally.</p> <p>Up to three litters are produced from spring to autumn; this strategy allows rapid build-up of numbers in years following fire.</p>	Unlikely	No	<p>The subject land does not contain suitable habitat as described for this species, and none occurs in proximity to the subject land. The openness and regular management of the development footprint also indicates the lack of suitable habitat.</p> <p>Only one (<math>n = 1</math>) record occurs within the 1.5km assessment circle, and only two (<math>n = 2</math>) records occur within the Byron Shire.</p> <p>No areas of potential habitat would be impacted, the proposal would not result in any significant impacts on any areas of potential or preferred habitat in the locality, and therefore, the proposal would not deleteriously impact on potential food or habitat resources for the Eastern Chestnut Mouse.</p>
Koala	Koalas inhabit eucalypt woodlands and forests where they feed on the foliage of more than 70 eucalypt species and 30 non-eucalypt species,	Low	Yes	There are numerous ( $n = 161$ ) records of Koalas occur within the 1.5km

Table 3: Threatened species recorded within 1.5 km or with the potential to occur, and subject land suitability assessment.

Common name (Scientific name)	Habitat requirements of the species	Likelihood of occurrence	Test of Significance	Rationale for whether a Test of Significance is undertaken
<i>(Phascolarctos cinereus)</i>	<p>but in any one area will select preferred browse species.</p> <p>Inactive for most of the day, Koalas feed and move mostly at night, spending most of their time in trees, but will descend and traverse open ground to move between trees.</p> <p>Home range size varies with quality of habitat, ranging from less than two ha to several hundred hectares in size.</p> <p>Generally solitary but have complex social hierarchies based on a dominant male with a territory overlapping several females and subordinate males on the periphery.</p> <p>Females breed at two years of age and produce one young per year.</p>			<p>assessment circle.</p> <p>The development footprint and the subject land do not contain Koala feed tree species, and none require removal or would be impacted to accommodate the proposal.</p> <p>Suitable habitat occurs beyond the development footprint in the wider locality; however, these areas would not be impacted.</p> <p>Although the proposal would not result in any impacts on potential habitat or food resources for this species, it has been included for a ToS as a matter of precaution.</p>
Grey-headed Flying-fox <i>(Pteropus poliocephalus)</i>	<p>Occur in subtropical and temperate rainforests, tall sclerophyll forests and woodlands, heaths and swamps as well as urban gardens and cultivated fruit crops.</p> <p>Roosting camps are generally located within 20 km of a regular food source and are commonly found in gullies, close to water, in vegetation with a dense canopy.</p> <p>Individual camps may have tens of thousands of animals and are used for mating, and for giving birth and rearing young.</p> <p>Annual mating commences in January and conception occurs in April or May; single young are born in October or November.</p> <p>Site fidelity to camps is high; some camps have been used for over a</p>	Low	No	<p>The development footprint does not contain any suitable habitat for the Grey-headed Flying-fox, and only marginal potential habitat occurs on the subject land.</p> <p>No known camps occur in close proximity to the subject land, and none would be impacted by the proposal.</p> <p>No areas of significant potential habitat would be impacted, the proposal would not result in any significant impacts on any areas of potential or preferred</p>

Table 3: Threatened species recorded within 1.5 km or with the potential to occur, and subject land suitability assessment.

Common name (Scientific name)	Habitat requirements of the species	Likelihood of occurrence	Test of Significance	Rationale for whether a Test of Significance is undertaken
	<p>century.</p> <p>Can travel up to 50 km from the camp to forage; commuting distances are more often &lt;20 km.</p> <p>Feed on the nectar and pollen of native trees, in particular Eucalyptus, Melaleuca and Banksia, and fruits of rainforest trees and vines. Also forage in cultivated gardens and fruit crops.</p>			habitat in the locality, and therefore, the proposal would not deleteriously impact on potential food or habitat resources for the Grey-headed Flying-fox.
Common Blossom-bat ( <i>Syconycteris australis</i> )	<p>Common Blossom-bats often roost in littoral rainforest and feed on nectar and pollen from flowers in adjacent heathland and paperbark swamps. They have also been recorded in a range of other vegetation communities, such as subtropical rainforest, wet sclerophyll forest and other coastal forests.</p> <p>They generally roost individually in dense foliage and vine thickets of the sub-canopy, staying in the same general area for a season. They change roost sites daily, but each roost site is generally only 50m or so away from other recent roosts.</p> <p>Favoured feeding sites are repeatedly visited on consecutive nights within a flowering season and revisited over several years.</p> <p>They require a year round supply of nectar and pollen which is gathered from a mosaic of coastal complex vegetation types. When these vegetation types are in short supply of nectar and pollen (Nov/Dec in northern NSW) Common Blossom-bats have been known to utilise riverine areas containing Black Bean, Silky Oak and Weeping Bottlebrush.</p>	Unlikely	No	<p>The subject land does not contain typical or preferred habitat for the Common Blossom-bat, and none is considered to occur in immediate proximity to the development footprint.</p> <p>Only one (<math>n = 1</math>) record occurs within the 1.5km assessment circle, approx. 1km from the development site, which indicates that the species is likely not a regular visitor to the immediate locality.</p> <p>No areas of significant potential habitat would be impacted, the proposal would not result in any significant impacts on any areas of potential or preferred habitat in the locality, and therefore, the proposal would not deleteriously impact on potential food or habitat resources for the Common Blossom-bat.</p>
Southern Myotis ( <i>Myotis macropus</i> )	Generally, roost in groups of 10 - 15 close to water in caves, mine shafts, hollow-bearing trees, storm water channels, buildings, wharves,	Low	No	Multiple ( $n = 22$ ) records of the Southern Myotis occur within the 1.5km

Table 3: Threatened species recorded within 1.5 km or with the potential to occur, and subject land suitability assessment.

Common name (Scientific name)	Habitat requirements of the species	Likelihood of occurrence	Test of Significance	Rationale for whether a Test of Significance is undertaken
	<p>bridges and in dense foliage.</p> <p>Forage over streams and pools catching insects and small fish by raking their feet across the water surface.</p> <p>In NSW females have one young each year usually in November or December.</p>			<p>assessment circle.</p> <p>The development footprint is not as described for preferred habitat for this species, either for roosting or foraging.</p> <p>Potential foraging habitat occurs along the constructed drainage channel, located south of the subject land, located approx. 80m from the development footprint.</p> <p>However, as all important potential habitats would be retained, the proposal would not be expected to result in any significant impacts on potential habitat or food resources for the Southern Myotis.</p>
Eastern Long-eared Bat ( <i>Nyctophilus bifax</i> )	<p>Lowland subtropical rainforest and wet and swamp eucalypt forest, extending into adjacent moist eucalypt forest.</p> <p>Coastal rainforest and patches of coastal scrub are particularly favoured.</p> <p>Roosts in tree hollows, the hanging foliage of palms, in dense clumps of foliage of rainforest trees, under bark and in shallow depressions on trunks and branches, among epiphytes, in the roots of strangler figs, among dead fronds of tree ferns and less often in buildings.</p>	Low	No	<p>Nine (<math>n = 9</math>) records of the Eastern Long-eared Bat occur within the 1.5km assessment circle.</p> <p>The development footprint is not as described for preferred habitat for this species, either for roosting or foraging. However, the species is known to forage widely, and potential habitat does occur in the southwestern portion of the subject land and more broadly in the locality.</p> <p>However, as all important potential</p>



Table 3: Threatened species recorded within 1.5 km or with the potential to occur, and subject land suitability assessment.

Common name (Scientific name)	Habitat requirements of the species	Likelihood of occurrence	Test of Significance	Rationale for whether a Test of Significance is undertaken
				habitats would be retained, the proposal would not be expected to result in any significant impacts on potential habitat or food resources for the Eastern Long-eared Bat.
Greater Broad-nosed Bat ( <i>Scoteanax rueppellii</i> )	<p>Utilises a variety of habitats from woodland through to moist and dry eucalypt forest and rainforest, though it is most commonly found in tall wet forest.</p> <p>Although this species usually roosts in tree hollows, it has also been found in buildings.</p> <p>Forages after sunset, flying slowly and directly along creek and river corridors at an altitude of 3 - 6 m.</p> <p>Open woodland habitat and dry open forest suits the direct flight of this species as it searches for beetles and other large, slow-flying insects; this species has been known to eat other bat species.</p> <p>Little is known of its reproductive cycle, however a single young is born in January; prior to birth, females congregate at maternity sites located in suitable trees, where they appear to exclude males during the birth and raising of the single young.</p>	Low	No	<p>Three (<math>n = 3</math>) records of the Greater Broad-nosed Bat occur within the 1.5km assessment circle.</p> <p>The development footprint is not as described for preferred habitat for this species, either for roosting or foraging. However, the species is known to forage widely, and potential habitat does occur in the southwestern portion of the subject land and more broadly in the locality.</p> <p>However, as all important potential habitats would be retained, the proposal would not be expected to result in any significant impacts on potential habitat or food resources for the Eastern Long-eared Bat.</p>
<b>Reptilia</b>				
Loggerhead Turtle ( <i>Caretta caretta</i> )	Loggerhead Turtles are ocean-dwellers, foraging in deeper water for fish, jellyfish and bottom-dwelling animals. The female comes ashore to lay her eggs in a hole dug on the beach in tropical regions during the	Very Unlikely	No	The subject land does not contain any suitable habitat for this marine species. Therefore, the proposal would not

Table 3: Threatened species recorded within 1.5 km or with the potential to occur, and subject land suitability assessment.

Common name (Scientific name)	Habitat requirements of the species	Likelihood of occurrence	Test of Significance	Rationale for whether a Test of Significance is undertaken
	warmer months.			impact on any habitat or habitat values for this species.
Green Turtle ( <i>Chelonia mydas</i> )	Ocean-dwelling species spending most of its life at sea. Carnivorous when young but as adults they feed only on marine plant material. Eggs laid in holes dug in beaches throughout their range. Scattered nesting records along the NSW coast.	Very Unlikely	No	The subject land does not contain any suitable habitat for this marine species. Therefore, the proposal would not impact on any habitat or habitat values for this species.
Hawksbill Turtle ( <i>Eretmochelys imbricata</i> )	Occurs in inshore and offshore marine waters. Rarely breeds in Australia, with the nearest regular nesting sites being the Solomon Islands and Malayan Archipelago. Occasional breeding records from NSW coast, including between Ballina and Lennox Head in northern NSW. Number of sightings in southern waters suggest species actively seeks temperate feeding grounds, rather than occurring only as stray vagrants. Feed on jellyfish.	Very Unlikely	No	The subject land does not contain any suitable habitat for this marine species. Therefore, the proposal would not impact on any habitat or habitat values for this species.
<b>Flora</b>				
Slender Marsdenia ( <i>Marsdenia longiloba</i> )	Subtropical and warm temperate rainforest, lowland moist or open eucalypt forest adjoining rainforest and, sometimes, in areas with rock outcrops. Associated species include <i>Eucalyptus crebra</i> , <i>E. microcorys</i> , <i>E. acmenoides</i> , <i>E. saligna</i> , <i>E. propinqua</i> , <i>Corymbia intermedia</i> and <i>Lophostemon confertus</i> . Flowering occurs in summer.	Unlikely	No	The subject land does not contain any records for this species, and it was not recorded during targeted flora surveys of the subject land.

Table 3: Threatened species recorded within 1.5 km or with the potential to occur, and subject land suitability assessment.

Common name (Scientific name)	Habitat requirements of the species	Likelihood of occurrence	Test of Significance	Rationale for whether a Test of Significance is undertaken
White Lace Flower ( <i>Archidendron hendersonii</i> )	White Lace Flower occurs in riverine and lowland subtropical rainforest, littoral rainforest, coastal cypress pine forest and their ecotones. It is found on a variety of soils including coastal sands and those derived from basalt and metasediments.	Unlikely	No	The subject land does not contain any records for this species, and it was not recorded during targeted flora surveys of the subject land.
Stinking Cryptocarya ( <i>Cryptocarya foetida</i> )	Found in littoral, warm temperate and subtropical rainforest, wet sclerophyll forest and Camphor laural forest usually on sandy soils, but mature trees are also known on basalt soils. The seeds are readily dispersed by fruit-eating birds, and seedlings and saplings have been recorded from other habitats where they are unlikely to develop to maturity. Though seedlings can be fairly numerous, few mature trees are known.	Unlikely	No	The subject land does not contain any records for this species, and it was not recorded during targeted flora surveys of the subject land.
Durobby ( <i>Syzygium moorei</i> )	Durobby is found in subtropical and riverine rainforest at low altitude. It often occurs as isolated remnant paddock trees.	Unlikely	No	The subject land does not contain any records for this species, and it was not recorded during targeted flora surveys of the subject land.
Southern Swamp Orchid ( <i>Phaius australis</i> )	Swampy grassland or swampy forest including rainforest, eucalypt or paperbark forest, mostly in coastal areas.	Unlikely	No	The subject land does not contain any records for this species, and it was not recorded during targeted flora surveys of the subject land.
Scented Acronychia ( <i>Acronychia littoralis</i> )	Scented Acronychia occurs in transition zones between littoral rainforest and swamp sclerophyll forest; between littoral and coastal cypress pine communities; and margins of littoral forest. The species mainly occurs within 2km from the coast on sandy soil. Two forms of Scented Acronychia exist, one which can produce viable seeds, and one which can only reproduce vegetatively.	Unlikely	No	The subject land does not contain any records for this species, and it was not recorded during targeted flora surveys of the subject land.

### 3. Impact assessment

The proposal was located, planned and designed to avoid and minimise impacts to native vegetation on the subject land as well as preventing impacts to the local ecology by utilising a low constraint site consisting of already developed areas (450 m<sup>2</sup>) and derived grassland (50 m<sup>2</sup>). The proposal has been designed, and subsequently redesigned to prevent clearing, and reduce and therefore minimise the impacts of the proposal overall. No native trees require removal and overall impacts are considered negligible.

Impacts based on available information are summarised below. A suite of management strategies and mitigation measures has been provided in Section 5 to further reduce any potential impacts.

#### 3.1 Vegetation impacts

A small area of managed grassland, generally dominated by exotic species, and regularly managed, would be impacted by the proposal. No native trees, shrubs, palms or similar protected vegetation would be impacted. The development footprint is contained within a low ecological constraint area of derived and managed grassland (approx. 50 m<sup>2</sup>) and developed hard surfaces (approx. 450 m<sup>2</sup>).

Isolated trees do occur in close proximity (Figure 4); however, the arborist report opines that “the construction of the development as planned will not cause any of the trees described in this report to become unviable” (Northern Tree Care, 2023). The report further specifies tree protection measures that should be adopted during construction of the proposal.

Therefore, all vegetation, including trees proximal to the development footprint would be retained, and protected from impacts, and the sum of vegetation impacts likely as a result of the proposal is considered negligible.

No threatened flora species occur on the subject land and no areas of consolidated vegetation would require removal or be impacted by the proposal.



*Plate 6: The residential area lawns is regularly managed with isolated native trees.*



### 3.2 Habitat loss or disturbance

Habitat loss or disturbance would be negligible, as the development footprint has been designed to maximise an existing cleared and already developed area, whilst avoiding impacts to retained native vegetation, including native trees proximal to the proposal.

No areas of habitat significance, no consolidated forest vegetation, nor any recognisable native ecological communities would be impacted, and any significant areas of vegetation in the locality would not be disturbed nor indirectly impacted. Any potential residual impacts would not be expected to result in any loss of habitat or significant disturbance for any threatened native species.

### 3.3 Water Quality or Hydrology Impacts

The subject land does not contain any areas of permanent freshwater wetland or natural freshwater drainage lines, nor do any occur immediately adjacent to the subject land. The subject land is low-lying, and subject to occasional localised ponding. A constructed drainage channel which transports estuarine water south of the subject land is located approx. 80 m from the development footprint.

The proposal for alterations and additions to an existing multi-dwelling housing development, on land already substantially developed, is not likely to result in any deleterious impacts on water quality or on hydrological function. No significant cut or fill is required.

The incorporation of mitigation measures to address any potential increase in sediment and/or nutrient loads (during construction) would adequately minimise any potential impacts on adjacent or downstream ecology. Future impacts during the occupation phase of the proposal would similarly be mitigated through the implementation of design principles including stormwater and waste management, such that future impacts as a result of the proposal would be considered negligible (Section 5).



*Plate 7: A constructed drain with brackish/estuarine water occurs approx. 80 m from the proposal.*



No.	species	DBH mm
1	Casuarina glauca	410
2	Cupaniopsis anacardioides	210
3	Casuarina glauca	320
4	Casuarina glauca	370
5	Casuarina glauca	360
6	Ficus virens	600
7	Casuarina glauca	380
8	Casuarina glauca	500
9	Casuarina glauca	360
10	Casuarina glauca	460
11	Cupaniopsis anacardioides	210
12	Cupaniopsis anacardioides	130
13	Casuarina glauca	270
14	Casuarina glauca	420
15	Cupaniopsis anacardioides	120
16	Casuarina glauca	300
17	Casuarina glauca	410

Figure 4: Tree survey plan, vegetation and proposal alterations and additions.

**Legend**

- Subject Land - 1 Kendall St
- Approved Asset Protection Zone
- Proposal additions & alterations
- Trees - surveyed (refer arborist report)
- Trees - surveyed
- Hydroline
- Lot
- NPWS Reserve
- Road Corridor

**Vegetation - subject land and surrounds**

- Swamp Oak forest
- Swamp Oak with rainforest and mangrove elements

**Land Zoning\_Byron LEP 2014**

- C2 - Environmental Conservation
- C3 - Environmental Management
- R2 - Low Density Residential





## 4. Statutory assessment of the proposal

The proposal has been (i) examined in the context of the most relevant environmental legislation and planning instruments; and (ii) assessed based on the subject land attributes, threatened species records, vegetation condition and habitat potential.

Key legislation and planning instruments assessed and of most relevance include the:

- Biodiversity Conservation (BC) Act 2016;
- Biodiversity Conservation (BC) Regulation 2017;
- Environmental Planning and Assessment Act 1979;
- State Environmental Planning Policy (SEPP) (Biodiversity and Conservation) 2021;
- State Environmental Planning Policy (Resilience and Hazards) 2021; and
- Environment Protection and Biodiversity Conservation (EPBC) Act 1999.

Other applicable legislation relating to the proposal are assessed within the relevant proposal reports and documents accompanying the DA submission.

### 4.1 Biodiversity Conservation Act 2016

Section 7.2 of the BC Act 2016 provides that development under the EP&A Act 1979 is likely to significantly affect threatened species if:

- (a) It is likely to significantly affect threatened species or ecological communities, or their habitats, according to the test in Section 7.3, or
- (b) The development exceeds the biodiversity offsets scheme (BOS) threshold if the BOS applies to the impacts of the development on biodiversity values, or
- (c) It is carried out in a declared Area of Outstanding Biodiversity Value (AOBV).

No threatened flora species listed under Schedule 1 of the BC Act 2016 were recorded at the subject land or in the immediate vicinity. Therefore, it is considered that no threatened flora species would be likely to be impacted by the proposal.

Vegetation on the subject land and extending south and west of the subject land, particularly within the Cumbebin Swamp Nature Reserve, contains tree species commonly found within the vegetation community listed in Schedule 2 of the BC Act 2016 as a threatened ecological community (TEC), namely the endangered ecological community (EEC) *Swamp Oak Floodplain Forest of the NSW North Coast, Sydney Basin and South East Corner bioregions*. It is considered that as a result of the complete lack of typical understorey vegetation, a complete lack of a midstorey, and a largely absent upper storey, the vegetation in the R2 Low Density Residential is not representative of the TEC. Vegetation within the development footprint is low managed residential lawn, dominated by exotic species.

Vegetation in the southern half of the subject land, beyond the R2 Low Density Residential Area and predominantly cleared and managed portions, is analogous with the EEC Swamp Oak Floodplain Forest of the NSW North Coast, Sydney Basin and South East Corner bioregions as described in the final Scientific Committee determination. However, this area on the subject land and vegetation beyond, is separate from the proposal and would not be impacted directly or indirectly as a result.

No threatened fauna species were recorded, although extensive targeted surveys for fauna classes was not undertaken. The subject land, particularly within and in the vicinity of the development footprint, contains little valuable habitat for threatened fauna species listed under Schedule 1 of the BC Act 2016. Valuable habitat does occur proximal to the subject land and in the wider locality; however, no habitat of value would be impacted by the proposal.

A subject land suitability assessment was initially undertaken for those species recorded within 1.5 km of the development footprint (Table 3). This identified the following five ( $n = 5$ ) species as having some potential to occur on the subject land and to be potentially impacted by the proposal. These species were further assessed by way of a *Test of Significance* (ToS):

- Bush Stone-curlew (*Burhinus grallarius*)
- South-eastern Glossy Black-Cockatoo (*Calyptorhynchus lathami lathami*)
- Pale-vented Bush Hen (*Amaurornis moluccana*)
- Common Planigale (*Planigale maculata*)
- Koala (*Phascolarctos cinereus*)

The ToS set out in Section 7.3 of the BC Act 2016 is based on the footprint and design of the development. Measures that offset or otherwise compensate for the development have not been considered in determining the degree of the developments effect on threatened species or ecological communities.

In determining the nature and magnitude of an impact, the following factors have been considered:

- pre-construction, construction and occupation/maintenance phases;
- all on-site and off-site impacts, including location, installation, operation and maintenance of auxiliary infrastructure and fire management zones;
- all direct and indirect impacts;
- the frequency and duration of each known or likely impact/action;
- the total impact which can be attributed to that action over the entire geographic area affected, and over time;
- the sensitivity of the receiving environment; and,
- the degree of confidence with which the impacts of the action are known and understood.

A ToS under Section 7.3 of the BC Act was undertaken for those species considered likely to occur and with some potential to be directly or indirectly impacted by the proposal (Appendix A). The ToS concluded that the proposal for alterations and additions to an existing multi-dwelling housing development is not likely to result in any direct or indirect impacts to threatened species, populations, ecological communities, or their habitats either on the subject land or beyond.

#### 4.1.1 Biodiversity Conservation Regulation 2017

Part 7 of the BC Regulation 2017 prescribes the biodiversity assessment and approvals under the EP&A Act 1979, and details when an activity exceeds a threshold and therefore requires assessment under the Biodiversity Offsets Scheme (BOS). The following three main threshold triggers apply: (i)



Area clearing threshold; (ii) Biodiversity Values Map threshold; and (iii) a threatened species ToS.

- (i) Area clearing thresholds (Clause 7.2) depend on the minimum lot size under the relevant LEP, as defined in Table 4. The proposal is to occur on land zoned R2 Low Density Residential under the Byron Local Environmental Plan 2014. The 'Minimum Lot Size Method' identified in the Biodiversity Values Map and Threshold Report (Appendix C) is 600 m<sup>2</sup>. The corresponding area threshold of entry into the scheme is therefore considered to be 0.25 ha (Table 4). Given the entire development proposal footprint covers an area approx. 500 m<sup>2</sup>, and vegetation impacts (i.e., managed exotic lawn) have been calculated as being approx. 50 m<sup>2</sup>, the area clearing threshold is not exceeded and does not apply.
- (ii) The Biodiversity Values Map threshold (Clause 7.3) is triggered when clearing of native vegetation or additional biodiversity impacts (Clause 6.1) within the Biodiversity Values Map exceeds a threshold. The proposal location marginally intersects an area mapped on the Biodiversity Values Map (Figure 5). This area is predominantly already developed hard surfaces (concrete driveway and parking), with an additional small area (approx. 50 m<sup>2</sup>) consisting of managed residential lawn dominated by exotic species.

The Biodiversity Values Map in this location is made up of two metadata layers, Coastal Wetlands associated mapping and a threatened species layer (i.e., Swift Parrot). The mapping does not accurately reflect the biodiversity values for which it has been applied, i.e., in a residential area that is already cleared, developed, and managed.

Although the proposal subject to this ecological assessment does occur within an area mapped on the Biodiversity Values Map, it is considered that no clearing of native vegetation or additional biodiversity impacts would occur within the area mapped on the Biodiversity Values Map. This position has been supported by BSC following a site inspection (Appendix D). It follows that this threshold does not apply.

- (iii) A threatened species ToS is triggered for all local developments that do not exceed the BOS threshold. If the ToS assessment indicates that there will be a significant impact, this exceeds the threshold, and the proponent must carry-out a BAM assessment. No threatened flora species were identified from the development footprint. And following a detailed desktop assessment, site habitat assessment and threatened species review, a ToS was undertaken for five ( $n = 5$ ) species recorded within 1.5 km of the development footprint with the potential to occur and potential to be impacted by the proposal (Appendix A). The ToS concluded that the proposal is not likely to result in any direct or indirect impacts to threatened species, populations, ecological communities or their habitats. Therefore, the BOS threshold has not been exceeded and the BOS will not apply.

*Table 4: Area clearing thresholds as stipulated under Part 7.2 of the Biodiversity Conservation Regulation, 2017.*

Minimum lot size of land (ha)	Area of clearing (ha)
Less than 1	0.25 or more
Less than 40 but not less than 1	0.5 or more
Less than 1,000 but not less than 40	1 or more
1,000 or more	2 or more

## 4.2 Environmental Planning and Assessment Act 1979

The proposal is an activity regulated under Part 4 of the EP&A Act. For the purposes of the Act, the proposal is not a development that is likely to significantly affect threatened species, populations, ecological communities, or their habitats.

In consideration of the likely impacts of the development pursuant to the EP&A Act Section 4.15 evaluation:

*S.4.15 1(b) - the likely impacts of that development, including environmental impacts on both the natural and built environments, and social and economic impacts in the locality; and*

The proposed development would not significantly impact the natural environment of the locality. No significant areas of native vegetation or significant fauna habitat would be impacted. The proposal would occur on low constraint land, the scale of the proposal is small, and the proposal is suitable for the zoning of the site. The most significant habitat associated with the subject land, which occurs in the southwest beyond the approved and managed APZ, would be retained and protected. The direct and indirect environmental impacts of the proposal would be negligible.

*S.4.15 1(c) - the suitability of the site for the development.*

The development can be entirely accommodated on lower constraint cleared and previously developed land. The most significant forest habitat associated with the subject land occurs in the southwest of the subject land, beyond the approved and managed APZ, with all significant habitat retained and protected. It is therefore considered that the site is suitable for the proposal with the incorporation of suitable mitigation measures.

## 4.3 State Environmental Planning Policy (Biodiversity and Conservation) 2021

Chapter 4 of (SEPP Biodiversity and Conservation) 2021 defines Core Koala Habitat as:

- (a) an area of land with a resident population of koalas, evidenced by attributes such as breeding females, being females with young, and recent sightings of and historical records of a population.
- (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 development footprint and adjacent managed residential lawn areas do not contain Schedule 3 trees. However, rare to occasional Schedule 3 tree species do occur in the locality, and areas where species such as *Melaleuca quinquenervia* are the dominant species. Therefore, potential habitat does occur scattered throughout the locality, including areas of consolidated forest habitat located south, south-east and west of the subject land, most notably within the Cumbebin Swamp Nature Reserve. However, as noted, the development footprint does not contain any Koala feed trees, nor does it contain any areas of native vegetation considered able to support a resident population of Koalas.

Multiple records for the Koala occur within the 1.5 km assessment circle; however, these records are in areas where suitable habitat or food trees occur. The proposal does not require the removal of any Koala feed trees, nor would it impact any areas of suitable habitat. All habitat in the locality will continue to serve its present function to Koalas, with no direct or indirect impact from the proposal.

The Byron Coast Comprehensive Koala Plan of Management (CKPoM) was approved under the SEPP

(Koala Habitat Protection) 2021 in March 2021; therefore Part 4.2 (Cl. 4.8) of Chapter 4 of SEPP (Biodiversity and Conservation) 2021 needs to be considered. Clause 4.8 (2) states that *"The council's determination of the development application must be consistent with the approved koala plan of management that applies to the land"*. However, the development assessment flow chart in the Byron Coast CKPoM (i.e., Figure 10, pg. 62), indicates that the CKPoM does not apply to the land as the subject land is <1 hectare in size.

It is therefore concluded that: (i) the subject land does not meet the definitions of 'core' Koala habitat; and (ii) no Koala habitat or Schedule 3 trees would be impacted by the development. Hence, the SEPP (Biodiversity and Conservation) 2021 and Byron Coast CKPoM do not prevent granting consent to the development application.

In consideration of the precautionary principle, the Koala underwent additional assessment by way of a Test of Significance (ToS), which concluded that the proposal would not result in a significant impact for this species.

#### **4.4 State Environmental Planning Policy (Resilience and Hazards) 2021**

##### **4.4.1 Chapter 2: Coastal Management**

Part 2.2 identifies the development controls for coastal management areas, with the key sections being as follows:

- Section 2.7 - Development on certain land within coastal wetlands and littoral rainforests area.
- Section 2.8 - Development on land in proximity to coastal wetlands or littoral rainforest.
- Section 2.10 - Development on land within the coastal environment area.
- Section 2.11 - Development on land within the coastal use area.

##### **Section 2.7 - Development on certain land within coastal wetlands and littoral rainforests area.**

(1) The following may be carried out on land identified as "coastal wetlands" or "littoral rainforest" on the Coastal Wetlands and Littoral Rainforests Area Map only with development consent—

- (a) the clearing of native vegetation within the meaning of Part 5A of the Local Land Services Act 2013,
- (b) the harm of marine vegetation within the meaning of Division 4 of Part 7 of the Fisheries Management Act 1994,
- (c) the carrying out of any of the following—
  - (i) earthworks (including the depositing of material on land),
  - (ii) constructing a levee,
  - (iii) draining the land,
  - (iv) environmental protection works,
- (d) any other development.

Note— Clause 2.14 provides that, for the avoidance of doubt, nothing in this Part—

- (a) permits the carrying out of development that is prohibited development under another

environmental planning instrument, or

(b) permits the carrying out of development without development consent where another environmental planning instrument provides that the development may be carried out only with development consent.

(2) Development for which consent is required by subsection (1), other than development for the purpose of environmental protection works, is declared to be designated development for the purposes of the Act.

(3) Despite subsection (1), development for the purpose of environmental protection works on land identified as “coastal wetlands” or “littoral rainforest” on the Coastal Wetlands and Littoral Rainforests Area Map may be carried out by or on behalf of a public authority without development consent if the development is identified in—

(a) the relevant certified coastal management program, or

(b) a plan of management prepared and adopted under Division 2 of Part 2 of Chapter 6 of the Local Government Act 1993, or

(c) a plan of management under Division 3.6 of the Crown Land Management Act 2016.

(4) A consent authority must not grant consent for development referred to in subsection (1) unless the consent authority is satisfied that sufficient measures have been, or will be, taken to protect, and where possible enhance, the biophysical, hydrological and ecological integrity of the coastal wetland or littoral rainforest.

(5) Nothing in this section requires consent for the damage or removal of a priority weed within the meaning of clause 32 of Schedule 7 to the Biosecurity Act 2015.

(6) This section does not apply to the carrying out of development on land reserved under the National Parks and Wildlife Act 1974 if the proposed development is consistent with a plan of management prepared under that Act for the land concerned.

The subject land contains a mapped area identified in Section 2.7; including the area identified as the development footprint. However, the mapping contains obvious erroneous spatial errors, and is not considered to accurately reflect those values that are specified as the criteria for inclusion, particularly for the area identified as the development footprint. The development footprint is predominantly already developed hard surfaces used for driveway access and parking, and a small area (approx. 50 m<sup>2</sup>) of managed residential lawn.

Therefore, it is considered that the proposal for alterations and additions to existing multi-dwelling housing would not deleteriously impact on the biophysical, hydrological and ecological integrity of any area that contains coastal wetland as intended by the legislation.

## **Section 2.8 – Development on land in proximity to coastal wetlands or littoral rainforest.**

(1) Development consent must not be granted to development on land identified as “proximity area for coastal wetlands” or “proximity area for littoral rainforest” on the Coastal Wetlands and Littoral Rainforests Area Map unless the consent authority is satisfied that the proposed development will not significantly impact on—

(a) the biophysical, hydrological or ecological integrity of the adjacent coastal wetland or littoral rainforest, or



(b) the quantity and quality of surface and ground water flows to and from the adjacent coastal wetland or littoral rainforest.

(2) This section does not apply to land that is identified as “coastal wetlands” or “littoral rainforest” on the Coastal Wetlands and Littoral Rainforests Area Map.

The development footprint contains both mapped ‘Coastal Wetland’ and ‘Proximity to Coastal Wetland’. However, the development footprint is predominantly already developed hard surfaces used for driveway access and parking, and a small area (approx. 50 m<sup>2</sup>) of managed residential lawn. As no significant cut or fill is required to accommodate the proposal, it is unlikely that there would be any resultant impact on the biophysical, hydrological or ecological integrity of the adjacent coastal wetland, nor would any change to flows to or from this area result from the proposal.

#### **Section 2.10 – Development on land within the coastal environment area.**

(1) Development consent must not be granted to development on land that is within the coastal environment area unless the consent authority has considered whether the proposed development is likely to cause an adverse impact on the following—

- (a) the integrity and resilience of the biophysical, hydrological (surface and groundwater) and ecological environment,
- (b) coastal environmental values and natural coastal processes,
- (c) the water quality of the marine estate (within the meaning of the *Marine Estate Management Act 2014*), in particular, the cumulative impacts of the proposed development on any of the sensitive coastal lakes identified in Schedule 1,
- (d) marine vegetation, native vegetation and fauna and their habitats, undeveloped headlands and rock platforms,
- (e) existing public open space and safe access to and along the foreshore, beach, headland or rock platform for members of the public, including persons with a disability,
- (f) Aboriginal cultural heritage, practices and places,
- (g) the use of the surf zone.

(2) Development consent must not be granted to development on land to which this section applies unless the consent authority is satisfied that—

- (a) the development is designed, sited and will be managed to avoid an adverse impact referred to in subsection (1), or
- (b) if that impact cannot be reasonably avoided—the development is designed, sited and will be managed to minimise that impact, or
- (c) if that impact cannot be minimised—the development will be managed to mitigate that impact.

The proposal is to be carried out on low constraint land, with the development footprint having little to no significant habitat value. The concept layout has been designed to avoid native vegetation on the subject land, which has enabled the minimisation of impacts as a result. The proposal would not require any significant cut or fill, and the integration of appropriate stormwater quality measures would ensure no impacts to the integrity of surface and groundwater flows or coastal processes.

### **Section 2.11 – Development on land within the coastal use area.**

(1) Development consent must not be granted to development on land that is within the coastal use area unless the consent authority—

(a) has considered whether the proposed development is likely to cause an adverse impact on the following—

- (i) existing, safe access to and along the foreshore, beach, headland or rock platform for members of the public, including persons with a disability,
- (ii) overshadowing, wind funneling and the loss of views from public places to foreshores,
- (iii) the visual amenity and scenic qualities of the coast, including coastal headlands,
- (iv) Aboriginal cultural heritage, practices and places,
- (v) cultural and built environment heritage, and

(b) is satisfied that—

- (i) the development is designed, sited and will be managed to avoid an adverse impact referred to in paragraph (a), or
- (ii) if that impact cannot be reasonably avoided—the development is designed, sited and will be managed to minimise that impact, or
- (iii) if that impact cannot be minimised—the development will be managed to mitigate that impact, and

(c) has taken into account the surrounding coastal and built environment, and the bulk, scale and size of the proposed development.

The subject land is intersected in the north-east by the mapped Coastal Use area, however, the development footprint does not fall within this area nor would the proposal affect this area. The proposal is to be carried out on very low constraint land and would not impact on areas or utilisation of areas identified in 2.11 (1)(a).

## **4.5 Environment Protection & Biodiversity Conservation Act 1999 (Cth)**









No flora or fauna species listed under the EPBC Act (1999) were recorded at the subject land during site surveys, however, several have the potential to occur in the general vicinity of the Cumbebin Swamp Nature Reserve area as identified by an extraction of BioNet threatened species records. A habitat suitability assessment for those species was undertaken and includes those appropriate EPBC listed species having been recorded within the 1.5 km assessment circle. The ToS concluded that no fauna species listed under the EPBC Act would be significantly impacted by the proposal for alternations and additions to an existing multi-dwelling residential development.

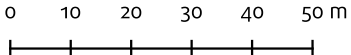
Therefore, the proposal would not impact on any Matters of National Environmental Significance (MNES) and assessment under the EPBC Act would not be required.



Figure 5: Biodiversity Values Mapping, Coastal Wetlands and Proximity Area.

**Legend**

-  Subject Land - 1 Kendall St\_FINAL
  -  Road Corridor
  -  Proposal additions & alterations
  -  Approved Asset Protection Zone
  -  NPWS Reserve
  -  Lot
  -  Hydroline
  -  BV Map V16\_clipped Byron Shire
  -  Coastal Wetland
  -  Coastal Wetland Proximity Area
- Land Zoning\_Byron LEP 2014**
-  C2 - Environmental Conservation
  -  C3 - Environmental Management
  -  R2 - Low Density Residential



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## 5. Management strategy to minimise development impacts

The sum of deleterious ecological impacts from the proposal to undertake additional multi-dwelling residential development on the subject land are considered to be minimal, with the proposal footprint consisting of already developed hard surfaces (approx. 450 m<sup>2</sup>) and low constraint managed grassland (approx. 50 m<sup>2</sup>).

However, the potential direct and indirect impacts of the proposal through both the construction and operational phases have been taken into consideration for this assessment, with key mitigation measures recommended to ensure minimisation of both direct and indirect impacts.

### 5.1 Mitigation measures

The following environmental safeguards and mitigation measures are proposed to promote ecology and biodiversity:

- Tree protection fencing to maintain structural root zones (SRZs) and tree protection zones (TPZs) would be established and maintained around adjacent native trees as recommended in the arborist report;
- Other tree protection measures would be adopted in accordance with the project arborist recommendations;
- If present, fallen branches and large woody debris in the development footprint or managed residential area would be relocated into adjacent areas of retained vegetation outside of the managed APZ;
- Ensure all machinery/vehicles/personnel enter and exit along the main entry route so additional impacts or disturbance do not occur to adjacent forest vegetation;
- Delineate the work area so that no machinery/vehicles/personnel impact on vegetation or habitat outside of the delineated development footprint area;
- Any disturbance, including ground layer disturbance would be minimised, and confined to the immediate development footprint only;
- If unexpected protected or threatened fauna are encountered during the construction period, then work would stop immediately, and a qualified ecologist or wildlife carer would be contacted;
- If a Koala is present within 30 metres of an area to be cleared or disturbed, then 24 hours must be provided for the animal to disperse of its own volition;
- Contingencies would be required to address the risk of bushfire, including spark arrestors and suspending works in high bushfire danger periods.

The following environmental safeguards and mitigation measures are proposed to promote air quality:

- Vehicles and all fuel powered machinery and equipment would be maintained to meet the requirements of the Protection of the Environment Operations (POEO) Act, 1997;
- All vehicles transporting waste or other materials that may produce odours or dust are to be covered during transportation;

- Debris and wastes must be cleaned from the construction area as soon as practical to ensure light-weight material is not disseminated by wind gusts;
- No burning of timber or other wastes would occur;
- Dust suppression measures are to be implemented to minimise or prevent air pollution from dust during high winds; and
- Any stockpiles must be appropriately managed so the potential for air pollution is minimised.

The following environmental safeguards and mitigation measures are proposed to promote water quality, hydrology and drainage:

- Appropriate sedimentation and erosion controls must be installed and always maintained during construction and operations to limit impacts on adjacent vegetation and waterways;
- All proposed works that has the potential to disturb the ground layer would be undertaken during periods of dry weather;
- All areas where excavation is required and/or vegetation is removed would be stabilised with the most appropriate method;
- Fuels and oils would be stored outside of the prescribed setback from waterways and flood zones;
- Disturbed surfaces would be compacted and stabilised in anticipation of a rain event to reduce the potential for erosion; and
- Erosion and sediment controls would be monitored for effectiveness and maintained until the site is remediated and the soil profile re-stabilised.

The following environmental safeguards and mitigation measures are proposed to promote Aboriginal and non-Aboriginal heritage:

- If any Aboriginal items or cultural heritage objects (including human remains) are located during the works, all work would cease near the artefact and the Local Aboriginal Land Council (LALC) Aboriginal Sites Officer would be notified. The find is also required to be reported to the NSW OEH; and
- All staff and contractors would be made aware of their responsibilities under the National Parks and Wildlife (NPW) Act 1974 and would be informed of the procedures in the event of unearthing an object.

The following environmental safeguards and mitigation measures are proposed to ensure minimal impacts to land use or services:

- Notification of any significant impacts to residents or nearby sensitive receivers would be provided at least five days prior to the commencement of construction activities if these activities would be expected to disrupt local residents;
- Any underground services would be clearly identified and marked near the excavation works if present before construction is undertaken.

The following environmental safeguards and mitigation measures are proposed to promote best practice dangerous goods/chemical and waste management:



- Waste destined for recycling or reuse would be stored separately and in a suitable location to avoid mixing with other materials/wastes;
- All residual waste material would be disposed of at a suitably licensed landfill or waste management facility;
- All working areas would be monitored to ensure they are kept free of rubbish and cleaned at the end of each working shift;
- Storage and handling of any dangerous goods must be undertaken in accordance with *The Storage and Handling of Dangerous Goods Code of Practice 2005*;
- Sufficient spill kits would always be kept on site; and
- Any excavated natural material would be treated in accordance with the requirements of the Protection of the Environment Operations (POEO) Act 1997.



*Plate 8: Tree protection measures have been recommended by the project arborist to further mitigate potential impacts.*

## 6. Summary and Conclusion

Biodiversity Assessments & Solutions Pty Ltd has completed an ecological assessment for the land at 1 Kendall Street, Byron Bay, NSW 2481 (Figure 1). The assessment has been undertaken to accompany a submission to Byron Shire Council (BSC) which seeks consent for alterations and additions to a multi-dwelling residential development. Following assessment of all available ecological information, threatened species records, habitat assessment of the subject land and potential impacts, the following conclusions are provided:

- the development footprint consists of already developed hard surfaces such as driveways and parking (approx. 450 m<sup>2</sup>) and low value exotic dominated managed lawn (approx. 50 m<sup>2</sup>);
- the development footprint was identified for the proposal due to the absence of native vegetation, and the negligible biodiversity impacts required to accommodate the proposal;
- the proposal has been re-designed to significantly reduce impacts, with design amendments incorporated to avoid and minimise impacts on adjacent native vegetation completely;
- the proposal footprint does contain areas mapped on the Biodiversity Values Map and an area mapped as Coastal Wetlands under the *Coastal Management Act 2016*, however, in addition to small scale spatial errors in the mapping, the proposal would not impact on any of the biodiversity or coastal values for which the mappings intent represents;
- the proposal only requires the removal of a small amount of managed lawn (approx. 50 m<sup>2</sup>), to accommodate construction of the proposal, which has negligible habitat value;
- following a habitat suitability assessment, and additional assessment by way of a Test of Significance (ToS) for identified species, it was concluded that the proposal would not cause significant impacts to species or ecological communities listed under the NSW *BC Act 2016*;
- based on available information and an assessment of the proposal, and in consultation with BSC (Appendix D), it is considered that the proposal does not trigger the Biodiversity Offsets Scheme (BOS), and a BDAR is not required;
- the proposal footprint is not considered to be of significant amenity, aesthetic or scenic value, and would not result in significant loss of views or amenity as a result of the proposal;
- the subject land does not meet the definitions of 'core' Koala habitat; and no Koala habitat or Schedule 3 trees would be impacted by the development. Hence, the SEPP (Biodiversity and Conservation) 2021 nor the Byron Coast CKPoM prevent granting consent to the development application; and
- potential impacts of the construction and occupation phases of the proposal would be negligible and can be mitigated sufficiently to ensure that direct and indirect impacts on biodiversity values of the remainder of the subject land and wider locality are avoided and subsequently minimised.

Based on these key points, it is considered that the identified development footprint is suitable for the proposal and subsequent development, that the proposal has, within all reasonable expectations, avoided and minimised impacts on the biodiversity values of the subject land, and that the proposal would not result in any significant deleterious direct or indirect impacts on the biodiversity values of the subject land or the wider locality.

## References

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## Appendix A – Test of Significance

In accordance with Section 7.3 of the *Biodiversity Conservation Act 2016*, a *Test of Significance* (ToS) has been completed for the purposes of determining whether the proposed development or activity is likely to significantly affect threatened species or ecological communities, or their habitats.

A ToS may be carried out on an individual threatened plant or animal species, an endangered population, or an endangered ecological community. The following entities have been selected for assessment by way of a ToS, with regards to the development proposal at Lot o SP 96105, 1 Kendall Street, Byron Bay, based on the information available at the time of the assessment.

### Threatened fauna species:

In accordance with Section 7.3 of the *Biodiversity Conservation Act 2016*, a ToS has been completed for the following five ( $n = 5$ ) threatened fauna species:

1. Bush Stone-curlew (*Burhinus grallarius*)
2. South-eastern Glossy Black-Cockatoo (*Calyptorhynchus lathami lathami*)
3. Pale-vented Bush Hen (*Amaurornis moluccana*)
4. Common Planigale (*Planigale maculata*)
5. Koala (*Phascolarctos cinereus*)

*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,*

### **1. Bush Stone-curlew (*Burhinus grallarius*)**

#### **1.1 Species information**

The Bush Stone-curlew stands about 55 cm tall. It has a grey to light brown back, marked with black blotches, and a streaked rump. It has buff and white underparts with dark streaks, and a black band that runs from near its eye down its neck. This species has large, bright yellow eyes and a hunch-shouldered stance on long spindly legs. When disturbed it lies flat on the ground, with its head and neck outstretched. Its call is a loud eerie wailing "wee-loo", mostly heard at night.

The Bush Stone-curlew is found throughout Australia except for the central southern coast and inland, the far south-east corner, and Tasmania. Only in northern Australia is it still common however and in the south-east it is either rare or extinct throughout its former range.

#### **1.2 Habitat and ecology of the species**

Bush Stone-curlews are found inhabiting open forests and woodlands with a sparse grassy groundlayer and fallen timber. They are largely nocturnal, being especially active on moonlit nights.

Bush Stone-curlews feed on insects and small vertebrates, such as frogs, lizards and snakes. They nest on the ground in a scrape or small bare patch, with two eggs laid in spring and early summer.

#### **1.3 Threats for this species include:**

Threats for the Bush Stone-curlew are identified as being:



- Predation by foxes and cats
- Trampling of eggs by cattle.
- Clearance of woodland habitat for agricultural and residential development.
- Modification and destruction of ground habitat through removal of litter and fallen timber, introduction of exotic pasture grasses, grazing and frequent fires.
- Disturbance in the vicinity of nest sites.
- Negative impacts of pesticides on wildlife when used around nesting sites and habitat.

#### 1.4 Potential impacts of the proposal on the Bush Stone-curlew

The development footprint does not represent typical preferred habitat for the Bush Stone-curlew; nor do any records occur in close proximity to the subject land. However, the species does occur in a wide range of urban settings, and multiple records for the species occurs within the 1.5 km assessment circle. The generally busy nature of the residential zone on the subject land, the already developed nature of the development footprint, and lack of identified habitat features does however limit the suitability and the significance of the habitat within the development footprint and adjacent areas for this species.

Regardless, the proposal for alterations and additions to an existing multi-dwelling residential development does not represent a key threat for the species, nor would the proposal impact on important habitat for this species.

Therefore, this assessment has concluded that it is highly unlikely that the proposal would have an adverse effect on the life cycle of the Bush Stone-curlew such that a viable local population of the species is likely to be placed at risk of extinction.

## 2. South-eastern Glossy Black-Cockatoo (*Calyptorhynchus lathami lathami*)

### 2.1 Species information

The South-eastern Glossy Black-Cockatoo is a small brown-black cockatoo with a massive, bulbous bill and a short crest. Males have a prominent red tail panel, while that of females is yellow to orange-red. The coloured tail panel is barred black in juvenile birds, with the extent of barring decreasing with age. The female usually has irregular pale-yellow markings on the head and neck and may have yellow flecks on the underparts and underwing. They are usually seen in pairs or small groups feeding quietly in sheoaks.

The species is uncommon although widespread throughout suitable forest and woodland habitats, from the central Queensland coast to East Gippsland in Victoria, and inland to the southern tablelands and central western plains of NSW, with a small population in the Riverina. An isolated population exists on Kangaroo Island, South Australia.

### 2.2 Habitat and ecology of the species

The South-eastern Glossy Black-Cockatoo inhabits open forest and woodlands of the coast and the Great Dividing Range where stands of sheoak occur. Black Sheoak (*Allocasuarina littoralis*) and Forest Sheoak (*A. torulosa*) are important foods.

Inland populations of the South-eastern Glossy Black-Cockatoo feed on a wide range of sheoaks, including Drooping Sheoak, *Allocasuarina diminuta*, and *A. gymnathera*. Belah is also utilised and may be a critical food source for some populations.

In the Riverina, birds are associated with hills and rocky rises supporting Drooping Sheoak, but also recorded in open woodlands dominated by Belah (*Casuarina cristata*).

Feeds almost exclusively on the seeds of several species of she-oak (*Casuarina* and *Allocasuarina* species), shredding the cones with the massive bill.

Dependent on large hollow-bearing eucalypts for nest sites. A single egg is laid between March and May.

### **2.3 Threats for this species include:**

Threats for the South-eastern Glossy Black-Cockatoo are identified as being:

- Reduction of suitable habitat through clearing for development.
- Decline of hollow bearing trees over time due to land management activities.
- Excessively frequent fire, which eliminates sheoaks from areas, prevents the development of mature sheoak stands, and destroys nest trees.
- Firewood collection resulting in loss of hollow-bearing trees, reduced recruitment of hollow-bearing trees, and disturbance of breeding attempts.
- Decline in extent and productivity of sheoak foraging habitat due to feral herbivores.
- Reduced access to surface water in close proximity to foraging and nesting habitat.
- Limited information on the location of nesting aggregations and the distribution of high quality breeding habitat.
- Disturbance from coal seam gas and open cut coal mining causing loss of foraging and breeding habitat as well as disturbing reproductive attempts.
- Decline in extent and productivity of sheoak foraging habitat caused by moisture stress due to climate change.
- Forestry activity resulting in loss of hollow-bearing trees, reduced recruitment of hollow-bearing trees, degradation of foraging habitat, and disturbance of breeding attempts.

### **2.4 Potential impacts of the proposal on the South-eastern Glossy Black-Cockatoo**

The development footprint does not contain or represent potential or suitable habitat for the South-eastern Glossy Black-Cockatoo, as the proposal area is already developed, containing hard concrete surfaces, and a small area of managed lawn. However, potential foraging habitat in the form of scattered individuals of Swamp Oak (*Casuarina glauca*) occur adjacent to the development footprint, elsewhere on the subject land, and extensively through the locality.

No potential foraging resources would be impacted as a result of the proposal, with no trees or other native vegetation to be removed. An arboricultural assessment report concludes that trees adjacent to the proposal footprint would maintain their viability and not be significantly impacted. As such it is considered that the proposal for alterations and additions to an existing multi-dwelling residential development does not represent a key threat for the species, nor would the proposal impact on

important habitat for this species.

Therefore, this assessment has concluded that it is highly unlikely that the proposal would have an adverse effect on the life cycle of the South-eastern Glossy Black-Cockatoo such that a viable local population of the species is likely to be placed at risk of extinction.

### **3. Pale-vented Bush-hen (*Amaurornis moluccana*)**

#### **3.1 Species information**

The Pale-vented Bush-hen is a medium-sized (body length 25-30 cm), all-dark waterbird, dark olive-brown above, with a dark-grey face, usually merging to paler off-white chin, and dark-grey on the lower throat, breast and belly and rufous-brown on the lower underbody. The bill is lime-green with an orange-red base to the upper mandible during the breeding season, and paler green without orange when not breeding; the legs are greenish-yellow. The Pale-vented Bush-hen is distinguished from other similarly-sized crakes and rails by the combination of uniformly dark plumage, lacking pale markings to underbody or undertail, its yellowish-green to green bill and its loud and distinctive shrieking calls or wailing duets during the breeding season. The Bush-hen in Australia is now classified as the Pale-vented Bush-hen (*Amaurornis moluccana*), separate from the Plain Bush-hen (*A. olivaceus*) of the Philippines, with which it was formerly combined. The Pale-vented Bush-hen is secretive and cryptic, usually remaining in dense vegetation near watercourses or at the edges of wetlands, and often only detected by its loud, distinctive calls. It is active during the day and at night. When walking, it flicks its tail in the manner of most rails and swamp-hens, particularly when nervous; and it swims and wades readily. It apparently flies mainly at night. It occurs solitarily, in pairs, or small family groups of parents and young.

In Australia, the Pale-vented Bush-hen occurs mainly in coastal and subcoastal regions from the Top End of the Northern Territory and Cape York Peninsula south through eastern Queensland to north-eastern NSW. There are a few records in the Kimberley Division of northern Western Australia. In NSW, Bush-hens are an apparently uncommon resident from the Queensland border south to the Clarence River, though the species appears to be expanding its range southwards with recent records as far south as the Nambucca River. Outside Australia, the species occurs in the Moluccas, western and southern New Guinea, the Bismarck Archipelago and the Solomon Islands. The subspecies present in Australia is *ruficrissa* which also occurs in southern and eastern New Guinea.

#### **3.2 Habitat and ecology of the species**

The Pale-vented Bush-hen inhabits tall dense understorey or ground-layer vegetation on the margins of freshwater streams and natural or artificial wetlands, usually within or bordering rainforest, rainforest remnants or forests.

Also occur in secondary forest growth, rank grass or reeds, thickets of weeds, such as *Lantana* (*Lantana camara*), and pastures, crops or other farmland, such as crops of sugar cane, and grassy or weedy fields, or urban gardens where they border forest and streams or wetlands, such as farm dams. Can also occur in and around mangroves, though rarely do so, if at all, in NSW. Key elements of their habitat are dense undergrowth 2 to 4 metres tall and within 300 metres of water.

The diet consists of seeds, plant matter, earthworms, insects and some frogs, taken from ground cover or by wading at edges of streams or wetlands.

The breeding season is from spring to early autumn, October to April. The nest is a shallow bowl or



cup of grass stems, often partly hooded, built close to water in thick ground vegetation such as dense Blady Grass (*Imperata cylindrica*), mat rush (*Lomandra*) or reeds, often under or growing through shrubs or vine or beneath a tree.

Birds lay 4 to 7 eggs in a clutch and will re-lay after a successful breeding attempt and make multiple attempts after nesting failures. The incubation period is about 3 weeks. The hatchlings are precocial and can run soon after hatching; they are probably dependent on their parents for 4 to 5 weeks after hatching.

### 3.3 Threats for this species include:

Threats for the Pale-vented Bush-hen are identified as:

- Clearing, filling and draining of wetlands for agricultural, residential and industrial development.
- Pollution of wetlands from agricultural, urban and industrial run-off, including herbicides and pesticides.
- Changes to wetlands caused by weed invasion, often associated with sedimentation or grazing.
- Predation by introduced, feral and domestic predators, particularly Red Foxes (*Vulpes vulpes*) and Cats (*Felis catus*).
- Destruction of habitat and predation by feral Pigs (*Sus scrofa*).
- Alteration to the natural flow regimes of rivers and streams and their floodplains and wetlands.
- Loss of dense and rank understorey vegetation near streams and wetlands with clearing associated with urban and semi-rural developments.

### 3.4 Potential impacts of the proposal on the Pale-vented Bush-hen

The development footprint does not represent typical preferred habitat for the Pale-vented Bush-hen; nor do any records occur in close proximity to the subject land. However, the species has been recorded within the 1.5km assessment circle, and suitable habitat does occur in the wider locality. The generally busy nature of the residential zone on the subject land, the already developed nature of the development footprint, and lack of identified habitat features does however limit the suitability and the significance of the habitat within the development footprint and adjacent areas for this cryptic species.

Regardless, the proposal for alterations and additions to an existing multi-dwelling residential development does not represent an identified key threat for the species, nor would the proposal impact on important habitat for this species.

Therefore, this assessment has concluded that it is highly unlikely that the proposal would have an adverse effect on the life cycle of the Pale-vented Bush-hen such that a viable local population of the species is likely to be placed at risk of extinction.

## 4. Common Planigale (*Planigale maculata*)

### 4.1 Species information

Common Planigales are tiny marsupials with a body length of about 8 cm and a tail as long again. They differ from the common house mouse in having a long, pointed snout with sharp teeth and large rounded ears. The head has a flattened appearance. Their fur is grey-brown above, sometimes with tiny white spots, and paler below.

Coastal north-eastern NSW, coastal east Queensland and Arnhem Land. The species reaches its confirmed southern distribution limit on the NSW lower north coast however there are reports of its occurrence as far south as the central NSW coast west of Sydney.

#### **4.2 Habitat and ecology of the species**

Common Planigales inhabit rainforest, eucalypt forest, heathland, marshland, grassland and rocky areas where there is surface cover, and usually close to water. They are active at night and during the day shelter in saucer-shaped nests built in crevices, hollow logs, beneath bark or under rocks.

They are fierce carnivorous hunters and agile climbers, preying on insects and small vertebrates, some nearly their own size.

They breed from October to January. The female builds a nest lined with grass, eucalypt leaves or shredded bark.

#### **4.3 Threats for this species include:**

Threats for the Common Planigale are identified as being:

- Predation by foxes and cats.
- Predation and poisoning by cane toads.
- Loss of habitat from a variety of land uses resulting in species fragmentation and habitat degradation. Includes changes to riparian areas and hydrology from residential and associated infrastructure development, and loss of ground cover vegetation and woody debris from too frequent fire and clearing.
- Frequent burning that reduces ground cover such as hollow logs and bark.
- Over grazing that reduces ground cover.
- Disturbance of vegetation surrounding water bodies.
- Predation by domestic cats.
- The species is often misidentified and requires further survey work to identify distribution and abundance.

#### **4.4 Potential impacts of the proposal on the Common Planigale**

The development footprint does not represent typical preferred habitat for the Common Planigale; nor do any records occur in close proximity to the subject land. However, the species has been recorded within the 1.5km assessment circle, and suitable potential habitat does occur in the wider locality. The generally busy nature of the residential zone on the subject land, the already developed nature of the development footprint, and lack of identified habitat features providing shelter and protection does however limit the suitability and the significance of the habitat within the development footprint and adjacent areas for this species.

Regardless, the proposal for alterations and additions to an existing multi-dwelling residential

development does not represent a key threat for the species, nor would the proposal impact on important habitat for this species.

Therefore, this assessment has concluded that it is highly unlikely that the proposal would have an adverse effect on the life cycle of the Common Planigale such that a viable local population of the species is likely to be placed at risk of extinction.

## **5. Koala (*Phascolarctos cinereus*)**

### **5.1 Species information**

The Koala is an arboreal marsupial with fur ranging from grey to brown above, and white below. It has large furry ears, a prominent black nose and no tail. It spends most of its time in trees and has long, sharp claws, adapted for climbing. Adult males weigh 6 - 12 kg and adult females weigh 5 - 8 kg. During breeding, males advertise with loud snarling coughs and bellows.

The Koala has a fragmented distribution throughout eastern Australia from north-east Queensland to the Eyre Peninsula in South Australia. In New South Wales, koala populations are found on the central and north coasts, southern highlands, southern and northern tablelands, Blue Mountains, southern coastal forests, with some smaller populations on the plains west of the Great Dividing Range.

### **5.2 Habitat and ecology of the species**

Koalas inhabit eucalypt woodlands & forests, where they feed on the foliage of more than 70 eucalypt species and 30 non-eucalypt species, but in any one area will select preferred browse species. Koalas are inactive for most of the day, feeding & moving mostly at night. They spend most of their time in trees but will descend & traverse open ground to move between trees. Home range size varies with quality of habitat, ranging from less than two ha to several hundred hectares in size.

Generally solitary but have complex social hierarchies based on a dominant male with a territory overlapping several females and sub-ordinate males on the periphery. Females breed at two years of age and produce one young per year.

### **5.3 Threats for this species include:**

Threats for the Koala are identified as being:

- Habitat loss – Loss, modification and fragmentation of habitat.
- Direct take/mortality – Road mortality and injury from vehicle strike.
- Pest animals – Predation by roaming or domestic dogs/cats.
- Risk of adverse fire/wildfire – Intense prescribed burns or wildfires that scorch or burn the tree canopy.
- Koala disease – Chlamydia/Retro-virus.
- Climate change induced microclimate modification causing heat stress through drought and heatwave.
- Climate change induced alteration of habitat structure, composition and resource availability.
- Inadequate capacity for fauna rehabilitation Inadequate support for fauna rehabilitation (e.g., from vehicle strike)



- Lack of knowledge – Insufficient understanding of threatening process to Koalas and a poor understanding of sources of trauma and mortality.

#### 5.4 Potential impacts of the proposal on the Koala

The development footprint and adjacent areas of the subject land do not contain tree species identified as Koala feed tree species in Schedule 3 of the State Environmental Planning Policy (SEPP) (Koala Habitat Protection) 2021, nor would any be impacted or require removal to accommodate the proposal.

Numerous records ( $n = 161$ ) of Koala occur within the 1.5km assessment circle around the subject land, however, none occur on or immediately adjacent to the subject land. Extensive areas of preferable or more suitable Koala habitat occurs in the locality, including large suitable areas occurring in association with the Cumbebin Swamp Nature Reserve located to the south, south-east and west of the subject land. Habitat associated with Cumbebin Swamp Nature Reserve in particular forms a large, consolidated patch of habitat able to support a large number of threatened species, including Koalas. The subject land and areas of forest immediately adjacent to the subject land are dominated by *Casuarina glauca*, which is not identified as a Schedule 3 Koala feed tree species on the North Coast.

The proposal for alterations and additions to an existing multi-dwelling residential development does not require the removal of any vegetation, and thus does not require the removal nor any impact on potential Koala feed trees or suitable habitat.

This assessment has concluded that it is highly unlikely that the proposal would have an adverse effect on the life cycle of the Koala such that a viable local population of the species is likely to be placed at risk of extinction.

***b) in the case of an endangered ecological community or critically endangered ecological community, whether the action proposed:***

- (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.*

The development footprint occurs on predominantly cleared land, with only isolated native trees occurring adjacent to the development footprint. Native trees adjacent to the development footprint contains tree species (e.g., Swamp Oak, Tuckeroo), commonly found within endangered ecological communities (EEC) with the potential of occurring within the BSC LGA (Table 2). However, the entirety of the development footprint and adjacent areas do not contain an understorey or midstorey, and generally lacks the diversity of species representative of this EEC.

Therefore, it is considered that vegetation within the development footprint and area immediately adjacent to the proposal, does not reach the threshold and is not as described in any of the final Scientific Committee determinations for EECs listed in Schedule 2 of the BC Act 2016.

***c) in relation to the habitat of a threatened species, population or ecological community:***

- (i) the extent to which habitat is likely to be removed or modified as a result of the action proposed, and*

*(ii) whether an area of habitat is likely to become fragmented or isolated from other areas of habitat as a result of the proposed action, and*

*(iii) the importance of the habitat to be removed, modified, fragmented or isolated to the long-term survival of the species, population or ecological community in the locality.*

When applying this factor, consideration has been given to all short-term and long-term impacts (direct and indirect) the proposal may have on habitat which is likely to support threatened species and ecological communities, regardless of whether the habitat occurs on the subject land.

With respect to (i), the proposal does not require the removal or modification of any habitat, and given the historically disturbed nature of the subject land, the small size of the development footprint, and the lack of habitat features overall present on the subject land, the extent to which habitat within the development footprint provides valuable habitat for any threatened species is likely negligible.

While habitat of conservation value does occur beyond the development proposal to the east, west and south of the subject land in association with the Cumbebin Swamp Nature Reserve, and other areas of consolidated vegetation, these areas would not be impacted directly or indirectly as a result of the proposal. It is therefore considered that the extent to which habitat is likely to be removed or modified as a result of the action proposed is negligible.

With respect to (ii), as only a small amount of managed lawn vegetation (50 m<sup>2</sup>) is to be removed, no impacts on any areas of significant habitat value would occur, no areas of habitat would become fragmented or isolated from other areas, nor impact on the functionality of any habitat corridors.

With respect to (iii), no significant areas of habitat would be removed, modified, fragmented or isolated for the proposal. Habitat within the development footprint is not significant in the local context and it is unlikely to be important for the survival of any threatened species with the potential to occur. Therefore, the actions of the proposal would not significantly affect the long-term survival of any species, populations or ecological communities in the locality.

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

This applies to declared areas of outstanding biodiversity value ("AOBVs") under Part 3 of the BC Act 2016 and is aimed at assessing whether a development or activity is likely to affect such areas.

The subject land does not contain any area which has been identified and declared as an AOVB. Therefore, AOVBs would not be affected by the proposed development.

*e) whether the action proposed constitutes or is part of a key threatening process or is likely to result in the operation of, or increase the impact of, a key threatening process*

The proposal is not characteristic of any listed Key Threatening Processes (KTP) gazetted pursuant to Schedule 4 of the BC Act 2016 (Table A.1). The degree that the proposal for alterations and additions to multi-dwelling housing on the subject land would contribute to any threatening process (e.g., clearing), is not considered likely to place the local population of any of the subject species or communities at significant risk of extinction.

Table A.1: Key Threatening Processes gazetted pursuant to Schedule 4 of the Biodiversity Conservation Act, 2016.

Listed Key Threatening Process (as described in the final determination of the Scientific Committee to list the threatening process)	Is the development or activity proposed of a class of development or activity that is recognised as a key threatening process?		
	Likely	Possible	Unlikely
Alteration of habitat following subsidence due to longwall mining			✓
Aggressive exclusion of birds by noisy miners			✓
Alteration to the natural flow regimes of rivers and streams and their floodplains and wetlands			✓
Anthropogenic climate change			✓
Bush rock removal			✓
Clearing of native vegetation			✓
Competition and grazing by the feral European Rabbit			✓
Competition and habitat degradation by feral goats			✓
Competition from feral honeybees			✓
Death or injury to marine species following capture in shark control programs on ocean beaches			✓
Entanglement in or ingestion of anthropogenic debris in marine and estuarine environments			✓
Forest Eucalypt dieback associated with over-abundant psyllids and bell miners			✓
High frequency fire resulting in the disruption of life cycle processes in plants and animals and loss of vegetation structure and composition			✓
Herbivory and environmental degradation caused by feral deer			✓
Importation of red imported fire ants			✓
Infection by <i>Psittacine circoviral</i> (beak and feather) disease affecting endangered psittacine species and populations			✓
Infection of frogs by amphibian chytrid causing the disease chytridiomycosis			✓
Infection of native plants by <i>Phytophthora cinnamomi</i>			✓
Introduction and Establishment of Exotic Rust Fungi of the order Pucciniales pathogenic on plants of the family Myrtaceae			✓
Introduction of the large earth bumblebee			✓
Invasion and establishment of exotic vines and scramblers			✓
Invasion and establishment of Scotch broom			✓
Invasion and establishment of the Cane Toad			✓
Invasion, establishment and spread of <i>Lantana camara</i>			✓



<i>Listed Key Threatening Process (as described in the final determination of the Scientific Committee to list the threatening process)</i>	<i>Is the development or activity proposed of a class of development or activity that is recognised as a key threatening process?</i>		
	<i>Likely</i>	<i>Possible</i>	<i>Unlikely</i>
Invasion of native plant communities by African Olive			✓
Invasion of native plant communities by <i>Chrysanthemoides monilifera</i> (bitou bush and boneseed)			✓
Invasion of native plant communities by exotic perennial grasses			✓
Invasion of the yellow crazy ant into NSW			✓
Loss and degradation of native plant and animal habitat by invasion of escaped garden plants, including aquatic plants			✓
Loss of hollow-bearing trees			✓
Loss or degradation (or both) of sites used for hill-topping by butterflies			✓
Predation and hybridisation of feral dogs			✓
Predation by the European red fox			✓
Predation by the feral cat			✓
Predation by <i>Gambusia holbrooki</i>			✓
Predation by the Ship Rat on Lord Howe Island			✓
Predation, habitat degradation, competition and disease transmission by feral pigs			✓
Removal of dead wood and dead trees			✓

## **Appendix B – Proposed Site Plan (Story Design Collective)**

SITE NOTES

GROUND SURFACE WATER

FALL GROUND 50mm MIN IN FIRST  
1000mm FROM BUILDING

THE HEIGHT OF SLAB ABOVE EXTERNAL  
FINISHED SURFACE TO BE NOT LESS THAN:

- (A) 150mm ABOVE FINISHED GROUND LEVEL  
(B) 100mm ABOVE SANDY WELL DRAINED AREAS  
(C) 50mm ABOVE PAVED OR CONCRETE AREAS  
WITH FALL AWAY FROM BUILDING

ROOF DRAINAGE

FACE GUTTERS TO HAVE A MIN. FALL OF 1:500  
BOX GUTTERS TOM HAVE A MIN. FALL OF 1:100

CATCHMENT AREA GUTTER

30m²	115mm D GUTTER
40m²	125mm D GUTTER
50m²	150mm D GUTTER
60m²	150mm D GUTTER

DOWNPIPES

MIN. SIZE 90mm DIAMETER

MAX. SPACING OF DOWNPIPES IS 12m

DOWNPIPES TO BE FIXED AS CLOSE AS POSSIBLE  
TO VALLEY GUTTERS & IF MORE THAN 1.2m FROM  
THE VALLEY PROVISION FOR AN OVERFLOW IS  
REQUIRED.

STORMWATER

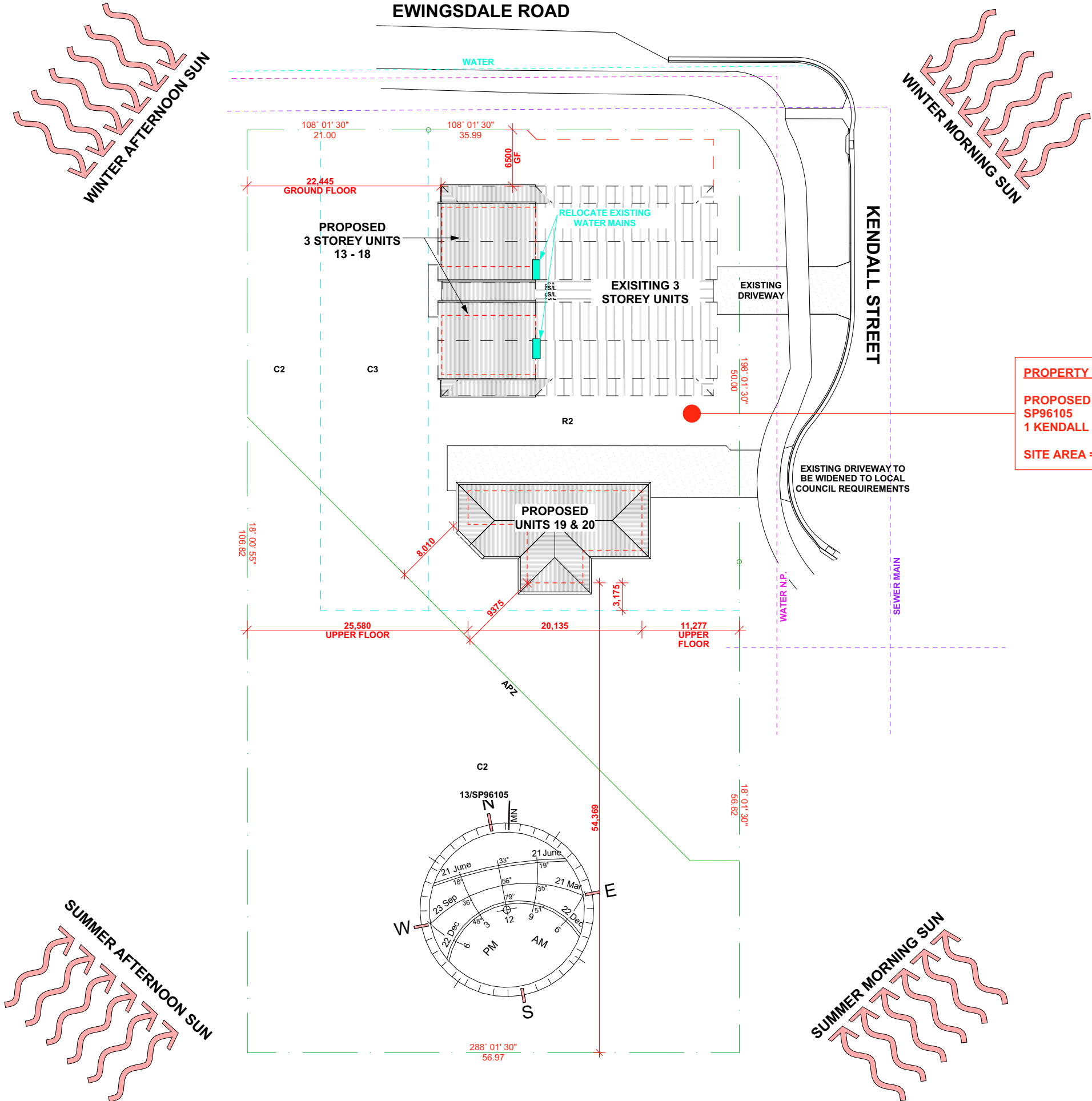
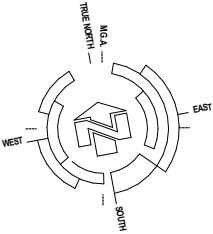
STORMWATER TO LEGAL POINT OF DISCHARGE

STORMWATER LINES FOR 2 OR MORE DOWNPIPES  
TO BE 100mm DIA. WITH ALL BRANCHES TO BE 90mm  
DIA.

STORMWATER LINES SHALL BE TO A MIN. FALL OF 1:60  
& WHERE POSSIBLE PLACED AS SHOWN.

100mm COVER TO STORMWATER DRAINAGE.  
STORMWATER & SEWER TO HYDRAULIC CONSULTANT'S  
INSTRUCTIONS.

DA DRAWINGS



PROPERTY DESCRIPTION

PROPOSED UNIT DEVELOPMENT  
SP96105  
1 KENDALL ST, BYRON BAY, NSW.

SITE AREA = 6,086.66 m²

AREA CALCULATIONS

SITE AREA = 6,086.66 m²

EXISTING AREAS  
R2 SITE AREA = 1,100.00 m²  
EXISTING GFA = 564.00 m²

EXISTING FSR = 0.51:1

PROPOSED AREAS  
R2 SITE AREA = 902.95 m²  
PROPOSED GFA = 437.58 m²  
PROPOSED FSR = 0.48:1

COMBINED AREAS  
R2 SITE AREA = 2,002.95 m²  
COMBINED GFA = 1,001.58 m²  
COMBINED FSR = 0.50:1

CARPARKING CALCULATIONS  
EXISTING CARSPACES = 12  
EXISTING VISITOR = 4

PROPOSED CARSPACES = 8  
VISITOR CARSPACES = 1

COMBINED CARSPACES = 20  
COMBINED VISITOR = 5  
TOTAL CARSPACES = 25

STORY

STORY DESIGN COLLECTIVE

www.storydesign.com.au

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0415 484 738

QBCC Lic # 1135254

SURFERS PARADISE

BANORA POINT

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rev.	date	description	initi.
A	01/02/23	FEASIBILITY	SR
B	14/02/23	FEASIBILITY REVISIONS	SR
C	14/03/23	PRELIM LAYOUT	SR
D	16/03/23	REVISED PRELIM LAYOUT	SR
E	22/03/23	REVISED PRELIM LAYOUT	SR
F	30/03/23	PRE-LODGEMENT	SR

rev.	date	description	initi.
G	11/05/23	PRE-LODGEMENT REVISIONS	SR
H	22/09/23	DA DOCUMENTATION	JB
I	06/11/23	SURVEY & CARPARKING REVISIONS	SR
J	17/11/23	DA COMPLETION PLANS	SR

rev.	date	description	initi.

client

The Kollektive Pty Ltd

project

Residential Development

1 Kendall St,  
Byron Bay, NSW

scale

1:500 @A3

drawn

JB

issue

J

checked

Sam Ray

project number

23001

drawing number

107

drawing print date

22/11/2023

drawing name

PROPOSED SITE PLAN 1:500



## Appendix C – BOSET Report

## Biodiversity Values Map and Threshold Report

This report is generated using the Biodiversity Values Map and Threshold (BMAT) tool. The BMAT tool is used by proponents to supply evidence to your local council to determine whether or not a Biodiversity Development Assessment Report (BDAR) is required under [the Biodiversity Conservation Regulation 2017 \(Cl. 7.2 & 7.3\)](#).

The report provides results for the proposed development footprint area identified by the user and displayed within the blue boundary on the map.

There are two pathways for determining whether a BDAR is required for the proposed development:

1. Is there Biodiversity Values Mapping?
2. Is the 'clearing of native vegetation area threshold' exceeded?

Biodiversity Values Map and Threshold Report		
Date of Report Generation		18/02/2024 10:57 AM
1. Biodiversity Values (BV) Map - Results Summary (Biodiversity Conservation Regulation Section 7.3)		
1.1	<b>Does the development Footprint intersect with BV mapping?</b>	yes
1.2	Was <u>ALL</u> BV Mapping within the development footprint added in the last 90 days? (dark purple mapping only, no light purple mapping present)	no
1.3	<b>Date of expiry of dark purple 90 day mapping</b>	N/A
1.4	<b>Is the Biodiversity Values Map threshold exceeded?</b>	yes
2. Area Clearing Threshold - Results Summary (Biodiversity Conservation Regulation Section 7.2)		
2.1	<b>Size of the development or clearing footprint</b>	356.5 sqm
2.2	<b>Native Vegetation Area Clearing Estimate (NVACE)</b> (within development/clearing footprint)	270.3 sqm
2.3	<b>Method for determining Minimum Lot Size</b>	LEP
2.4	<b>Minimum Lot Size</b> (10,000sqm = 1ha)	600 sqm
2.5	<b>Area Clearing Threshold</b> (10,000sqm = 1ha)	2,500 sqm
2.6	<b>Does the estimate exceed the Area Clearing Threshold?</b> (NVACE results are an estimate and can be reviewed using the <a href="#">Guidance</a> )	no
REPORT RESULT: Is the Biodiversity Offset Scheme (BOS) Threshold exceeded for the proposed development footprint area?		<b>yes</b>
(Your local council will determine if a BDAR is required)		

## What do I do with this report?

- If the result above indicates the BOS Threshold has been exceeded, your local council may require a Biodiversity Development Assessment Report with your development application. Seek further advice from Council. An accredited assessor can apply the Biodiversity Assessment Method and prepare a BDAR for you. For a list of accredited assessors go to: <https://customer.lmbc.nsw.gov.au/assessment/AccreditedAssessor>.
- If the result above indicates the BOS Threshold has not been exceeded, you may not require a Biodiversity Development Assessment Report. This BMAT report can be provided to Council to support your development application. Council can advise how the area clearing threshold results should be considered. Council will review these results and make a determination if a BDAR is required. Council may ask you to review the area clearing threshold results. You may also be required to assess whether the development is “likely to significantly affect threatened species” as determined under the test in Section 7.3 of the *Biodiversity Conservation Act 2016*.
- If a BDAR is not required by Council, you may still require a permit to clear vegetation from your local council.
- If all Biodiversity Values mapping within your development footprint was less than 90 days old, i.e. areas are displayed as dark purple on the BV map, a BDAR may not be required if your Development Application is submitted within that 90 day period. Any BV mapping less than 90 days old on this report will expire on the date provided in Line item 1.3 above.

For more detailed advice about actions required, refer to the Interpreting the evaluation report section of the [Biodiversity Values Map Threshold Tool User Guide](#) .

## Review Options:

- If you believe the Biodiversity Values mapping is incorrect please refer to our [BV Map Review webpage](#) for further information.
- If you or Council disagree with the area clearing threshold estimate results from the NVACE in Line Item 2.6 above (i.e. area of Native Vegetation within the Development footprint proposed to be cleared), review the results using the [Guide for reviewing area clearing threshold results from the BMAT Tool](#).

## 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: \_\_\_\_\_

(Typing your name in the signature field will be considered as your signature for the purposes of this form)

Date: \_\_\_\_\_

18/02/2024 10:57 AM



## Biodiversity Values Map and Threshold Tool

The Biodiversity Values (BV) Map and Threshold Tool identifies land with high biodiversity value, particularly sensitive to impacts from development and clearing.

The BV map forms part of the Biodiversity Offsets Scheme threshold, which is one of the factors for determining whether the Scheme applies to a clearing or development proposal. You have used the Threshold Tool in the map viewer to generate this BV Threshold Report for your nominated area. This report calculates results for your proposed development footprint and indicates whether Council may require you to engage an accredited assessor to prepare a Biodiversity Development Assessment Report (BDAR) for your development.

This report may be used as evidence for development applications submitted to councils. You may also use this report when considering native vegetation clearing under the State Environmental Planning Policy (Biodiversity and Conservation) 2021 - Chapter 2 vegetation in non-rural areas.

What's new? For more information about the latest updates to the Biodiversity Values Map and Threshold Tool go to the updates section on the [Biodiversity Values Map webpage](#).

Map Review: Landholders can request a review of the BV Map where they consider there is an error in the mapping on their property. For more information about the map review process and an application form for a review go to the [Biodiversity Values Map Review webpage](#).

If you need help using this map tool see our [Biodiversity Values Map and Threshold Tool User Guide](#) or contact the Map Review Team at [map.review@environment.nsw.gov.au](mailto:map.review@environment.nsw.gov.au) or on 1800 001 490.





# Biodiversity Values Map



35.2 0 17.60 35.2 Metres

WGS\_1984\_Web\_Mercator\_Auxiliary\_Sphere

### Legend

-  Biodiversity Values that have been mapped for more than 90 days
-  Biodiversity Values added within last 90 days
-  Native Vegetation Area Clearing Estimate (NVACE)
-  Development area selected by proponent

18/02/2024 10:57 AM

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.

Imagery © Airbus DS/Spot Image 2016

© NSW Department of Customer Service, Basemaps 2019

© NSW Department of Planning and Environment

The results provided in this tool are generated using the best available mapping and knowledge of species habitat requirements.

This map is valid as at the date the report was generated. Checking the [Biodiversity Values Map viewer](#) for mapping updates is recommended.

## **Appendix D – BSC Response to development related advice**



15 September 2023

Planners North  
PO Box 538  
LENNOX HEAD NSW 2478

Email: [kate@plannersnorth.com.au](mailto:kate@plannersnorth.com.au)

Dear Ms Singleton

RESPONSE TO REQUEST FOR DEVELOPMENT RELATED ADVICE	
Request No.	29.2023.131.1
Parcel No.	268846
Property Address	LOT: 0 SP: 96105 1 Kendall Street BYRON BAY

I refer to your recent request for Development Related Advice received on 15 September 2023 in relation to the above property. Further to our recent on-site meeting regarding the proposed extensions to the subject residential development on the site, Council provides the following comment in terms of Coastal Wetlands and mapped Biodiversity Values land.

It is considered the proposal will need to be prepared as designated development triggering the provisions under Clause 2.7 of SEPP Resilience and Hazards 2021.

Council also notes the property is partly mapped as containing Biodiversity values under the Biodiversity Conservation Act 2016.

- The developed portion of the site adjacent to the existing structures features scattered swamp oak within a mown grassland – this comprises an approved APZ which must be mown/maintained in perpetuity as per the original consent DA10.2015.398.1 This area is mapped as BV land (on the basis of being SEPP Coastal Wetlands)
- It is understood the proposed additions do not require any additional bushfire measures with regard to any expanded APZ, so the existing measures may continue and do not require any additional vegetation removal or modification – on this basis BV land is unlikely to be impacted upon due to the previous approval.
- The proposed building additions occur on existing carpark areas (concrete slab/gravel) where vegetation is absent. A small portion of mown lawn within the existing APZ may be affected (this is not mapped as BV land)
- No trees or shrubs would require removal.



On the basis of the existing approvals and that any new additions would not require the removal of native vegetation for construction and bushfire management purposes, it appears unlikely that the Biodiversity Offset Scheme would be triggered.

Council trust this will assist with your discussions with relevant Stage Government Agencies with the preparation of the Environmental Impact Statement.

If you have any questions about the application please contact Council's Development Support Team on 02 6626 7025 or email [dso@byron.nsw.gov.au](mailto:dso@byron.nsw.gov.au).

Yours sincerely



Christopher Larkin

Manager Sustainable Development