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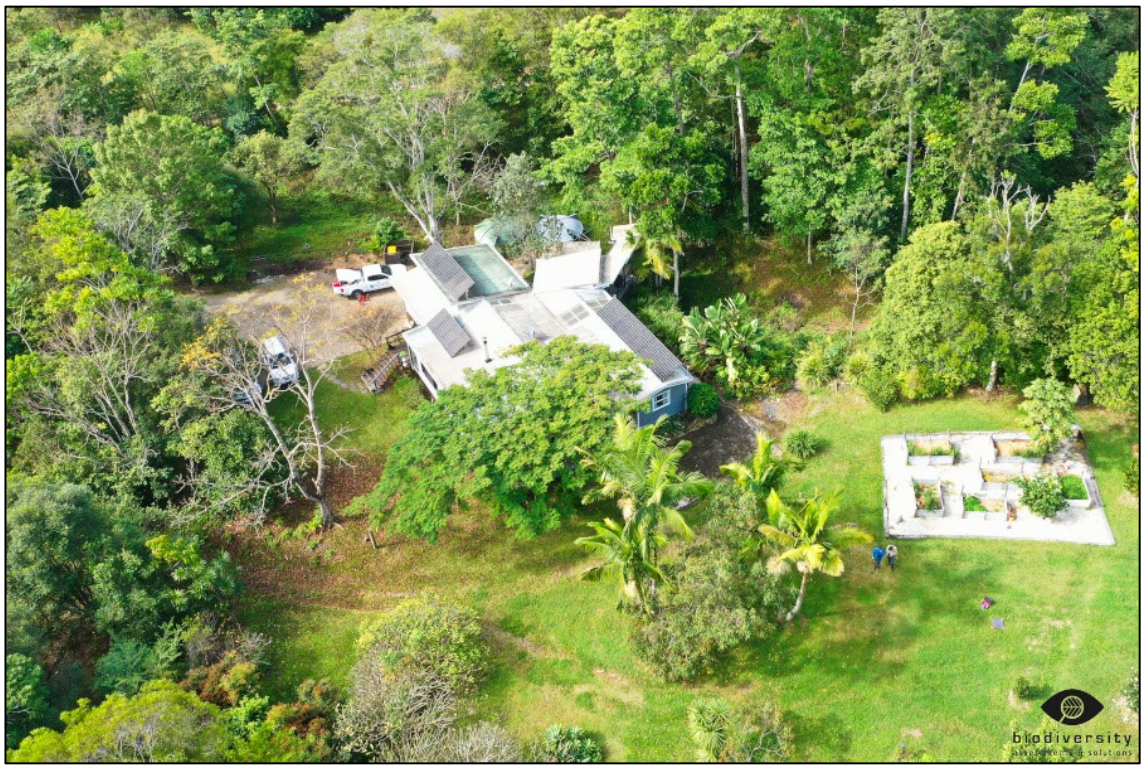

Lot 5 DP 585928 – 55 Settlement Rd, Main Arm, NSW, 2482

Ecological Assessment – Planning proposal to amend Byron LEP 2014 to provide a dual occupancy dwelling entitlement.

Client:	Caroline Kinsella and Glenn Wright
Prepared by:	Biodiversity Assessments & Solutions Pty Ltd
Date:	24th May 2024

Project Control

Project name: Lot 5 DP 585928 – 55 Settlement Rd, Main Arm, NSW, 2482

Ecological Assessment – Planning proposal to amend Byron LEP 2014 to provide a dual occupancy dwelling entitlement.

Job number: 230202

Client: Caroline Kinsella and Glenn Wright

Contact: c/o Planners North

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1. Introduction and Background

Biodiversity Assessments & Solutions Pty Ltd has completed an ecological assessment at Lot 5 DP 585928 – 55 Settlement Rd, Main Arm, NSW (Figure 1 & Plate 1). This assessment has been completed to accompany the Planning Proposal which seeks to amend the Byron Local Environment Plan (LEP 2014) to provide the property with a dual occupancy dwelling entitlement. This has been prepared in response to Council's Unauthorised Dwellings Policy adopted on 18 June 2020.

The aim of this ecological assessment, which has examined the Planning Proposal with respect to any potential impacts as a result of dwelling, asset protection zone, and access upgrade requirements should a dual occupancy be approved for the locations of existing dwellings, is to determine the ecological significance of the subject land and more specifically the areas in the vicinity of the proposal.

The assessment identifies any potential impacts of the proposal, particularly regarding any threatened species, populations or communities listed under the *Biodiversity Conservation (BC) Act 2016*, and the likely impacts of the proposal pursuant to the *Environmental Planning and Assessment (EP&A) Act 1979*.

Plate 1: *The subject land is vegetated with cleared areas around existing dwellings and current access.*

1.1 Subject land

Lot 5 DP 585928 is defined as the 'subject land', and the area identified for which approval for a dual occupancy entitlement is sought, is defined as the 'development footprint' (Figure 2). An unauthorised dual occupancy with asset protection zones (APZs) are located on the subject land, in the location for which planning proposal approval is sought.

The subject land is generally well vegetated, however, there are several cleared and managed areas, predominantly in the northwest portion, surrounding the existing dwellings, sheds and access roads (Plates 1 - 4). Areas of native vegetation occur in the central and southern portions of the subject land,

however, these vegetation communities are generally separate from the areas for which approval is sought and would not be impacted by the proposal. The highest biodiversity values of the subject land have been avoided as the proposal is already largely established, and only minor upgrades are required.

The development footprint does not contain any area mapped on the Biodiversity Values (BV) Map or mapped as Coastal Wetlands or Littoral Rainforest under the Coastal Management Act 2016. An area of BV mapping occurs in the southern portion of the site, > 200 m from the development footprint. This area would not be impacted by the proposal (Figure 1).

In summary, the subject land is:

- comprised of one lot (Lot 5 DP 585928) covering a total area of approx. 23 ha;
- mostly vegetated with three (n = 3) native vegetation classes of varying degrees of condition present including;
    - Subtropical Rainforest;
    - North Coast Wet Sclerophyll Forests; and
    - Cleared Land / Non-native Vegetation.
- undulating to steep topography, with ground level elevation ranging from a height of approx. 30 m to 140 m AHD, however the area of the proposal is relatively flat;
- bounded to the north by Settlement Road, bounded to the west and south by similarly cleared vegetated lots, bounded to the east by an agricultural lot being a banana farm;
- intercepted by several unnamed watercourse/draining lines and includes one farm dam;
- zoned RU2 Rural Landscape and C2 Environmental Conservation; and,
- substantially cleared historically for agricultural grazing purposes.

Plate 2: View of existing dwelling which requires the formalisation of APZ.

1.2 The proposal

The Planning Proposal seeks to amend the Byron LEP 2014 to provide a dual occupancy entitlement for the subject land. This ecological assessment has also considered potential impacts should dwelling entitlements be approved for the current unauthorised residential dwelling locations (for which approval is sought), with consideration of any upgrades or improvements required to existing infrastructure to meet various building, engineering, and bushfire standards, as informed by other consultancy reports.

Of most relevance to the ecological assessment is the extent of and impacts required to establish and maintain an asset protection zone (APZ) around each of the dwellings, and access upgrade requirements. The area identified to accommodate the dual dwellings (Plates 2, 3 & 4), occurs within low constraint landscaped vegetation and managed lawns, with small areas of modified native vegetation present in adjacent areas. The development footprint is already currently used, with surrounding areas of the dwellings currently managed as APZs, with the ground layer within the APZ dominated by exotic species and currently managed to varying extents.

Ecological impacts required for the dwelling, access and APZ upgrades would be limited to minor vegetation impacts only within the requisite APZs, which would include the removal of one (*n* = 1) small Creek Sandpaper Fig (*Ficus coronata*), the removal of three (*n* = 3) small Sally Wattle (*Acacia melanoxylon*), the removal of several small exotic saplings, i.e., Camphor Laurel (*Cinnamomum camphora*) and Large-leaved Privet (*Ligustrum lucidum*), and the continued vegetation management of the exotic dominated ground layer.

Likewise, ecological impacts required to accommodate the passing bays is negligible, with impacts restricted to exotic dominated roadside vegetation at two locations along Settlement Road (Figure 2 & Plate 5). Therefore, the subject land can accommodate the proposal with negligible impacts to vegetation or habitat. The concept design layout is identified in Figure 2.

Plate 3: Area of proposed APZ looking to the northeast showing maintained lawns and gardens.

Plate 4: The studio is predominantly surrounded by cleared land, with only minor vegetation impacts required within the identified APZ.

Plate 5: Passing bays along settlement road would only impact disturbed and exotic dominated road side vegetation.

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Figure 1: Subject Land and location - 55 Settlement Rd.

- Subject Land - 55 Settlement Rd, Main Arm
- Lot
- BV Map V16_clipped Byron Shire
- Hydroline
- Contours
- Road Corridor
- Dwelling Locations

0 50 100 150 200 250 m

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Figure 2: Development proposal.

- Subject Land - 55 Settlement Rd, Main Arm
- Dwelling
- APZ_Dwelling
- Studio
- APZ_Studio
- Existing Access
- Passing Bays - Settlement Rd
- RoadCorridor
- Lot
- hydroline

0 25 50 75 100 125 150 m

2. Methods and results

2.1 Summary

Consistent with NSW OEH Survey and Assessment Guidelines (2017), the approach used to undertake this ecological assessment of the proposal and subject land is as follows:

1. Literature and online resource review

- BioNet Vegetation Classification.
- BioNet Threatened Biodiversity Data Collection (TBDC).
- BioNet Atlas.
- BioNet Web Services.
- OEH Data Portal (SEED).
- PlantNET NSW.

2. GIS Data review

- Cadastre (NSW Department of Finance, Services and Innovation 2023).
- Topography (NSW Department of Finance, Services and Innovation 2023).
- IBRA Regions and Subregions (OEH 2016).
- NSW (Mitchell) Landscapes - version 3.1 (OEH 2016).
- State Environmental Planning Policy (Coastal Management) 2018 (DPIE 2018).
- Byron LGA Vegetation 2021 (BSC 2021).
- Biodiversity Values Mapping (DPE 2023).
- Fauna Corridors for Northeast NSW (OEH 2018).
- Historical Imagery 1958 – 1997.
- Nearmap Aerial imagery 2014 - 2024.

3. Subject land visits/surveys (13th February 2023, 7th June 2023 & 23rd May 2024).

- Plant Community Types (PCT) vegetation communities' assessment.
- Targeted threatened flora species survey.
- Threatened flora habitat suitability assessment.
- Exotic species threat assessment.
- Threatened fauna habitat assessment.
- Koala habitat suitability assessment.
- Preliminary statutory and constraints analysis.

- Preliminary direct and indirect impact assessment.

Given the field survey methods detailed above are in accordance with NSW OEH Survey and Assessment Guidelines (2017), they are considered adequate for a proposal of this nature and for land of this size.

Results are described in Sections 3 and 4 of this assessment.

2.2 Survey Limitations

Surveys were focused on the area of the subject land defined in Section 1.2 of this report as the "development footprint", and the area immediately adjacent to it (Figure 2), most of the accessible areas of the subject land was surveyed using meandering transects. No targeted fauna surveys were undertaken, because, in accordance with guideline recommendations, if preferred habitat requirements are met then threatened species are assumed to have the potential to occur and have been assessed accordingly.

Further desktop assessment was then undertaken by way of a Test of Significance (ToS; Appendix A) for those threatened species recorded or with the potential to occur and be impacted by the proposal, in accordance with Section 7.3 of the Biodiversity Conservation Act 2016 (BC Act).

2.3 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 eight (*n* = 8) threatened fauna species and ten (*n* = 10) threatened flora species listed under Schedule 1 of the BC Act (Table 1 and Figure 3).

Most of the subject land and all the development footprint falls entirely within the Mt Jerusalem - Marshalls Ck regional fauna habitat corridor. This corridor represents a regional link from hinterland to coast via Chincogan Mtns/ Coastal complex/ wet escarp-foothills. This regional corridor has no focal species identified as of particular importance for the corridor. Other corridors present at the subject site include Fauna Key Habitats NE NSW and Climate Change Corridors Coastal NE NSW (Figure 3)

A search of the BioNet Atlas of NSW Wildlife also returned twelve (*n* = 12) Threatened Ecological Communities (TEC) listed under Schedule 2 of the BC Act that occur within the Byron Local Government Area (LGA) (Table 2).

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
Reptilia	Elapidae	*Hoplocephalus stephensii*	Stephens' Banded Snake	V,P	
Aves	Columbidae	*Ptilinopus regina*	Rose-crowned Fruit-Dove	V,P	
Aves	Climacteridae	*Climacteris picumnus victoriae*	Brown Treecreeper (eastern subspecies)	V,P	
Aves	Monarchidae	*Carterornis leucotis*	White-eared Monarch	V,P	
Mammalia	Phascolarctidae	*Phascolarctos cinereus*	Koala	V,P	V
Mammalia	Pteropodidae	*Nyctimene robinsoni*	Eastern Tube-nosed Bat	V,P	

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
Mammalia	Miniopteridae	*Miniopterus australis*	Little Bent-winged Bat	V,P	
Mammalia	Muridae	*Pseudomys novaehollandiae*	New Holland Mouse	P	V
Flora	Cunoniaceae	*Davidsonia jerseyana*	Davidson's Plum	E1,2	E
Flora	Fabaceae (Mimosoideae)	*Acacia bakeri*	Marblewood	V	
Flora	Lauraceae	*Endiandra floydii*	Crystal Creek Walnut	E1	E
Flora	Lauraceae	*Endiandra hayesii*	Rusty Rose Walnut	V	V
Flora	Lindsaeaceae	*Lindsaea brachypoda*	Short-footed Screw Fern	E1,3	
Flora	Myrtaceae	*Gossia fragrantissima*	Sweet Myrtle	E1	E
Flora	Myrtaceae	*Rhodamnia rubescens*	Scrub Turpentine	CE	
Flora	Myrtaceae	*Syzygium moorei*	Durobby	V	V
Flora	Phyllanthaceae	*Phyllanthus microcladus*	Brush Sauropus	E1	
Flora	Proteaceae	*Macadamia tetraphylla*	Rough-shelled Bush Nut	V	V

Notes

NSW Status: CE= Critically Endangered, E= Endangered, V = Vulnerable; P = Protected; 1= Category 1 sensitive species, 2 = Category 2 sensitive species; 3 = Category 3 sensitive species.

Commonwealth (Cth) Status: E= Endangered, V = Vulnerable.

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

Threatened ecological community	NSW status	Cth status
Coastal Cypress Pine Forest in the New South Wales North Coast Bioregion	E3	
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	
Coastal Swamp Oak (Casuarina glauca) Forest of New South Wales and South East Queensland ecological community		E
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 and Coastal Vine Thickets of Eastern Australia		CE
Littoral Rainforest in the New South Wales North Coast, Sydney Basin and South East Corner	E3	

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

Threatened ecological community	NSW status	Cth status
Bioregions		
Lowland Rainforest in the NSW North Coast and Sydney Basin Bioregions	E3	
Lowland Rainforest of Subtropical Australia		CE
Lowland Rainforest on Floodplain in the New South Wales North Coast Bioregion	E3	
Subtropical and Temperate Coastal Saltmarsh		V
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	
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	

Notes

NSW Status: E3 = Endangered Ecological Community.

Commonwealth (Cth) Status: CE = Critically Endangered, E = Endangered, V= Vulnerable

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

Subject Land - 55 Settlement Rd, Main Arm
hydroline
Lot
NPWSReserve

BSC BioNet TS Records_1.5km

- Brown Treecreeper (eastern subspecies)
- Brush Sauropus
- Crystal Creek Walnut
- Davidson's Plum
- Durobby
- Eastern Tube-nosed Bat
- Koala
- Little Bent-winged Bat
- Marblewood
- New Holland Mouse
- Rose-crowned Fruit-Dove
- Rough-shelled Bush Nut
- Rusty Rose Walnut
- Scrub Turpentine
- Short-footed Screw Fern
- Stephens' Banded Snake
- Sweet Myrtle
- White-eared Monarch

FaunaCorridors_NE_NSW

- regional
- subregional

0 250 500 750 m

2.4 Subject land assessment

The on-ground assessment involved a meandering habitat survey concentrated on the development footprint and the immediate surrounding vegetation, with regard for the suitability of the habitat for threatened species, particularly those recorded within 1.5 km of the subject land (see section 2.3), and others with the potential to occur.

The subject land is substantially vegetated, however as identified previously, the development footprint and adjacent surrounding vegetation was assessed as the priority during the on-ground assessment. This was because the property is large, and the development footprint is only a small area (<. 5,000 m^2). The balance of the subject land would be unaffected by this proposal.

Byron Shire Council (BSC) vegetation mapping (2017) (Figure 4) shows the following seven (n = 7) vegetation types being present across the property:

- Subtropical Rainforest
- North Coast Wet Sclerophyll Forest
- Camphor Laurel >80%
- Camphor Laurel 50-80%
- Planted Landscaping, Mixed
- Plantation
- Planted Rainforest

From the on-ground assessment the development footprint and immediately adjacent surrounding areas contain three (n = 3) vegetation types identified from BSC 2017 mapping:

- Subtropical Rainforest
- Camphor Laurel 50-80%
- Planted Landscaping, Mixed

These are discussed further below, and their location are shown below in Figure 4.

2.4.1 Subtropical Rainforest

This vegetation type is located predominantly to the east and southeast of the existing dwelling. However, with regards to the development footprint, the area is generally interspersed with and merged with areas of landscaped gardens and mown lawns.

This vegetation type is generally regrowth and in poor condition with a range of environmental weed species present throughout. The understory is heavily dominated by weed species and areas merge with mixed native planting areas. There is an unmapped ephemeral drainage line running through this community to the east of the existing dwelling, which also extends past the studio.

Overstorey species present in this community include: Red Ash (*Alphitonia excelsa*), Blue Quandong (*Elaeocarpus grandis*), Blackwood (*Acacia melanoxylon*), Silky Oak (*Grevillea robusta*), Pencil Cedar (*Polyscias murrayi*), White Quandong (*Elaeocarpus kirtonii*), Brushbox (*Lophostemon confertus*), Creek Sandpaper Fig (*Ficus coronate*), Native Tamarind (*Diploglottis australis*), Red Kamala (*Mallotus philippensis*), Guioa (*Guioa semiglauca)*, Foambark (*Jagera pseudorhus*), Bunya Pine (*Araucaria bidwillii*),

Cheese Tree (*Glochidion ferdinandi*), Yellow Kamala (*Mallotus discolor*) and Water Gum (*Tristaniopsis laurina*).

Some isolated eucalyptus species are present within the overstorey of this community, some of them known to be planted. These included Swamp Mahogany (*Eucalyptus robusta*), Tallowwood (*Eucalyptus microcorys*), Forest Redgum (*Eucalyptus tereticornis*) and Pink Bloodwood (*Corymbia intermedia*).

Midstorey species present includes Macaranga (*Macaranga tanarius*), Cheese Tree (*Glochidion ferdinandi*), Blackwood (Acacia melanoxylon), Common Lilli Pilly (*Syzygium smithii*), Creek Sandpaper Fig (*Ficus coronata*) and Veiny Wilkiea (*Wilkiea huegeliana*).

Understorey species include Spiny-headed Mat-rush (*Lomandra longifolia*), Harsh Ground Fern (*Hypolepis muelleri*), Native Raspberry (*Rubus parvifolius*), and Australian Basket Grass (*Oplismenus aemulus*). Vines and Scramblers included Cockspur Thorn (*Maclura cochinchinensis*) and Sweet Morinda (*Gynochthodes jasminoides*).

Weed species include Camphor Laurel (*Cinnamomum camphora*), Large-leaved Privet (*Ligustrum lucidum*), Golden Rain Tree (*Koelreuteria paniculate*), Lantana (*Lantana camara*), Freckle face (*Hypoestes phyllostachya*), Annual Ragweed (*Ambrosia artemisiifolia),* Taro (Colocasia esculenta), Blue Billygoat Weed (*Ageratum houstonianum*), Trad (*Tradescantia fluminensis*), Cuphea *(Cuphea carthagenensis*), Paddy's Lucerne (*Sida rhombifolia*), Whiskey Grass (*Andropogon virginicus*), and Broad-leafed paspalum (*Paspalum mandiocanum*).

Plate 6: Area of disturbed rainforest to the south of the existing dwelling.

Two (*n* = 2) threatened flora species were recorded in association with this vegetation type or in the vicinity of, being Durobby (*Syzygium moorei*) of which one (*n* = 1) individuals were recorded, and Scrub Turpentine (*Rhodamnia rubescens*) of which two (*n* = 2) individuals were recorded. None of the recorded threatened flora occurs within the development footprint, as the existing driveway does not require any upgrades in the vicinity of the Scrub Turpentine and Durobby (Figure 4).

This vegetation community is analogous with the Threatened Ecological Community (TEC) *Lowland Rainforest in the NSW North Coast and Sydney Basin Bioregions* under the BC Act 2016; however, condition varies considerably and some areas, inclusive of the area of this community within the APZ, are in poor condition and with an abundance of exotic species through most structural layers.

The area mapped as this vegetation community and contained within the APZ is shown in Plate 6, showing a dominance of exotic species thought the ground and mid storey.

2.4.2 Camphor Laurel 50-80%

An area of exotic dominated vegetation with Camphor Laurel (*Cinnamomum camphora*), Lantana (*Lantana camara*), Blue Billygoat Weed (*Ageratum houstonianum*) and Large-leaved Privet (*Ligustrum lucidum*). It also contains common pioneer species such as Sally Wattle (*Acacia melanoxylon*) and Blush Macaranga (*Macaranga tanarius*).

Plate 7: Camphor Laurel dominated exotic vegetation occurs in areas adjacent to the studio.

2.4.3 Planted Landscaping

This is the area surrounding the existing dwelling and makes up most of the proposed development footprint. This area is heavily modified and maintained with large areas of mown lawn. There are numerous planted landscape species in this area including, Poinciana Tree (*Delonix regia*), Gardenia (*Gardenia sp.*), Crepe Myrtle (*Lagerstroemia sp.*), Bird of Paradise (*Strelitzia sp.),* Magnolia Tree (*Magnolia sp.*), Frangipani (*Plumeria sp.*). There are also a variety of citrus species and planted hybrid eucalyptus species in this area.

Planted native species include, Red Cedar (*Toona ciliata),* Bangalow Palm (*Archontophoenix cunninghamiana*), and Spiny-headed Mat-rush.

Plate 8: Landscape gardens around the existing dwelling.

2.5 Discussion

As a result of significant historical land-use impacts (i.e., clearing for agriculture, landscaping, general garden maintenance and impacts of environmental weed species), the development footprint represents minimal potential habitat for native flora or fauna, particularly when considering the threatened species habitat that occurs in the wider locality. The development footprint is mostly located in areas that lack areas of consolidated native vegetation, and the proposal avoids impacting on areas of higher ecological value that occur on and adjacent to the subject land (Figure 2).

No threatened flora species were recorded within the proposed footprint during surveying (Figure 4). Threatened species recorded on the subject land occur > 30 m from the development footprint.

Areas analogous with Subtropical Rainforest that occur on the subject land can be classified as the Threatened Ecological Community (TEC) *Lowland Rainforest in the NSW North Coast and Sydney Basin Bioregions* under the BC Act 2016. However, only a negligible impact to this community will occur, given vegetation in the vicinity of the proposal that contains species representative of this community is dominated by exotic species generally, and vegetation removal is limited to exotic species (e.g., Camphor Laurel (*Cinnamomum camphora*), Large-leaved Privet (*Ligustrum lucidum*), Mango (*Magnifera indica*) (if required), Lantana (*Lantana camara*)), one (*n* = 1) small Creek Sandpaper Fig and three (*n* = 3) small Sally Wattle (*Acacia melanoxylon*), and the continued maintenance of understorey vegetation to meet RFS APZ standards.

A lack of any significant habitat features within the development footprint or immediately adjacent to it indicates that most threatened fauna species are highly unlikely to occur. The exception being those species that are highly mobile such as microbats and avifauna which may use the area for occasional or opportunistic foraging. Otherwise, the development footprint is of low habitat value and of little significance in the context of the subject land or wider locality.

Large areas of higher-quality habitat occur on the subject land away from the development proposal and in the wider locality, particularly to the north, south and west of the subject land.

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.

Due to being recorded on the subject land or their potential to occur a *Test of Significance* (ToS) (Appendix A) for the following was undertaken:

Threatened Ecological Communities

- Lowland Rainforest in the NSW North Coast and Sydney Basin Bioregions

Fauna

- Stephens' Banded Snake (*Hoplocephalus stephensii*)
- Rose-crowned Fruit-Dove (*Ptilinopus regina*)
- Koala (*Phascolarctos cinereus*)
- Eastern Tube-nosed Bat (*Nyctimene robinsoni*)

Flora

- Scrub Turpentine (*Rhodamnia rubescens*)
- Durobby (*Syzygium moorei*)

The ToS concluded that the proposal would not result in a significant impact for those species identified as either occurring or having the potential to occur (Appendix A).

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Figure 4: Byron Shire Council mapping for subject land and threatened species recorded on site.

- Subject Land - 55 Settlement Rd, Main Arm
- APZ_Dwelling
- APZ_Studio
- Dwelling
- Studio
- Passing Bays - Settlement Rd
- Existing Access
- hydroline
- Road Corridor
- Lot

ByronVeg2017_May18_clipped subject land

- Subtropical Rainforests
- North Coast Wet Sclerophyll Forests
- Camphor Laurel >80%
- Camphor Laurel 51-80%
- Planted Landscaping, Mixed
- Plantation
- Planted Rainforest

Threatened species_subject land

- Durobby
- Scrub Turpentine

0 50 100 150 m

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Figure 5: Vegetation impacts required to accommodate the approval_subject land.

Subject Land - 55 Settlement Rd, Main Arm
hydroline
Lot
Dwelling
APZ_Dwelling
Studio
APZ_Studio
Existing Access
contour
RoadCorridor

Native trees impacted
Creek Sandpaper Fig
Sally Wattle

ByronVeg2017_May18_clipped subject land
Subtropical Rainforests
North Coast Wet Sclerophyll Forests
Camphor Laurel >80%
Camphor Laurel 51-80%
Planted Landscaping, Mixed
Planted Orchard
Planted Rainforest

0 25 50 75 m

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
Reptilia				
Stephens' Banded Snake (*Hoplocephalus stephensii*)	Rainforest and eucalypt forests and rocky areas up to 950 m in altitude. Stephens' Banded Snake is nocturnal, and shelters between loose bark and tree trunks, amongst vines, or in hollow trunks limbs, rock crevices or under slabs during the day. At night it hunts frogs, lizards, birds and small mammals.	Low	**Yes**	One (*n* = 1) Bionet record of this species was recorded within the 1.5 km assessment circle. This record is from 1996. The subject land contains areas of typically preferred specific habitat requirements for this species, however most of the habitat within the development footprint is in poor condition and lacks the habitat features required by this species. The lack of records within close proximity to the site, provides a level of confidence that the proposal would not significantly impact on potential food or habitat resources for the species. Notwithstanding, this species has been included for a Test of Significance as a matter of precaution (Appendix A).
Aves				
Rose-crowned Fruit-Dove (*Ptilinopus regina*)	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. They are shy pigeons, not easy to see amongst the foliage, and are more often heard than seen. 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.	Moderate	**Yes**	There is one (*n* = 1) record of the Rose-crowned Fruit-Dove scattered within the 1.5 km assessment circle of the subject land, recorded in 2014. The subject land and development footprint contain a variety of suitable food resources for fruit doves in the form of rainforest fruiting species. The proposal would result in minor impacts on foraging resources within the development footprint. Specifically, four (*n* = 4) small sized native trees

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
	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.			require removal to accommodate the proposal, including one (*n* = 1) Creek Sandpaper Fig (Figure 5). Therefore, this species has been identified for further assessment by way of a ToS (Appendix A).
Brown Treecreeper (eastern subspecies) *(Climacteris picumnus victoriae)*	Found in eucalypt woodlands (including Box-Gum Woodland) and dry open forest of the inland slopes and plains inland of the Great Dividing Range; mainly inhabits woodlands dominated by stringybarks or other rough-barked eucalypts, usually with an open grassy understorey, sometimes with one or more shrub species; also found in mallee and River Red Gum (Eucalyptus camaldulensis) Forest bordering wetlands with an open understorey of acacias, saltbush, lignum, cumbungi and grasses; usually not found in woodlands with a dense shrub layer; fallen timber is an important habitat component for foraging; also recorded, though less commonly, in similar woodland habitats on the coastal ranges and plains. Sedentary, considered to be resident in many locations throughout its range; present in all seasons or year-round at many sites; territorial year-round, though some birds may disperse locally after breeding. Gregarious and usually observed in pairs or small groups of 8 to 12 birds; terrestrial and arboreal in about equal proportions; active, noisy and conspicuous while foraging on trunks and branches of trees and amongst fallen timber; spend much more time foraging on the ground and fallen logs than other treecreepers.	Unlikely	No	One (*n* = 1) Bionet record of this species was recorded within the 1.5 km assessment circle. This record is from 1996. There is some potential habitat for this species on the subject land. However, the development footprint does not contain areas of typically preferred specific habitat requirements for this species. Furthermore, the habitat within the development footprint is in poor condition and the removal of four (*n* = 4) small native trees, would not impact the foraging opportunities of this species. The proposal would not result in any impacts on resources at the subject land or in the locality, & likely suitable habitat for this species would not be impacted. Therefore, the proposal is unlikely to negatively impact on this species.

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
	When foraging in trees and on the ground, they peck and probe for insects, mostly ants, amongst the litter, tussocks and fallen timber, and along trunks and lateral branches; up to 80% of the diet is comprised of ants; other invertebrates (including spiders, insects larvae, moths, beetles, flies, hemipteran bugs, cockroaches, termites and lacewings) make up the remaining percentage; nectar from Mugga Ironbark (Eucalyptus sideroxylon) and paperbarks, and sap from an unidentified eucalypt are also eaten, along with lizards and food scraps; young birds are fed ants, insect larvae, moths, craneflies, spiders and butterfly and moth larvae. Hollows in standing dead or live trees and tree stumps are essential for nesting. The species breeds in pairs or co-operatively in territories which range in size from 1.1 to 10.7 ha (mean = 4.4 ha). Each group is composed of a breeding pair with retained male offspring and, rarely, retained female offspring. Often in pairs or cooperatively breeding groups of two to five birds.			
White-eared Monarch (*Carterornis leucotis*)	In NSW, White-eared Monarchs occurs in rainforest, especially drier types, such as littoral rainforest, as well as wet and dry sclerophyll forests, swamp forest and regrowth forest. They appear to prefer the ecotone between rainforest and other open vegetation types or the edges of rainforest, such as along roads. They are highly active when foraging, characteristically sallying, hovering and fluttering around the outer foliage of	Low	No	One (*n* = 1) Bionet record of this species was recorded within the 1.5 km assessment circle. This record is from 2018 and from Settlement Rd. The subject land and the development footprint do contain areas of habitat typically preferred by this species. However, most of the habitat within the development footprint is in poor condition and the removal of four (*n* = 4) small native trees, would not impact the foraging opportunities of this species.

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
	rainforest trees. They are usually observed high in the canopy or subcanopy. They eat insects, but their diet is not well studied. They breed from about September to March, usually nesting high in the canopy, and often at the edge of patches of rainforest.			The proposal would not result in any impacts on resources at the subject land or in the locality, & likely suitable habitat for this species would not be impacted. Therefore, the proposal is unlikely to negatively impact on this species.
Mammalia				
Koala (*Phascolarctos cinereus*)	Inhabit eucalypt woodlands and forests. Feed on the foliage of more than 70 eucalypt species and 30 non-eucalypt species, but in any one area will select preferred browse species. Inactive for most of the day, feeding and moving mostly at night. Spend most of their time in trees, but will descend and traverse open ground to move between trees. 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.	Low	Yes	There are eighteen (*n* = 18) Koala records within the 1.5 km assessment circle of the subject land. None of these records occur on the site. The development footprint does not contain any suitable habitat or Koala feed trees, and only a small number of planted Eucalyptus adjacent to the development footprint. No evidence of koala usage or observation of actual Koalas was recorded during ecological surveying of the subject land. No Koala feed trees, or potential Koala habitat would be impacted to accommodate the proposal. The proposal would not result in any significant impacts on potential habitat or food resources, & therefore the proposal is unlikely to impact on this species. However, in the interests of the precautionary principle, this species has been selected for additional assessment by way of a ToS (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
Eastern Tube-nosed Bat (*Nyctimene robinsoni*)	Favour streamside habitats within coastal subtropical rainforest and moist eucalypt forests with a well-developed rainforest understorey. They feed mainly on fruit and nectar from trees in the rainforest canopy and sometimes come close to human settlement to visit flowering or fruiting trees.	Low	Yes	There is one (*n* = 1) record of this species within the 1.5 km assessment circle of the subject land. The development footprint does contain foraging resources for the Eastern Tube-nosed bat in the form of rainforest fruiting species. The proposal would result in minor impacts on foraging resources within the development footprint. Specifically, four (*n* = 4) small native trees require removal to accommodate the proposal (Figure 5). Therefore, this species has been identified for further assessment by way of a ToS (Appendix A).
Little Bent-winged Bat (*Miniopterus australis*)	Moist eucalypt forest, rainforest, vine thicket, wet and dry sclerophyll forest, Melaleuca swamps, dense coastal forests and banksia scrub. Generally found in well-timbered areas. Little Bentwing-bats roost in caves, tunnels, tree hollows, abandoned mines, stormwater drains, culverts, bridges and sometimes buildings during the day, and at night forage for small insects beneath the canopy of densely vegetated habitats. They often share roosting sites with the Common Bentwing-bat, and, in winter, the two species may form mixed clusters. In NSW the largest maternity colony is in close association with a large maternity colony of Eastern Bentwing-bats (Miniopterus schreibersii) and appears to depend on the large colony to provide the high temperatures needed to rear its young.	Moderate	No	One (*n* = 1) Bionet record of this species was recorded within the 1.5 km assessment circle. This record is from 1996. The subject land does contain areas of habitat typically preferred by this species. However, most of the habitat within the development footprint is in poor condition and the removal of a single rainforest tree, would not impact the foraging opportunities of this species. The proposal would not result in any impacts on resources at the subject land or in the locality, & likely suitable habitat for this species would not be impacted. Therefore, the proposal is unlikely to negatively impact on this species.

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
	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.			
New Holland Mouse (*Pseudomys novaehollandiae*)	Known to inhabit open heathlands, woodlands and forests with a heathland understorey and vegetated sand dunes. It is a social animal, living predominantly in burrows shared with other individuals. Distribution is patchy in time and space, with peaks in abundance during early to mid-stages of vegetation succession typically induced by fire.	None	No	One (*n* = 1) Bionet record of this species was recorded within the 1.5 km assessment circle. This record is from 1996. There is no habitat present within the subject land or development footprint suited to this species. The proposal would not result in any impacts on resources at the subject land or in the locality, & likely suitable habitat for this species would not be impacted. Therefore, the proposal is unlikely to negatively impact on this species.
Flora				
Davidson's Plum (*Davidsonia jerseyana*)	Lowland subtropical rainforest and wet eucalypt forest at low altitudes (below 300m). Many trees are isolated in paddocks and on roadsides in former rainforest habitats.	Not Recorded	No	Sixteen (*n* = 16) records Davidson's Plum of occurs within the 1.5 km assessment circle. Suitable habitat occurs on the subject land and within the development footprint. However, this species wasn't record within the development footprint. The species does not occur in the development footprint and adjacent habitat would not be impacted.
Marblewood (*Acacia bakeri*)	Marblewood grows in or near lowland subtropical rainforest, in adjacent eucalypt forest and in regrowth of both.	Not Recorded	No	One (*n* = 1) record of Marblewood occurs within the 1.5 km assessment circle.

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
	It usually occurs in the understorey but may occur as a large canopy tree.			Suitable habitat occurs on the subject land and within the development footprint. However, this species wasn't record within the development footprint. The species does not occur in the development footprint and adjacent habitat would not be impacted.
Crystal Creek Walnut (*Endiandra floydii*)	Warm temperate, subtropical rainforest or wet sclerophyll forest with Brush Box overstorey, and in and Camphor Laurel forest. The species can occur in disturbed and regrowth sites. The species generally preferres sheltered locations however it has been recorded on ridgelines, slopes, gullies and creek flats. It occurs from sea level up to 430 m above sea level. Flowering has been observed from November to May. Fruit, which has been observed from December to May, is not produced every year, and heavy crops are produced at irregular intervals. Following the severe drought conditions of the 2002 dry season, heavy fruit crops were reported throughout the range of the Crystal Creek Walnut. Seeds germinate readily and rapidly in nursery conditions. From one recorded fire exposure event the species was found to resprout from the root stock following the fire, the main trunk was killed by the fire.	Not Recorded	No	One (n = 1) record of Crystal Creek Walnut occurs within the 1.5 km assessment circle. Suitable habitat occurs on the subject land and within the development footprint. However, this species wasn't record within the development footprint. The species does not occur in the development footprint and adjacent habitat would not be impacted.
Rusty Rose Walnut (*Endiandra hayesii*)	Sheltered moist gullies in lowland subtropical and warm temperate rainforest on alluvium or basaltic soils. The species	Not Recorded	No	Two (n = 2) record of Rusty Rose Walnut occurs within the 1.5 km assessment circle.

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
	occurs in regrowth and highly modified forms of these habitats. Top Flowers have been recorded on the Rusty Rose Walnut in spring and in March, October and November, with fruits recorded in March and May.			Suitable habitat occurs on the subject land and within the development footprint. However, this species wasn't record within the development footprint. The species does not occur in the development footprint and adjacent habitat would not be impacted
Short-footed Screw Fern (*Lindsaea brachypoda*)	Very moist habitats in subtropical or warm-temperate rainforest or palm forest.	Not Recorded	No	One (*n* = 1) historic record (1894) of Short-footed Screw Fern occurs within the 1.5 km assessment circle. Suitable habitat occurs on the subject land and within the development footprint. However, this species wasn't record within the development footprint. The species does not occur in the development footprint and adjacent habitat would not be impacted
Sweet Myrtle (*Gossia fragrantissima*)	Dry subtropical and riverine rainforest. As it can coppice from roots left in the ground when rainforest is cleared, it is found at several sites as isolated plants in paddocks or regrowth.	Not Recorded	No	Fifty-three (*n* = 53) records of Sweet Myrtle occur within the 1.5 km assessment circle. Suitable habitat occurs on the subject land and within the development footprint. However, this species wasn't record within the development footprint. The species does not occur in the development footprint and adjacent habitat would not be impacted.
Scrub Turpentine (*Rhodamnia rubescens*)	Found in littoral, warm temperate and subtropical rainforest and wet sclerophyll forest usually on volcanic and sedimentary soils.	Recorded	**Yes**	Two (*n* = 2) individuals of this species were recorded on site. All individuals were recorded outside the development footprint and will be retained.

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
	This species is characterised as highly to extremely susceptible to infection by Myrtle Rust. Myrtle Rust affects all plant parts.			However, due to the presence of this species on the subject land this species has been identified for further assessment by way of a ToS.
Durobby (*Syzygium moorei*)	Durobby is found in subtropical and riverine rainforest at low altitude. It often occurs as isolated remnant paddock trees.	Recorded	Yes	One (*n* = 1) individual of this species was recorded on site, this individual was planted. The recorded individual was outside the development footprint and will be retained. However, due to the presence of this species on the subject land this species has been identified for further assessment by way of a ToS.
Brush Sauropus (*Phyllanthus microcladus*)	Usually found on banks of creeks and rivers, in streamside rainforest or dry rainforest.	Not Recorded	No	Two (*n* = 2) records of Brush Sauropus occur within the 1.5 km assessment circle. Suitable habitat occurs on the subject land and within the development footprint. However, this species wasn't record within the development footprint. The species does not occur in the development footprint and adjacent habitat would not be impacted.
Rough-shelled Bush Nut (*Macadamia tetraphylla*)	Found in subtropical rainforest, usually near the coast.	Not Recorded	No	Sixteen (*n* = 16) records of Rough-shelled Bush Nut occur within the 1.5 km assessment circle. Suitable habitat occurs on the subject land and within the development footprint. However, this species wasn't record within the development footprint. The species does not occur in the development footprint and adjacent habitat would not be impacted.

3. Impact assessment

The proposal avoids and minimises impacts to the local ecology with the APZs being primarily located within existing landscaped areas consisting of maintained gardens, mown lawns and exotic dominated vegetation.

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

Only four (*n* = 4) small native trees would require removal for the better establishment of the requisite APZs for each of the existing dwellings. One small Creek Sandpaper Fig (Plate 9, Figure 5) with an approx. DBH of 20cm and approx. 6 meters in height requires removal near the existing dwelling, and three (*n* = 3) small Sally Wattle (*Acacia melanoxylon*), with DBHs of approx. 10-15 cm and heights between approx. 3-4 m require removal near the existing studio (Plate 10, Figure 5).

Plate 9: Creek Sandpaper Fig required to be removed.

Other vegetation requiring removal within the APZs include weed species such Camphor Laurel, Large-leaved Privet, Golden Rain Tree, Lantana, and the continued maintenance of the exotic dominated groundcover to requisite APZ standards.

Two (*n* = 2) threatened flora species were recorded on the subject land, Scrub Turpentine (*Rhodamnia rubescens*) and Durobby (*Syzygium moorei*), however, all individuals are outside the development footprint and will remain in situ (Figure 4).

Vegetation impacts to establish recommended passing bays along Settlement Rd would be negligible, with roadside vegetation within the proposed footprints overwhelmingly dominated by exotic vegetation, including species such as Camphor Laurel, Large-leaved Privet, Palm Grass (*Setaria palmifolia*), Lantana (*Lantana camara*) and Winter Senna (*Senna pendula*).

Plate 10: Creek Sandpaper Fig required to be removed.

3.2 Habitat loss or disturbance

Habitat loss or disturbance would be minimal as most of the development footprint is located in an area characterised as being existing landscaped gardens and mown lawns, with only a small area of native vegetation located within the development footprint (Figure 5), most notably to the east and the southeast of the existing dwelling, and to the west and south of the existing studio.

Minor impacts only to an area potentially analogous with the TEC *Lowland Rainforest in the NSW North Coast and Sydney Basin Bioregions* in the form of the removal of one (*n* = 1) small native tree from within the dwelling and studio APZs required. This community is already in poor condition, with a general dominance of exotic species. Habitat loss or disturbance for minor vegetation removal (i.e., three (*n* = 3) small native trees) associated with the studio APZ is similarly expected to be negligible, with habitat in very poor condition and dominated by exotic regrowth. Areas of higher significance vegetation, including areas of habitat in the south of the subject land, or in the locality, would not be directly or indirectly impacted. Impacts would not be expected to result in any significant loss of habitat for native species with the potential to occur.

Habitat loss or disturbance required for the construction of passing bays on Settlement Rd would similarly be negligible, considering the low value and highly disturbed nature of existing habitat.

3.3 Water Quality or Hydrology Impacts

The subject land contains several natural drainage lines and a dam (Figure 1 and 2). No mapped drainage lines occur within the development footprint (i.e., APZs); however, an unmapped ephemeral drainage line does intercept the requisite APZ adjacent to the existing dwelling. This area is currently managed as an APZ and would be improved as such and managed accordingly. No disturbance of soils would occur as a result of the proposal, and the incorporation of mitigation measures to address any potential increase in sediment and/or nutrient loads would adequately minimise any potential impacts on downstream ecology if required (Section 5).

4. Statutory assessment of the proposal

The proposal has been (i) examined in the context of 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:

- Byron Local Environmental Plan (LEP) 2014;
- Byron Shire Development Control Plan (DCP) 2014;
    - DCP Chapter B1 – Biodiversity;
- Biodiversity Conservation (BC) Act 2016;
    - Biodiversity Conservation Regulation 2017;
- Rural Fires Act 1997;
- Environmental Planning and Assessment Act 1979
- State Environmental Planning Policy (Biodiversity and Conservation) 2021;
    - Chapter 4: Koala Habitat Protection 2021

4.1 Byron Local Environmental Plan 2014

The Byron LEP 2014 guides the planning decisions for the Byron LGA. It specifies the objectives of each zone and the uses permitted with or without consent, as well as prohibited uses. It is supported by the Byron Shire Development Control Plan (DCP) 2014 which provides more detailed information relating to development controls (refer Section 6.2).

The subject land has two (n = 2) zones associated with it, these being:

- RU2 - Rural Landscape; and
- C2 - Environmental Conservation.

The proposal only occurs on a section of land zoned RU2 Rural Landscape.

4.2 Byron Shire Development Control Plan 2014

The Byron DCP 2014 has been examined in the context of the proposal, with consideration being primarily given to Chapter B1 – Biodiversity, which is of most relevance to this assessment.

This DCP chapter was reviewed to ascertain if any constraints exist or are relevant to the proposal specifically.

4.2.1 DCP B1

Table 3 from DCP Chapter B1 identifies the requisite ecological setbacks identified for a variety of biodiversity features which are defined as red flags and apply to the proposal's development envelope. These ecological setbacks, and the applicability to the consent sought, are described in Table 4 below.

Table 4: Biodiversity elements and ecological setbacks identified in B1 and relevance to the proposal.		
Red Flags [a]	Ecological Setback [b] (m)	Applicability / Compliance
High Ecological Value Vegetation		
Threatened Ecological Communities: Includes Critically Endangered, Endangered or Vulnerable listed under State or Commonwealth legislation).	30	Does not comply – vegetation within the proposed APZ can be considered analogous with the TEC *Lowland Rainforest in the NSW North Coast and Sydney Basin Bioregions*. Impacts to vegetation consists primarily of the removal of one (*n* =1) native tree being Creek Sandpaper Fig and some exotic species being Camphor Laurel, Large-leaved Privet and Golden Rain Tree will not be likely to be significant with regards to vegetation community structure or function. Vegetation removal required near the studio is not considered to represent a TEC.
Over-cleared vegetation types: A vegetation type of which more than 70% has been cleared in the Catchment Management Area.	20	Does not comply – The site is mapped as PCT 3002 under the NSW PCT mapping. Although vegetation on the subject land is not necessarily analogous with those vegetation types, both of those PCTs are approx. 90% cleared from original estimated extent.
Over-cleared landscapes: A Mitchell landscape in which more than 70% native vegetation cover has been cleared.	20	Does not comply – the proposal falls within two Mitchells Landscapes. Byron-Tweed Alluvial Plains is 80.1% cleared, whilst Mount Warning Exhumed Slopes is 60% cleared.
Old growth Old-growth forests are ecologically mature forests, often diverse in structure and species with relatively large old trees, some of which may contain tree hollows.	30	Complies- there are mapped old growth forests occurring in the south of the property (BV mapping). However, this vegetation is nearly 300m to the south of the proposed APZ.
Important wetlands: Wetlands protected under NSW State or Commonwealth legislation or policy. Includes wetlands mapped under the NSW State Environmental Planning Policy (SEPP) Coastal Management 2018 (previously SEPP 14 Wetlands).	50	NA – no mapped wetlands occur on or proximal to the subject land.
Other wetlands: Any other wetland other than an Important wetland.	20	Does not comply – a small, degraded ephemeral wetland associated with a

Table 4: Biodiversity elements and ecological setbacks identified in B1 and relevance to the proposal.

Red Flags [a]	Ecological Setback [b] (m)	Applicability / Compliance
Wetland has the same meaning as defined within the NSW Wetland Policy: • Wetlands are areas of land that are wet by surface water or groundwater, or both, for long enough periods that the plants and animals in them are adapted to and depend upon moist conditions for at least part of their lifecycle. They include areas that are inundated cyclically, intermittently or permanently with fresh, brackish, or saline water, which is generally still or slow moving except in distributary channels such as tidal creeks which may have higher peak flows. • Examples of wetlands include mangroves, backwaters, sedgelands, wet heathlands, lakes, lagoons, estuaries, rivers, floodplains, swamps, bogs, billabongs, marshes, coral reefs and seagrass beds).		drainage gully runs through the area of the proposed APZ near the existing dwelling. Although this area which contains wetland species is within the ecological setback, no direct impacts would occur, and the value of this low condition wetland would not be reduced.
<u>Other bushland on a slope > 18 degrees.</u>	20	Does not comply – areas within the APZ have slopes >18 degrees. However, vegetation impacted consists of the removal of one (*n* =1) native tree being Creek Sandpaper Fig and potentially some exotic species being Camphor Laurel, Large-leaved Privet and Golden Rain Tree. This would not likely cause any erosion issues. Similarly, works required within the proposed studio APZ on the western slope would predominantly only require removal of small trees and management of exotic vegetation currently there.
<u>Pre-existing protected habitat:</u> Areas of existing habitat (or other land) provided with formal long-term protection designed to limit further development. Protected habitat can be established by various mechanisms including but not limited to, restrictive covenants, rezoning, voluntary planning agreements, formal conservation agreements, biodiversity stewardship agreements, or in some cases dedication to Council or other public authority. The mechanism(s) to establish protected habitat must be conditioned or otherwise approved by Council).	20m or as above, whichever is larger	Complies – although C2 land occurs on the property it is more than 200m to the south of the proposed APZ.
Wildlife Corridors		
<u>Land within a defined wildlife corridor:</u>	20	Does not comply – the development

Table 4: Biodiversity elements and ecological setbacks identified in B1 and relevance to the proposal.

Red Flags [a]	Ecological Setback [b] (m)	Applicability / Compliance
Refers to linear areas that link wildlife habitat and provide a crucial role in maintaining connectivity between plant and animal populations that would otherwise be at greater risk of extinction. Such corridors are critical for the maintenance of ecological processes, enabling migration, colonisation and interbreeding of plants and animals.		footprint falls completely within the regional MtJ-Marshall Creek corridor. Vegetation impacted consists of the removal of four (n = 4) small native trees and exotic species including Camphor Laurel, Large-leaved Privet, Golden Rain Tree and Lantana, and not likely to be significant with regards to corridor function.
Threatened and Significant Species		
<u>Areas with a species polygon for threatened fauna or other significant fauna that are known or predicted to occur at the site:</u> Threatened fauna or flora is any species listed as critically endangered, endangered or vulnerable under NSW State or Commonwealth legislation.	20	NA – no species polygons or known threatened fauna occur on the subject land.
<u>Areas with a species polygon for threatened flora or other significant flora that are known to occur at the site</u>: A species polygon is an area of land enclosing the known or predicted habitat of targeted flora or fauna. In most cases known records will be used for flora and predicted habitat will be used for fauna.	10	Complies – all threatened flora species recorded are more than 10m from the proposal.
Koala Habitat		
<u>Koala habitat outside of areas defined within a Comprehensive Koala Plan of Management.</u>	20	NA – the subject land does not contain any areas that would be considered to represent Koala habitat, nor would any be impacted as a result of the proposal.
<u>Isolated or scattered primary koala food trees with evidence of koala activity.</u>	20	Complies– one Swamp Mahogany (likely planted) adjacent to the development footprint. However, no evidence of Koala activity was recorded during incidental surveys. There are several other planted Koala food trees being Tallowwood and Forest Red Gum approximately 30m to the northeast of the proposed APZ, again these trees will be retained and there was no evidence of Koala activity was recorded during incidental surveys. Most of the potential Koala habitat of significance occurs to the south of the studio on the upper slopes of the subject

Table 4: Biodiversity elements and ecological setbacks identified in B1 and relevance to the proposal.

Red Flags [a]	Ecological Setback [b] (m)	Applicability / Compliance
		land, however, no such impact would be impacted directly or indirectly as a result of the proposal.
Any other areas where koalas are present and/or koala habitat is planted with public monies.	20	NA – no records for Koala occur on the subject land and no activity was recorded. Nevertheless, no Koala feed trees would be impacted by the proposal.
Waterways and Riparian Areas (from the top of bank)		
Stream Order First order stream	10	Complies – closest mapped hydroline (which is a first order stream) occurs approx. 25m from the existing studio, but is within approx. 5m of the drainage line. However, no works are required beyond existing management practices to maintain the ground cover within the APZ, and no trees or other established vegetation requires removal within this buffer.
Second order stream	20	Complies – closest mapped hydroline (which is a second order stream) occurs 45m from the proposal.
Third order stream	30	Complies – closest mapped hydroline (which is a second order stream) occurs 45m from the proposal.
Fourth order stream	40	Complies – closest mapped hydroline (which is a second order stream) occurs 45m from the proposal.
Estuarine area	50	NA – no estuarine areas occur on the subject land.
Flying Fox Camps		
Year round or intermit	100	NA – no flying fox camps occur on the subject land or proximal to it.
Other Habitat Features		
Very large native trees: Local native trees that have a trunk diameter of greater than or equal to 0.8 metres at 1.4 metres above the natural ground level. Local native trees are trees that existed in the Byron Shire before European settlement.	10	Complies – although several very large trees occur on the subject land, none of those are within 10m of the proposal elements.
Stags and hollow-bearing trees	10[d]	Complies – although hollow bearing trees

Table 4: Biodiversity elements and ecological setbacks identified in B1 and relevance to the proposal.		
Red Flags [a]	**Ecological Setback [b] (m)**	**Applicability / Compliance**
		occur on the subject land, none of those are within 10m of the proposal elements.
Raptor nests	50	NA – no raptor nests recorded
Notes: [a] = An area of land with high biodiversity conservation value which should be excluded from any development envelope. [b] = Where more than one red flag applies or an ecological setback is specified in another adopted plan or policy (e.g., locality plan), the larger ecological setback applies. [c] = Mapping available on Councils website. [d] = A larger development setback may need to be considered to prevent damage to built structures in the event of tree or stag fall.		

The proposal generally complies with most of the ecological setbacks prescribed in DCP B1, or the setbacks do not apply to the subject land or development footprint. Exceptions relating to the proximity of the proposal to 'Threatened Ecological Communities', 'Over-cleared vegetation types', 'Over-cleared landscapes', 'Other Wetlands', 'Other bushland on a slope > 18 degrees', or 'Land within a defined wildlife corridor' categories identified in Table 6.1. However, most of the encroachments into the requisite setbacks are minor and unavoidable due to spatial constraints. Regardless, the proposal would not impact the biodiversity themes central to DCP B1, despite these minor encroachments.

Significant native vegetation and forest habitat have been avoided, minimising impacts to biodiversity values of the subject land and the locality generally. None of these areas of significance would be directly impacted, and indirect impacts are able to be mitigated such that no significant deleterious impacts would result.

Despite minor encroachments into prescribed ecological setbacks identified in Table 4, the following is noted:

- the area of native vegetation to be cleared is the combined canopy of four (n = 4) small native trees (i.e., one (n = 1) Creek Sandpaper Fig and three (n = 3) Sally Wattle);
- the clearing does not result in any significant decrease in habitat connectivity;
- most ecological setbacks can be complied with and maintained, with minor incursions likely to result in negligible impacts;
- the spatial constraints of the site mean that some of the APZ is situated within the EEC *Lowland Rainforest in the NSW North Coast and Sydney Basin Bioregions*; and,
- adequate areas occur on the subject land to ensure commensurate compensatory plantings or efforts to rehabilitate existing habitat can be undertaken to ensure no net loss of biodiversity as a result of the proposal.

4.3 Biodiversity Conservation Act 2016

Section 7.2 of the BC Act provides that development under the *Environmental Planning and Assessment*

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 threshold if the biodiversity offsets scheme applies to the impacts of the development on biodiversity values, or

(c) It is carried out in a declared area of outstanding biodiversity value.

Consideration has been given to the BC Act during the planning process. Preserving native vegetation on the subject land and within the development footprint has ensured avoidance of impacts to adjacent biodiversity values. Low constraint land makes up a majority of the development footprint, which has effectively minimised any negative impacts to the biodiversity values of the locality.

Two (*n* = 2) threatened flora species (Scrub Turpentine and Durobby) listed under the BC Act were recorded at the subject land however these will not be impacted by the proposal and will remain in situ. However, a ToS has been undertaken for both these species (Appendix A).

No threatened fauna species were recorded, although extensive targeted surveys for all fauna classes were not undertaken, with the site visit assessing habitat suitability. The subject land does potentially contain habitat for threatened fauna species listed under the BC Act and impacts from the development have been minimised.

One (*n* = 1) identified EEC occurs on the subject land, i.e., *Lowland Rainforest in the NSW North Coast and Sydney Basin Bioregions*. Vegetation within the development footprint, specifically to the south east of the dwelling, shares species analogous with this EEC despite being dominated by exotic species through all structural layers. Impacts to this EEC would be minimal, with the removal of one (*n* = 1) native rainforest species being a Creek Sandpaper Fig (DBH 20cm) and continued management of ground layer.

A subject land suitability assessment was undertaken for those species recorded within 1.5 km of the subject land (Table 2.3) or with the potential to occur. This identified the following one (*n* = 1) EEC and six (*n* = 6) species as either occurring or having some potential to occur at the subject land and to be impacted by the proposal which were further assessed by way of a *Test of Significance* (ToS):

<u>Endangered Ecological Communities</u>

- Lowland Rainforest in the NSW North Coast and Sydney Basin Bioregions

<u>Fauna</u>

- Stephens' Banded Snake (Hoplocephalus stephensii)
- Rose-crowned Fruit-Dove (Ptilinopus regina)
- Koala (Phascolarctos cinereus)
- Eastern Tube-nosed Bat (Nyctimene robinsoni)

<u>Flora</u>

- Scrub Turpentine (Rhodamnia rubescens)
- Durobby (Syzygium moorei)

The ToS is set out in Section 7.3 of the Act. The ToS is based on the footprint and the design of the

development. Measures that offset or otherwise compensate for the development have not been considered in determining the degree of the effect on threatened species or ecological communities.

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

- Establishment/maintenance phases;
- all on-site and off-site impacts, including location, installation, operation and maintenance of 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 recorded at the subject land or within the 1.5 km assessment circle, and those 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 the APZ 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.

4.3.1 Biodiversity Conservation Regulation 2017

Part 7 of the BC Regulation prescribes the biodiversity assessment and approvals under the *Environmental Planning and Assessment Act 1979,* and details when an activity exceeds a threshold and therefore requires assessment under the Biodiversity Offsets Scheme (BOS). Although not relevant to the Planning Proposal, these are of relevance when seeking consent for existing dwelling.

The following three main threshold triggers apply: (i) Area clearing threshold, (ii) Biodiversity Values Map threshold, and (iii) a threatened species Test of Significance.

(i) Area clearing thresholds (Clause 7.2) depend on the minimum lot size under the relevant Local Environment Plan (LEP), as defined in Table 4. The proposal is to occur on land zoned RU2 Rural Landscape and C2 - Environmental Conservation under the Byron Local Environmental Plan 2014. The 'Minimum Lot Size Method' identified in the Biodiversity Values Map and Threshold Report (Attachment C) is the smallest minimum lot size included within the subject land, which is 40 ha for land zoned RU2 Landscape. The corresponding area threshold of entry into the scheme is therefore considered to be 1 ha (Table 5).

Given the entirety of the combined APZs are < 4,000 m^2 and generally dominated by exotic or planted vegetation, and the proposal requires the removal of four (n = 4) small native trees only, and groundlayer management of vegetation within the APZs, which is dominated by exotic vegetation, it stands that the area clearing threshold is not exceeded and would 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. Given the development footprint does not contain any areas mapped on

the Biodiversity Values Map, this threshold would not apply (Figure 1).

(iii) A threatened species *Test of Significance* is triggered for all local developments that do not exceed the BOS threshold. If the 'test of significance' assessment indicates that there will be a significant impact, this exceeds the threshold, and the proponent must carry-out a BAM assessment. A ToS has been considered for those species recorded or identified within 1.5 km of the subject land and/or with the potential to occur (Appendix A). This 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 would not been exceeded, and the BOS would not apply.

Table 5: 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

4.4 Rural Fires Act 1997

The subject land is within a designated bush fire prone area. Therefore, any proposed development upon the property will be required to comply with Planning for Bush Fire Protection (PBP) 2019 for new development.

PBP 2019 provides the following development standards and guidelines for designing and building on bush fire prone land in NSW:

- strategic land use planning to ensure that new developments are not exposed to high bush fire risk;
- creating new residential and rural residential subdivision allotments;
- special fire protection purpose (SFPP) development taking account of occupant vulnerability;
- bush fire protection measures (BPMs) for new buildings; and,
- upgrading and maintaining existing development.

Detailed bushfire information relating to the development are provided in a separate report by Bushfire Certifiers. The APZ would be contained within the area identified as the development site (Figure 2). Minimal vegetation requires removal to establish an Asset Protection Zone (APZ) for the proposal, mostly consisting of exotic species and isolated trees or shrubs, with only continued management of understorey fuel loads required within the designated APZ to ensure compliance.

4.5 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 predominantly 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 and in the surrounding landscape would be retained and protected. The direct and indirect environmental impacts of the proposal would be minimal.

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

The development can be accommodated by utilising the lower constraint cleared land of the subject land or areas of lesser condition or habitat value. The most significant forest habitat associated with the subject land occurs on the central and southern part of the property, which would be retained and protected. It is therefore considered that the site is suitable for the proposal with the incorporation of suitable mitigation measures.

4.6 State Environmental Planning Policy (Biodiversity and Conservation) 2021

4.6.1 Chapter 4: Koala habitat protection 2021

Section 4.2 of SEPP (Biodiversity and Conservation) 2021 defines Core Koala Habitat as meaning:

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

The subject land contains a few planted Schedule 3 trees to the northeast of the development footprint; however, it does not contain any areas of native vegetation considered able to support a resident population of Koalas. No Koala records are attributed to the subject land; however, several records occur in proximity to the subject land. There have been eighteen (n = 18) records of Koalas within 1.5 km of the subject land, however, most of these occur east of the subject land. The site is within an identified regional or sub-regional corridor however the development footprint is unlikely to represent anything more than occasional opportunistic foraging habitat or for travel between areas of suitable habitat.

The proposal does not require the removal of any Koala feed trees or would not impact any areas in proximity to suitable habitat. All "habitat" in the locality will continue to serve its present function to Koalas, with no direct or indirect impact from the proposed development.

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 applies. 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".

The 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 outside the Byron Coast Planning Area. As discussed in Section 3 herein, this proposal requires the removal of four (n = 4) small sized native trees, however, none of the species requiring removal are classified as Koala feed tree species in the Byron Coast CKPoM, or in Schedule 3 of the SEPP (Biodiversity and Conservation) 2021.

It is therefore concluded that for the areas surveyed 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.

4.7 Environment Protection & Biodiversity Conservation Act 1999 (Cth)

Two (n = 2) flora species listed under the EPBC Act were recorded at the site (Durobby and Scrub Turpentine), however, these individuals would be retained and protected as part of the proposal, with no works required within their vicinity. Therefore, no threatened flora species listed under the EPBC Act would be impacted directly or indirectly as a result of the proposal.

While no fauna species listed under the EPBC Act have been recorded at the site, it is possible that some species may occur from time to time, any threatened species which have the potential to occur have been assessed by way of a ToS. The site and habitat suitability assessment concluded that no fauna species listed under the EPBC Act would be significantly impacted by the proposal.

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

5. Management strategy to minimise development impacts

The sum of deleterious ecological impacts from the proposal to undertake the formalisation of the APZ on the subject land are considered to be negligible, with most of the proposal's footprint consisting of low constraint landscaped land.

However, the potential direct and indirect environmental impacts of the proposal through both establishment and maintenance phases have been taken into consideration for this assessment, with key mitigation measures provided 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:

- Ensure all machinery/vehicles enter and exit along the main entry route so additional impacts or disturbance do not occur to native forest vegetation or on-site drainage line;
- Delineate the work area so that no machinery/vehicles/personnel impact on vegetation or habitat outside of the delineated development site area;
- Vegetation to be removed to be flagged by an ecologist prior to the establishment of the APZ;
- Any trees requiring removal would be cut above ground level, with the stump to remain within the ground to prevent soil disturbance;
- Woody vegetation removed during the establishment of the APZ should be mulched/chipped on site and re-used where appropriate, or placed into adjacent forest habitat;
- If unexpected protected or threatened fauna are encountered during construction, 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;
- If any pruning of mature trees is required during the maintenance phase of the proposal, it must be completed by an appropriately qualified arborist in accordance with appropriate standards;
- 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;

The following environmental safeguards and mitigation measures are proposed to promote water

quality, hydrology and drainage:

- All proposed works would be undertaken during periods of dry weather;
- Fuels and oils would be stored more than 40m away from waterways and flood zones;
- Refueling and maintenance of machinery would be undertaken at least 40m away from waterways or drainage lines;

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 Tweed Byron Local Aboriginal Land Council (TBLALC) Aboriginal Sites Officer would be notified on (07) 5536 1763. 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 Act 1974 and informed of the procedures in the event of unearthing an object.

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.

6. Summary and Conclusion

Biodiversity Assessments & Solutions Pty Ltd has completed an ecological assessment for the land at Lot 5 DP 585928 – 55 Settlement Rd, Main Arm, NSW (Figure 1). This assessment has been completed to accompany the Planning Proposal which seeks to amend the Byron Local Environment Plan (LEP 2014) to provide the property with a dwelling entitlement. This has been prepared in response to Council's Unauthorised Dwellings Policy adopted on 18 June 2020.

This ecological assessment also considered potential impacts should a dwelling entitlement be approved for the current unauthorised residential dwelling location (for which approval is sought), with consideration of any upgrades or improvements required to existing infrastructure to meet various building, engineering, and bushfire standards, as informed by other consultancy reports.

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 (APZ) that has been identified for the proposal is mostly located in an area of landscaped gardens and maintained lawns, with minimal native vegetation present, and negligible biodiversity impacts are required to accommodate the proposal;
- The proposal requires the removal of one (*n* = 1) small native rainforest species, being a Creek Sandpaper Fig (*Ficus coronata*) (DBH = 20 cm and Height = 6 m) to accommodate the APZ for the existing dwelling, with additional exotic species being Camphor Laurel, Large-leaved Privet and Golden Rain Tree removed to improve the APZ;
- The proposal requires the removal of three (*n* = 3) small native pioneer species, being individuals of Sally Wattle (*Acacia melanoxylon*) to accommodate the APZ for the existing studio, along with removal of exotic species such as Camphor Laurel, Large-leaved Privet and Lantana to improve the APZ for the studio;
- The development footprint does not contain any areas mapped on the Biodiversity Values Map, nor any areas mapped as Coastal Wetlands, Coastal Wetlands Proximity, Littoral Rainforests or Littoral Rainforest Proximity areas under the *Coastal Management Act 2016*;
- Two (*n* = 2) threatened flora species listed in Schedule 1 of the BC Act were recorded on the subject land, Durobby (*Syzygium moorei*), of which one (*n* = 1) individuals were recorded, and Scrub Turpentine (*Rhodamnia rubescens*), or which two (*n* = 2) individuals were recorded. Although some of these individuals are in the vicinity of the proposal, all individuals would be retained in situ and protected from direct impacts. The Scrub Turpentine individuals are infected by Myrtle Rust and are in a senescent state. The ToS concluded that the proposal would not result in a significant impact on threatened species recorded on the subject land;
- An area of the vegetation within the development footprint (i.e., APZ for existing dwelling) is analogous with the Scientific Committee Final Determination for Lowland Rainforest in the NSW North Coast and Sydney Basin Bioregion listed as a Threatened Ecological Communities (TEC) in Schedule 2 of the BC Act. The ToS concluded that the proposal would not result in a significant impact on this TEC;
- Impacts required to accommodate two (*n* = 2) passing bays along Settlement Rd to improve fire safety generally for locals and visitors utilising this road would be negligible. Locations identified for potential use are highly degraded and exotic dominated roadside vegetation with

little to no biodiversity or habitat value;

- Following a habitat suitability assessment, and additional assessment by way of a Test of Significance (ToS), it was concluded that the proposal would not cause significant impacts to species or ecological communities listed in the NSW *BC Act 2016*;
- No records or evidence of Koalas exists on the subject land, and the site does not meet the definition of 'core' habitat under Chapter 4 Koala habitat protection 2021 from State Environmental Planning Policy (Biodiversity and Conservation) 2021. No Koala feed trees listed in the Byron Coast Comprehensive Koala Plan of Management, or Schedule 3 of the SEPP (Biodiversity and Conservation) 2021 require removal to accommodate the proposal, and therefore neither policy prevents granting consent to the development application. The ToS concluded that the proposal would not result in a significant impact on this species.
- Based on available information, the proposal would not trigger the Biodiversity Offsets Scheme (BOS) at DA stage as the proposal would not reach the requisite area clearing threshold, and the proposal does not intercept the Biodiversity Values Mapping, and therefore a BDAR would not be required; and
- Potential impacts of the establishment and maintenance phases of the proposal would be minimal and can be mitigated sufficiently to ensure that direct and indirect impacts on biodiversity values of the locality are further avoided and minimised.

Based on these key points, it is considered that the subject land and identified development footprint is suitable for the proposal and subsequent development. The current location of the residential dwelling, for which a dwelling entitlement is sought, is suitable given the proposal purpose, with minimal ecological impacts required to upgrade proposal elements to meet current building, engineering, and bushfire standards. The proposal has, within all reasonable expectations, avoided and minimised impacts on the biodiversity values of the locality.

References

Byron Shire Council (2014). Byron Local Environment Plan. Byron Shire Council, Mullumbimby, NSW.

Byron Shire Council (2014). Byron Shire Development Control Plan. Byron Shire Council, Mullumbimby, NSW.

Byron Shire Council (2015). Byron Coast Comprehensive Koala Plan of Management. Byron Shire Council, Mullumbimby, NSW.

DEC (2004). *Threatened Biodiversity Survey and Assessment*: *Guidelines for Developments and Activities. Working Draft.* Department of Environment and Conservation (NSW).

Department of the Environment (Cth) (2016). Protected Matters Search Tool: [Accessed June 2023]. http://www.environment.gov.au/epbc/pmst/index.html

DUAP (1995). *Circular No. B35 State Environmental Planning Policy No. 44 – Koala Habitat Protection.* Department of Urban Affairs and Planning, Sydney.

Morand, D.T. (1994). Soil Landscapes of the Murwillumbah-Tweed Heads: 100 000 Sheet. Department of Land and Water Conservation, Sydney, NSW.

NSW OEH (2016). NSW Guide to Surveying Threatened Plant. Office of Environment and Heritage, Sydney.

NSW OEH (2018a). BioNet Vegetation Classification. Office of Environment and Heritage, Sydney. Viewed June 2023: http://www.environment.nsw.gov.au/NSWVCA20PRapp/search/compexportcustom.aspx

NSW OEH (2021). NSW BioNet Database Search Tool. [Accessed June 2023]. http://www.bionet.nsw.gov.au/

NSW OEH (2021). Threatened Species Profiles. [Accessed June 2023]. http://www.environment.nsw.gov.au/threatenedSpeciesApp/

NSW OEH (2017). Threatened Species Survey and Assessment Guidelines. [Accessed May 2023]. http://www.environment.nsw.gov.au/threatenedspecies/surveyassessmentgdlns.htm

NSW OEH (2018). Threatened Species Test of Significance Guidelines. Office of Environment and Heritage, Sydney, NSW.

NSW OEH (2017). Field Survey Methods for Threatened Species, Populations or Ecological Communities. [Accessed May 2023]. http://www.environment.nsw.gov.au/threatenedspecies/surveymethodsfauna.htm

Sommerville, K.D., et.al. (2020). Conservation in the wake of myrtle rust – a case study on two critically endangered Australian rainforest plants. Pacific Conservation Biology. 10.1071/PC19026.

Triggs, B., (2004). Tracks, Scats and Other Traces. A field guide to Australian mammals. Oxford University Press, Victoria, Australia.

PlantNET (The NSW Plant Information Network System). Royal Botanic Gardens and Domain Trust, Sydney. [Accessed June 2023]. http://plantnet.rbgsyd.nsw.gov.au

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 5 DP 585928, based on the information available at the time of the assessment.

Flora

In accordance with Section 7.3 of the Biodiversity Conservation Act 2016, a ToS has been completed for the following two (*n* = 2) threatened flora species:

- Scrub Turpentine (*Rhodamnia rubescens*)
- Durobby (*Syzygium moorei*)

Fauna

In accordance with Section 7.3 of the Biodiversity Conservation Act 2016, a ToS has been completed for the following four (n = 4) threatened animal species:

- Stephens' Banded Snake (*Hoplocephalus stephensii*)
- Rose-crowned Fruit-Dove (*Ptilinopus regina*)
- Koala (*Phascolarctos cinereus*)
- Eastern Tube-nosed Bat (*Nyctimene robinsoni*)

Threatened Ecological Communities

One (*n* = 1) Endangered Ecological Community (EEC), Lowland Rainforest in the NSW North Coast and Sydney Basin Bioregions, is considered to occur on the subject land that require assessment by way of a ToS.

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. Durobby (*Syzygium moorei*)

1.1 Species information

Durobby, also known as Coolamon, is a tree growing up to 40 m tall, with dense dark foliage. The bark is red-brown, light grey or pinkish grey with soft papery scales. Its paired leaves are thick, oval-shaped or slightly elongated, 8 - 20 cm long, and usually rounded at the tips. Flowers are showy, pink to red, fluffy, and clustered directly on older leafless branches and the trunk of the tree. The white fleshy fruits are edible rather tasteless. They have a diameter of up to 6 cm and enclose a single seed.

Found in the Richmond, Tweed and Brunswick River valleys in north-east NSW and with limited occurrence in south-east Queensland.

1.2 Habitat and ecology of the species

Durobby is found in subtropical and riverine rainforest at low altitude. It often occurs as isolated remnant paddock trees.

1.3 Threats for this species include:

- Clearing and fragmentation of habitat for agriculture.
- Clearing and fragmentation of habitat for rural and residential development and roadworks.
- Weed infestation of rainforest habitats.
- Grazing and trampling of seedlings and saplings by domestic stock, particularly around remnant paddock trees.
- Illegal collection for horticulture.
- Risk of local extinction due to small population sizes.

1.4 Potential impacts of the proposal on the species

One individual (*n* = 1) of Durobby (planted) occurs on the subject land in proximity to the proposal. This individual is outside the development footprint and will be retained in situ.

Therefore, it is highly unlikely that the proposal would have an adverse effect on the Durobby, such that a viable local population of the species is likely to be placed at risk of extinction.

2. Scrub Turpentine (*Rhodamnia rubescens*)

2.1 Species information

Shrub or small tree to 25 m high with reddish/brown, fissured bark. Young stems densely covered in fine hairs. Leaves 5–10 cm long, 2–5 cm wide, upper surface green and sparsely hairy, lower surface paler and sparsely to densely hairy. Leaves strongly 3-veined from base with moderately dense, translucent oil dots. Petiole 4–9 mm long. Inflorescences 1–3 per axil, usually 3-flowered with petals 4–6 mm diam. and white. Fruit globose, 5–8 mm diam., red turning black.

Occurs in coastal districts north from Batemans Bay in New South Wales, approximately 280 km south of Sydney, to areas inland of Bundaberg in Queensland. Populations of R. rubescens typically occur in coastal regions and occasionally extend inland onto escarpments up to 600 m a.s.l. in areas with rainfall of 1,000-1,600 mm.

2.2 Habitat and ecology of the species

Scrub Turpentine are found in littoral, warm temperate and subtropical rainforest and wet sclerophyll forest usually on volcanic and sedimentary soils.

This species is characterised as highly to extremely susceptible to infection by Myrtle Rust. Myrtle Rust affects all plant parts.

2.3 Threats for this species include:

- Decline in health/loss of mature plants and a lack of seed-based recruitment due to infection by *Austropuccinia psidii* (Myrtle Rust).
- Degradation of habitat and competition from transformer weed species.

- Clearing from rural, agricultural and urban development leading to edge effects, degradation and further fragmentation.
- Habitat degradation and clearing due to forestry operations.
- Too frequent/intense fire destroying habitat and individual plants.
- Damage caused by inappropriate use of four-wheel drive vehicles.
- Road and track development and maintenance.

2.4 Potential impacts of the proposal on the species

Two (*n* = 2) individuals of Scrub Turpentine occur on the subject land. All individuals recorded occur outside the development footprint (< 30m).

The Scrub Turpentines recorded would be retained and protected. All individuals are infected by Myrtle Rust, and are senescent, and would be expected to die in the near future regardless of any development of the site.

Therefore, it is highly unlikely that the proposal would have an adverse effect on the Scrub Turpentine, such that a viable local population of the species is likely to be placed at risk of extinction.

3. Stephens' Banded Snake (*Hoplocephalus stephensii*)

3.1 Species Information

Stephens' Banded Snake is a medium-sized partly tree-dwelling snake up to one metre long. It is brown or yellow brown above, with a series of irregular, broad, dark crossbands. The head is black with a brown crown and a brown or cream patch on either side of the nape and the lips are barred with black and cream.

3.2 Habitat and ecology of the species

Rainforest and eucalypt forests and rocky areas up to 950 m in altitude. Stephens' Banded Snake is nocturnal, and shelters between loose bark and tree trunks, amongst vines, or in hollow trunks limbs, rock crevices or under slabs during the day. At night it hunts frogs, lizards, birds and small mammals.

3.3 Threats for this species include:

- Clearing and fragmentation of habitat.
- Forestry practices which result in loss of old or dead trees.
- Too frequent burning for fuel reduction or grazing management which destroys old and dead trees and removes understorey vegetation.
- Illegal collecting Illegal collection of snakes from the wild.
- Poor knowledge of the species' habitat preferences.

3.4 Potential impacts of the proposal on the species:

The subject land contains potential habitat for the Stephens' Banded Snake particularly within the older growth areas in the south of the site. The development footprint contains marginal habitat at best, with a general absence of requisite habitat features such as logs, rocks or hollow limiting the suitability of this area for this species.

The proposal requires clearing of one (*n* = 1) small native rainforest tree (DBH 20 cm, Height 6m) to accommodate the APZ on the subject land, as a result it is not likely that the proposal would result in a significant reduction in habitat or food resources or foraging habitat available either on the subject land or in the locality.

Given that minimal impacts are required to accommodate the proposal, the abundance of preferred foraging habitat in the southern portion of the subject land, and there are no other likely significant direct or indirect impacts on this species as a result of the development, it is considered unlikely the proposal would have an adverse effect on the life cycle of the Stephens' Banded Snake such that a viable local population of the species is likely to be placed at risk of extinction.

4. Rose-crowned Fruit-Dove (*Ptilinopus regina*)

4.1 Species Information

Rose-crowned Fruit-doves are small, colourful rainforest pigeons to 24 cm in length. They are distributed on the coast and ranges of eastern NSW and Queensland, from Newcastle to Cape York. Vagrants are occasionally found further south to Victoria. Males have a rose crown edged with yellow, and the head and breast are blue-grey, spotted white. The upper parts are grey-green, the tail-tip yellow and the abdomen are orange. Females are mostly grey-green. The call is a loud, explosive, repeated 'hookcoo' which becomes faster and on declining notes as a rapid 'coocoocoocoocoo'.

4.2 Habitat and ecology of the species

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. They are shy pigeons, not easy to see amongst the foliage, and are more often heard than seen. 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. 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. The species occurs in small remnants and regrowth patches, and in Camphor Laurel-privet regrowth in farmland.

4.3 Threats for this species include:

- Clearing and fragmentation of low to mid-elevation rainforest.
- Logging and roading in moist eucalypt forest with well-developed rainforest understorey.
- Burning of remnant rainforest habitat.
- Invasion of habitat by introduced weed species.
- Removal of Camphor Laurel food source without appropriate mitigation measures.

4.4 Potential impacts of the proposal on the species:

The subject land contains potential foraging habitat for the Rose-crowned Fruit-dove within the subtropical rainforest, with a wide variety of rainforest species available. Being locally nomadic, there is the potential for this species to occur on or pass through the subject land on occasion. Areas of forest adjacent to the development proposal also offer sheltered habitat potentially suitable for temporary roosting.

The proposal requires clearing of one (*n* = 1) small native rainforest tree and three (*n* = 3) small native pioneer species to accommodate the APZs for the dwellings on the subject land, as a result it is not

likely that the proposal would result in a significant reduction in habitat or food resources or foraging habitat available either on the subject land or in the locality.

Given that only a small amount of vegetation would be impacted to accommodate the proposal, the abundance of preferred foraging habitat in the western portion of the subject land, and there are no other likely significant direct or indirect impacts on this species as a result of the development, it is considered unlikely the proposal would have an adverse effect on the life cycle of the Rose-crowned Fruit-dove 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:

- 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

There are no records of Koala occurring on the subject land. However, there are several records immediately adjacent to the subject land, and multiple records occur within the 1.5 km radius of the subject land (Figure 3).

The subject land contains several planted tree species identified as Koala feed tree species in Schedule 3 of the State Environmental Planning Policy (SEPP) (Biodiversity and Conservation) 2021 in the vicinity of the proposal, and the subject land contains extensive eucalyptus vegetation on the slopes of the southern portion, however, all suitable vegetation is located outside the development footprint and none would be impacted. The proposal does not require the removal of any Koala feed trees or impact on Koala habitat, nor would any occur in the locality as a result of the proposal, with no direct or indirect impacts expected.

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.

6. Eastern Tube-nosed Bat (*Nyctimene robinsoni*)

6.1 Species information:

Eastern Tube-nosed Bats are small relatives of the flying-foxes, with raised tubular nostrils and large chocolate-brown eyes. They are fawn to rich brown in colour, grading to grey on the head. A distinctive feature of this bat is the sparse yellow to green spotting on the wings and ears, and a distinct narrow black stripe along the spine. At night they fly rapidly and with great manoeuvrability just above or below the forest canopy, making a distinctive, high-pitched whistling call.

This bat species is found in Coastal areas of north-eastern Australia from Cape York south to the far north-east corner of NSW. Few records from NSW, including the Nightcap, Tweed and Burringbar Ranges and in the vicinity of Mt Warning.

6.2 Habitat and ecology of the species:

Favour streamside habitats within coastal subtropical rainforest and moist eucalypt forests with a well-developed rainforest understorey.

They feed mainly on fruit and nectar from trees in the rainforest canopy and sometimes come close to human settlement to visit flowering or fruiting trees.

6.3 Threats for this species include:

- Clearing and fragmentation of rainforest and wet eucalypt forest for agriculture and residential development.
- Habitat fragmentation and degradation from past land clearing for agriculture, forestry, and urban development reducing habitat availability and condition and food and water availability.
- Degradation from weeds including lantana and vines suppressing regeneration of food trees.

- Destruction of Black Bean, an important food tree, because the seeds are toxic to cattle.
- Predation by cats particularly while foraging on low hanging fruit and flowers.
- Disturbance due to agricultural development, individuals getting caught on barbed wire fences near feeding and drinking areas (e.g. near orchards and dams).
- Alteration of habitat from climate change including structure, floristic composition, resource availability (water and food trees and palms), rainforest drying including gullies and streams.
- Monitoring is required to assess the species population trends over time.
- Monitoring is required to assess the severity of threats.

6.4 Potential impacts of the proposal on the species:

The subject land contains potential foraging habitat for the Eastern Tube-nosed Bat within the subtropical rainforest, with a wide variety of rainforest species available. Being locally nomadic, there is the potential for this species to occur on or pass through the subject land on occasion. Areas of forest, particularly in the south of the subject land, offer sheltered habitat potentially suitable for temporary roosting.

The proposal requires clearing of four small native trees to accommodate the APZs on the subject land, as a result it is not likely that the proposal would result in a significant reduction in habitat or food resources or foraging habitat available either on the subject land or in the locality.

Given that only a small amount of vegetation requires removal to accommodate the proposal, the abundance of preferred foraging habitat outside the proposed development footprint on the subject land and in the surrounding landscape. Furthermore, there are no other likely significant direct or indirect impacts on this species as a result of the development, it is considered unlikely the proposal would have an adverse effect on the life cycle of the Eastern Tube-nosed Bats 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 proposed development is to occur on land which contains vegetation analogous with the Scientific Committee Final Determination for Lowland Rainforest in the NSW North Coast and Sydney Basin Bioregion listed as Threatened Ecological Communities in Schedule 2 of the BC Act.

The proposal requires the removal of one (*n* = 1) small (DBH 20cm, Height 6m) rainforest tree (Creek Sandpaper Fig (*Ficus coronata*)) within an area sharing characteristics of the Lowland Rainforest EEC adjacent to the existing dwelling. The vegetation proposed for removal is not considered significant for species with the potential to occur on the subject land or indeed for the locality.

Additionally, the small amount of vegetation requiring removal to accommodate the APZ for the existing

studio is minimal, and does not occur in an area representative of any EEC.

Therefore, the proposal is not likely to have an adverse effect on the extent of any threatened ecological community, nor adversely modify any threatened ecological community, such that its local occurrence is placed at risk of extinction.

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

No significant habitat would be removed or modified as a result of the proposal. The threatened species habitat assessment concluded that the vegetation that would require removal (four (n = 4) native rainforest trees), does not provide significant habitat features for threatened species with the potential to occur based on local records within 1.5 km of the site. This vegetation constitutes locally common rainforest species that provide some marginal potential foraging resources. However, in the local context, the extent of vegetation to be removed is not considered significant.

The proposal is therefore unlikely to adversely impact any habitat of threatened species or ecological community.

(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

The proposal would not further fragment available habitat in the locality for any of the species identified as having the potential to occur. The proposal would require the removal of a small amount of native vegetation (four (n = 4) small native trees) and exotic vegetation (e.g., Camphor Laurel, Golden Rain Tree, Large-leaved Privet, Lantana etc. Vegetation to be removed generally consists of small native trees from the midstorey layer level, rather than upper stratum canopy species. Considering the small scale of the proposal relative to land and the low impact of the development, the proposal would not result in the fragmentation or isolation of habitat at the site or in the locality. Significant vegetation on the remainder of the site would be protected.

(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.

The proposal would not remove any habitat of importance to any of the species identified as having the potential to occur or ecological communities that occur in the locality. Better habitat for potential threatened species occurs elsewhere on the subject land and in the wider locality. Retention of important habitat on the remainder of the property beyond the development footprint would ensure that any species likely to use the site would have habitat available for long-term survival 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). Low constraint areas would accommodate the proposal, and careful design principles to mitigate potential threatening processes has been incorporated. The degree that the proposal, e.g., clearing of four (n = 4) small native trees and continued management of exotic vegetation within the APZ, would contribute to any threatening process, is not considered likely to place the local population of any of the subject species or communities at significant risk of extinction, and therefore the proposal is not considered to represent or likely to contribute to a key threatening species.

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			✓

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*
Infection by *Psittacine circoviral* (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 *Phytophthora cinnamomi*			✓
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 *Lantana camara*			✓
Invasion of native plant communities by African Olive			✓
Invasion of native plant communities by *Chrysanthemoides monilifera* (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 *Gambusia holbrooki*			✓
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			✓