



31 Alidenes Rd, Wilsons Creek – Lot 38 DP 1059938

Ecological Assessment

Rezoning Proposal

Client:	St Saviour Investments Pty Ltd
Prepared by:	Biodiversity Assessments & Solutions Pty Ltd
Date:	30 th November 2018

Project Control

Project name: No. 31 Alidenes Rd, Wilsons Creek

Ecological Assessment – Rezoning Proposal

Job number: 181018

Client: St Saviour Investments Pty Ltd

Contact: c/o Dwayne Roberts, Ardill Payne & Partners

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1 Introduction and Background

Biodiversity Assessments & Solutions has prepared this ecological assessment for Ardill Payne & Partners on behalf of St Saviour Investments Pty Ltd. This report is to inform their submission for a Planning Proposal/LEP Amendment Request to Byron Shire Council (BSC) for Lot 38, DP 1059938, No. 31 Alidenes Road, Wilsons Creek.

The aim of this assessment is to determine the ecological significance of the site and identify any key ecological issues with respect to the proposal and subsequent development of the site, particularly regarding any threatened species, populations or communities listed under the *Biodiversity Conservation Act 2016*, and the likely impacts of the proposal and subsequent development on biodiversity values pursuant to the *Biodiversity Conservation Regulation 2017*.

1.1 Site Summary

The site comprises one rural lot (Lot 38 DP 1059938) approx. 12.2 ha in size which is located approx. 5 km west – south west of Mullumbimby. Site elevation ranges between approx. 20-40m AHD, with topography being characterised by minor topographical variations, with several drainage lines ranging from 1st to 3rd order intersecting the site.

Vegetation at the site is highly disturbed and well delineated between substantially cleared grazing pasture (8 ha), and invasive Camphor Laurel dominant (51-95%) forest with exotic and native rainforest species (4.2 ha). Vegetation regeneration is dominated by exotic species through all forest layers across the site, with vegetation structure and composition generally being in very low to low condition. The site is currently used for grazing agriculture. Built structures include a residential dwelling and sheds.



Plate 1.1: View of cleared grazing pasture near original home site.



Plate 1.2: Forest vegetation at the site is dominated by Camphor Laurel and other exotic species.

The main drainage line, Yankee Creek, is a 3rd order stream that flows through the site from west to east through the central portion (refer Figure 1.1). Some good potential habitat features such as small pools and riparian habitats are associated with either Yankee Creek or the associated northern and southern 2nd order streams, however these are infrequent and substantially degraded. Drainage lines generally alternate between more open water, particularly within closed camphor forest, and aquatic weed dominated reaches in the absence of riparian vegetation.



Plate 1.3: Yankee Creek at north-western boundary with stock and Camphor Laurel forest.



Plate 1.4: Good aquatic habitat occurs in several sections within the site along Yankee Creek.



Plate 1.5: Aquatic weeds such as Parrots Feather are present where no riparian vegetation occurs.

1.2 The Proposal

The proposal is a Planning Proposal / LEP Amendment Request and involves the rezoning of the land from the current zoning RU2 Rural Landscape to R5 Large Lot Residential. The proposed amendments also include a request to amend the Byron Local Environment Plan to facilitate a minimum lots size of 3,000m². R5 land is currently zoned on land immediately adjacent to Alidenes Rd on the northern boundary (refer Figure 1.2).

The subsequent subdivision and development would be reasonably expected to be able to be accommodated with minimal impacts to native vegetation by utilising existing cleared agricultural areas of low ecological value.

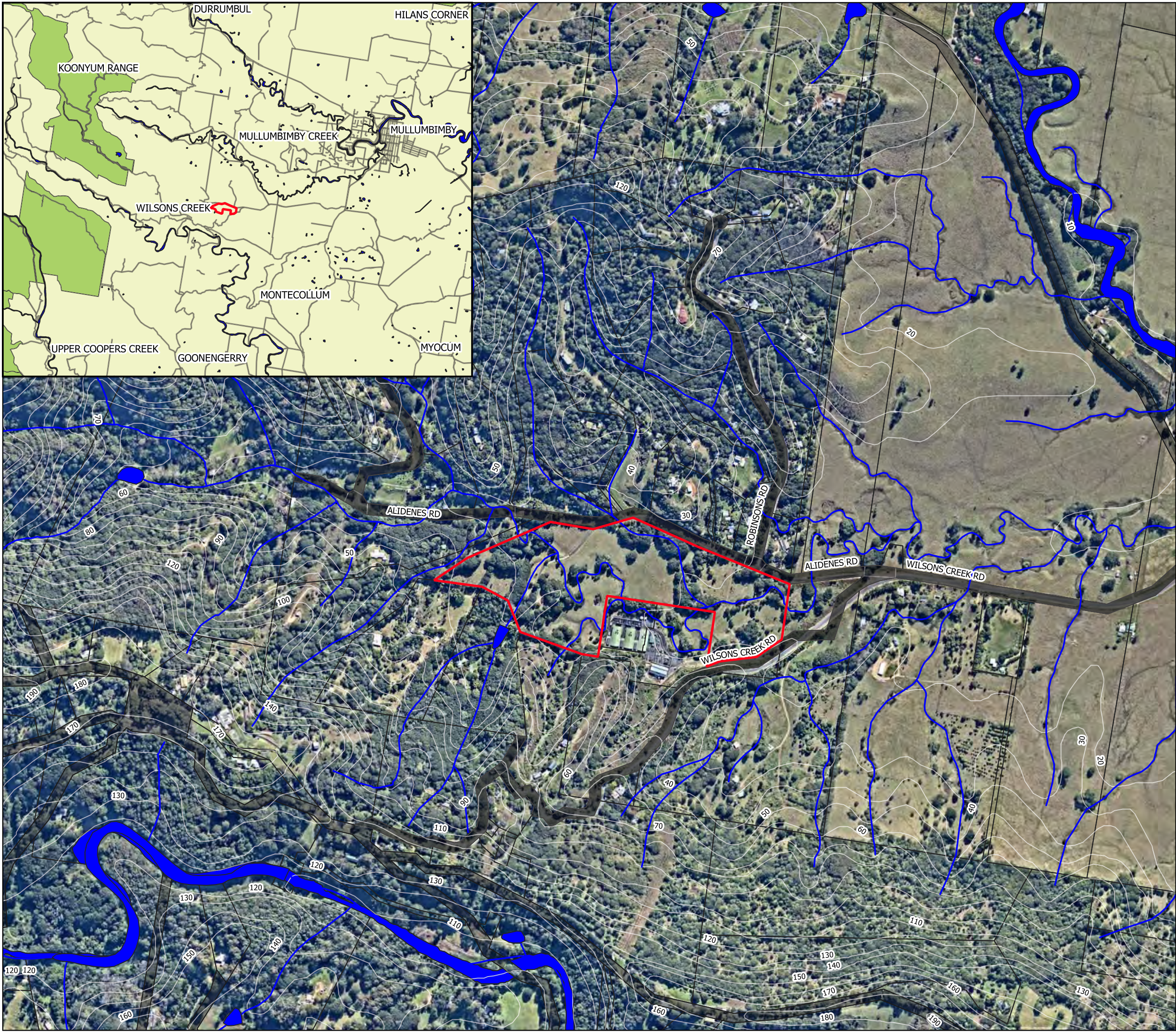
The proposal would also be reasonably expected to be able to incorporate strategies to mitigate direct and indirect impacts, enable regeneration, and offset onsite if required to achieve a net improvement in site biodiversity values.



Plate 1.6: Low constraint open pasture occurs throughout the site.



Plate 1.7: View from south east corner of predominantly low constraint open pasture.



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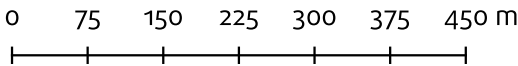
Figure 1.1: Study site and location



Legend

- Study Site
- Cadastre
- Contours
- Road Corridors
- Hydrolines
- Water Features
- NPWS Reserves

1:7,500



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Figure 1.2: Study site and current land zoning



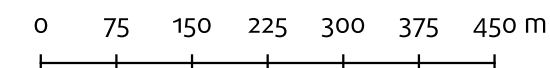
Legend

- Study Site
- Cadastre
- Contours
- Road Corridors
- Water Features

Land Zoning_current

- Deferred Matter
- Large Lot Residential
- Low Density Residential
- Primary Production
- Rural Landscape

1:7,500



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2 Methods

2.1 Summary

The approach utilised to undertake this ecological assessment of the proposal site is consistent with NSW OEH Survey and Assessment Guidelines (2017) and are as follows:

- GIS data and literature review;
- Review of the BioNet Atlas of NSW Wildlife database on the 30th October 2018;
- Site visits/surveys to undertake plant community type identification, threatened flora species search, threatened fauna habitat assessment, and Koala feed tree / activity search on:
 - o 31st October 2018; 10th November 2018; and 11th November 2018.
- Threatened species profile assessment;
- Preliminary statutory and constraints analysis; and
- Direct and indirect impact assessment.

The results are described in Section 3 and Section 4.

2.2 Survey Limitations

The field survey methods are in accordance with NSW OEH field survey methods and considered adequate for a proposal of this nature and for a site of this size. No targeted fauna surveys were undertaken for this rezoning proposal, however, if preferred habitat requirements were met, threatened species are assumed to have the potential to occur. Due to the objectives of this assessment, and as no impacts would occur for the rezoning proposal, the fauna survey methods are considered adequate.



Plate 2.1: Yankee Creek with Camphor Laurel forest, open pasture, and minor bank erosion.

3 Flora Results

3.1 Desktop Assessment

A search of the BioNet Atlas of NSW Wildlife (30th October 2018), based on an area within 1.5 km radius of site boundary returned the records for 16 threatened flora species listed in the BC Act (refer Table 3.1 and Figure 3.1). BioNet Atlas records for three (3) threatened flora species; Red Boppel Nut, Rough-shelled Bush Nut and Durobby are mapped as occurring at the north west boundary of the site (refer Figure 3.1).

Red Boppel Nut and Rough-shelled Bush Nut were recorded at the site some distance (min. 100m) from mapped BioNet Atlas location during assessment. Refer Section 3.2 for full site assessment results.

Table 3.1: Threatened flora species recorded within 1.5 km radius of the site boundary.

Class	Family	Scientific Name	Common Name	NSW Status	Cth Status
Flora	Apocynaceae	<i>Ochrosia moorei</i>	Southern Ochrosia	E1,P	E
Flora	Cunoniaceae	<i>Davidsonia johnsonii</i>	Smooth Davidson's Plum	E1,P	E
Flora	Fabaceae (Faboideae)	<i>Desmodium acanthocladum</i>	Thorny Pea	V,P	V
Flora	Fabaceae (Mimosoideae)	<i>Acacia bakeri</i>	Marblewood	V,P	
Flora	Lauraceae	<i>Endiandra floydii</i>	Crystal Creek Walnut	E1,P	E
Flora	Lauraceae	<i>Endiandra hayesii</i>	Rusty Rose Walnut	V,P	V
Flora	Menispermaceae	<i>Tinospora tinosporoides</i>	Arrow-head Vine	V,P	
Flora	Myrtaceae	<i>Gossia fragrantissima</i>	Sweet Myrtle	E1,P	E
Flora	Myrtaceae	<i>Syzygium hodgkinsoniae</i>	Red Lilly Pilly	V,P	V
Flora	Myrtaceae	<i>Syzygium moorei</i>	Durobby	V,P	V
Flora	Phyllanthaceae	<i>Phyllanthus microcladus</i>	Brush Sauropus	E1,P	
Flora	Proteaceae	<i>Floydia praealta</i>	Ball Nut	V,P	V
Flora	Proteaceae	<i>Hicksbeachia pinnatifolia</i>	Red Boppel Nut	V,P	V
Flora	Proteaceae	<i>Macadamia tetraphylla</i>	Rough-shelled Bush Nut	V,P	V
Flora	Rutaceae	<i>Bosistoa transversa</i>	Yellow Satinheart	V,P	
Flora	Sapindaceae	<i>Diploglottis campbellii</i>	Small-leaved Tamarind	E1,P	E

V = Vulnerable; E = Endangered; P = Protected



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Figure 3.1: Desktop assessment flora atlas records & BSC vegetation mapping within 1.5km of site boundary.



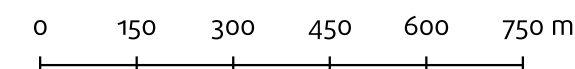
Legend

- Study Site
- Cadastre
- Contours
- Road Corridors
- Water Features
- Threatened flora_1500m assessment circle

Vegetation_1.5km assessment circle (BSC)

- Camphor Laurel >80%
- Camphor Laurel 51-80%
- Exotic
- North Coast Dry Sclerophyll Forests
- North Coast Wet Sclerophyll Forests
- Subtropical Rainforests

1:11,750



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3.2 Site Assessment

The vegetation at the site is characterised by small fragmented forest patches of the noxious and invasive weed, Camphor Laurel, with infrequent to occasional native rainforest species. Mature native vegetation is rare to occasional across the site, and generally directly adjacent to the 2nd and 3rd order streams.

All vegetation structural layers across the site within camphor forest are dominated by exotic species, with only small patches having a reasonable diversity of native species. Approx. 8 ha of the 12.2 ha site remains substantially cleared grazing pasture with isolated Camphor Laurel paddock trees.

For the purposes of this assessment, the site has been broadly delineated into five (5) vegetation categories. These are generally consistent with 2015 BSC vegetation mapping, with an additional category added to represent Camphor Laurel > 90% to highlight level of dominance in those polygons.

These are illustrated in Figure 3.2 and described as being:

- 1a - Camphor Laurel Forest > 90%;
- 1b - Camphor Laurel > 80%;
- 1c - Camphor Laurel 51-80% (Derived Rainforest);
- 2a - Residence landscaping / fruit trees / Camphor Laurel; and
- 3a - Cleared pasture with paddock trees (Camphor Laurel).

Exotic species are denoted in the following vegetation category descriptions with the symbol * after the species common name.



Plate 3.1: Forest dominated by Camphor Laurel occur through the site.

3.2.1 Vegetation Category Descriptions

1a - Camphor Laurel Forest > 90% (1.6ha)

General Comments: Predominantly located in the more elevated south west portion of the site, and in small fragmented polygons scattered through the site where Camphor Laurel regrowth has occurred.

Upper Stratum: Almost exclusively contains Camphor Laurel* (*Cinnamomum camphora*), with rare individuals of native species such as Blackwood (*Acacia melanoxylon*) and Brush Box (*Lophostemon confertus*).

Middle Stratum: Dominated by exotic species including Camphor Laurel*, Small-leaved Privet* (*Ligustrum sinense*), Large-leaved Privet* (*Ligustrum sinense*), Senna* (*Senna pendula*) and Lantana* (*Lantana camara*). Native species generally infrequent and consisting of widespread coastal district species such as Red Kamala (*Mallotus philippensis*) and Cockspur (*Maclura cochinchinensis*).

Ground Stratum: Dominated by Camphor Laurel* seedlings and other exotic species such as Coral Berry* (*Rivina humilis*), Crofton Weed* (*Ageratina adenophora*) and Broad-leaved Paspalum* (*Paspalum mandiocanum*). Little evidence of native species regeneration present.

Condition Rating: Very Low



Plate 3.2: Camphor Laurel seedlings dominate large swaths of forest community understorey.

1b - Camphor Laurel Forest > 80% (1.5ha)

General Comments: Occurs in association with Yankee Creek through the central portion of the site and the northern 2nd order stream.

Upper Stratum: Dominated by Camphor Laurel* (*Cinnamomum camphora*), with native tree species such

as Foam Bark (*Jagera pseudorhus*), Guioa (*Guioa semiglauca*) and Cheese Tree (*Glochidion ferdinandi*) rare to occasional.

Middle Stratum: Dominated by exotic species including Camphor Laurel*, Small-leaved Privet* (*Ligustrum sinense*), Large-leaved Privet* (*Ligustrum sinense*), Senna* (*Senna pendula*) and Lantana* (*Lantana camara*). Native species are infrequent with widespread coastal district species present such as Red Kamala (*Mallotus philippensis*), Cockspur (*Maclura cochinchinensis*) and Foam Bark. The two (2) individuals of Rough-shelled Bush Nut (*Macadamia tetraphylla*) are in this vegetation category located in the western portion of the site adjacent to Yankee Creek.

Ground Stratum: Dominated by Camphor Laurel* seedlings and other weed species such as Coral Berry* (*Rivina humilis*), Small-leaved Privet*, Crofton Weed* (*Ageratina adenophora*) and Broad-leaved Paspalum* (*Paspalum mandiocanum*), with little evidence of native species regeneration.

Condition Rating: Very Low



Plate 3.3: Mature native species such as Brush Box are rare to infrequent at the site.

1c - Camphor Laurel Forest 51-80% (0.8ha)

General Comments: Located in the eastern third of the site, with the two larger polygons in association with Yankee Creek. More representative of derived rainforest, although exotic species are still dominant throughout all strata.

Canopy – generally still dominated by Camphor Laurel* (*Cinnamomum camphora*), but also includes the weed species Coral Tree* (*Erythrina x sykesii*). This vegetation category does contain a slightly higher abundance of native species, with canopy species including Cudgerie (*Flindersia schottiana*), Foam Bark (*Jagera pseudorhus*), Sandpaper Fig (*Ficus fraseri*) and Cheese Tree (*Glochidion ferdinandi*). A small polygon in the south west of the site has been included in this category as it contains one (1) mature

Moreton Bay Fig (*Ficus macrophylla*) as the major canopy component, surrounded by Camphor Laurel* (*Cinnamomum camphora*), other exotic species, and occasional native species representation.

Mid Stratum: Contains both exotic and native species represented across the site. Camphor Laurel* is generally the most abundant species in the midstorey, with Coral Tree* (*Erythrina x sykesii*) also abundant in sections. Native species include Red Kamala (*Mallotus philippensis*), Cockspur (*Maclura cochinchinensis*), Guioa (*Guioa semiglauc*), Creek Sandpaper Fig (*Ficus coronate*) and Foam Bark. The individual of Red Boppel Nut (*Hicksbeachia pinnatifolia*) recorded during site surveys is located in the north east corner of the site, on a steep bank of Yankee Creek.

Ground Stratum: Dominated by Camphor Laurel* seedlings and other weed species such as Trad* (*Tradescantia fluminensis*), Mistflower* (*Ageratina riparia*), Crofton Weed* (*Ageratina adenophora*) and Broad-leaved Paspalum* (*Paspalum mandiocanum*). Native species include rare to occasional species as represented in the canopy, and ground layer species such as Mat Rush (*Lomandra hystrix*), Basket Grass (*Oplismenus aemulus*) and Harsh Ground Fern (*Hypolepis muelleri*). Native species regeneration is generally poor.

Condition Rating: Low



Plate 3.4: Coral Tree infestation along Yankee Creek within area mapped as Camphor 51-80%.

2a - Residence landscaping / fruit trees / Camphor Laurel (0.3ha) – a mixed species composition in the vicinity of current and former dwelling locations.

Upper Stratum: Camphor Laurel* (*Cinnamomum camphora*) is generally the most abundant species across structural layers, but also contains a diverse mix of species including Mango* (*Mangifera indica*), Jacaranda* (*Jacaranda mimosifolia*), Poinciana* (*Delonix regia*), Cocos Palm* (*Syagrus romanzoffiana*), Paw Paw* (*Asimina triloba*), Sandpaper Fig (*Ficus fraseri*) and Macadamia (*Macadamia integrifolia*).

Mid Stratum: Camphor Laurel*, Lantana* (*Lantana camara*), Cockspur (*Maclura cochinchinensis*) and Peach* (*Prunus persica*).

Ground Stratum: Dominated by weed species such as Trad* (*Tradescantia fluminensis*), Crofton Weed* (*Ageratina adenophora*), Broad-leaved Paspalum* (*Paspalum mandiocanum*) and Camphor Laurel* seedlings. Native species regeneration is poor.

Condition Rating: Low



Plate 3.5: Mature mango trees located near location of removed farmhouse dwelling.

3a - Cleared Pasture with Camphor Laurel paddock trees (8ha) – cleared open pasture dominated by exotic grasses and herbs. Occasional paddock trees generally of the species Camphor Laurel.

Upper Stratum: Camphor Laurel* (*Cinnamomum camphora*).

Mid Stratum: Absent.

Ground Stratum: Dominated by exotic grasses and herbs including Rhodes Grass* (*Chloris gayana*), Bahia Grass* (*Paspalum notatum*), Buffalo Grass* (*Stenotaphrum secundatum*), Kikuyu* (*Cenchrus clandestinus*), Mullumbimby Couch* (*Cyperus brevifolius*), Fireweed* (*Senecio madagascariensis*) and Trad* (*Tradescantia fluminensis*).

Condition Rating: Very Low

3.2.2 Threatened Ecological Communities

In current condition, and with little prospect for improvement in condition with existing land use, it is considered that vegetation at the site does not contain sufficient elements to be considered for inclusion as any of the critically endangered, endangered or vulnerable ecological communities listed in

Schedule 2 of the BC Act. Considering the extent and dominance of the invasive noxious weed Camphor Laurel across the site, and the emergence of other weed threat from species such as Small-leaved Privet and Large-leaved Privet, vegetation integrity would be expected to continue to decline over time.

However, based on landscape positioning and native species that are present, sections of creek vegetation share some characteristics of Lowland Rainforest and would be expected that if active regeneration is undertaken, then transition to a more recognised form of this vegetation community would occur, particularly along 2nd and 3rd order drainage lines.

3.2.3 Threatened Flora

Two (2) threatened flora species listed in Schedule 1 of the BC Act were recorded at the site (refer Figure 3.2 for locations). These were:

- Red Boppel Nut (*Hicksbeachia pinnatifolia*); and
- Rough-shelled Bush Nut (*Macadamia tetraphylla*).

A BioNet Atlas record for Durobby (*Sygium moorei*) occurs in association with the Red Boppel Nut and Rough-shelled Bush Nut, however, no individuals of Durobby were located during the site assessment. Both the individuals of Rough-shelled Bush Nut and single individual of Red Boppel Nut occur in direct association with Yankee Creek and would be expected to be able to be preserved and protected with any future development of the site (refer Figure 3.2).



Plate 3.6: Red Boppel Nut located on Yankee Creek.

3.2.4 Exotic Flora Species

The considerable extent of historical impacts and continued disturbance has resulted in high levels of weed proliferation across the site. Weed species are dominant in all vegetation structural layers with

regeneration also dominated by weed species. Vegetation condition is likely to continue to degrade with the level of weed regeneration occurring at the site.



Plate 3.7: An understory dominated by Camphor Laurel seedlings.

Drainage lines in areas without riparian vegetation are generally dominated by the aquatic weed Parrot's Feather* (*Myriophyllum aquaticum*), as well as other exotic species including Umbrella Sedge* (*Cyperus eragrostis*), Ludwigia* (*Ludwigia peruviana*), Long Leaf Willow Primrose* (*Ludwigia longifolia*). Native species include Sag (*Eleocharis equisetina*) and Spotted Knotweed (*Persicaria strigosa*).



Plate 3.8: The aquatic weed Parrot's Feather occurs frequently through shallow water drainage lines.



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Figure 3.2: Site vegetation and threatened species.



Legend

- Study Site
- Cadastre
- Contours
- Road Corridors
- Water Features

Vegetation study site clipped

- Camphor Laurel >80%
- Camphor Laurel >90%
- Camphor Laurel 51-80%
- Mixed Plantings + Camphor Laurel
- Open Pasture
- Site_Threatened Flora Species

1:2,350



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3.3 Discussion

The site has been historically impacted since European settlement by way of clearing associated with agriculture, and subsequent grazing. Some regeneration has occurred, particularly in association with drainage line segments, however, regeneration has significantly advantaged exotic species, in particular Camphor Laurel, such that the structure and diversity of all vegetation across the entirety of the site is poor, and not representative from that of its likely pre-European condition.

The cleared agricultural land on the site is almost entirely dominated by exotic grasses and herbs, with little to no native vegetation. Isolated paddock trees are generally Camphor Laurel, with rare occurrences of some juvenile locally common native species such as Red Kamala.

The forested areas of the site are in poor condition with a high dominance of Camphor Laurel at the site. Occasional mature native trees occur, almost exclusively near creeks and drainage lines. Some native rainforest species regeneration is evident to varying degrees in Camphor Laurel forest, with native species generally being represented by locally common rainforest species such as Guioa, Red Kamala, Cheese Tree, Cudgerie and Foam Bark. Weed species occur in high to moderate quantities with species including Lantana, Mistflower, Crofton Weed, Trad, Small-leaved Privet, and Senna occurring in the ground layer of most forested areas of the site.

Two (2) threatened flora species listed in Schedule 1 of the BC Act were recorded at the site, Red Boppel Nut (*Hicksbeachia pinnatifolia*) and Rough-shelled Bush Nut (*Macadamia tetraphylla*). Both of these species are directly adjacent to Yankee Creek (refer Figure 3.2). A third species, Durobby (*Syzygium moorei*), is mapped as occurring on the north west boundary. This species was not located during site surveys. The threatened flora species recorded are immediately adjacent to Yankee Creek, and as such would be expected to be able to be adequately protected during any development and occupation phases for the site.

Although rainforest species occur across the site, it is not considered that vegetation at the site contains sufficient elements to be considered for inclusion as any of the critically endangered, endangered or vulnerable ecological communities listed in Schedule 2 of the BC Act. A continuation of existing use at the site is likely to result in the continued and increasing dominance of exotic species, particularly Camphor Laurel through all vegetation communities. It would be expected that without active management the sites' vegetation condition would remain low and continue to reduce over time.

The proposal would be expected to be able to be accommodated at the site without impacting any significant vegetation or threatened flora species recorded at the site, or others with the potential to occur.

4 Fauna

4.1 Desktop Assessment

The site is on the far eastern edge of the Scenic Rim IBRA subregion which contains a high diversity of fauna species. A search of the NSW Wildlife Atlas (30th October 2018) based on an area within 1.5 km of the study site edge, identified the confirmed records of 10 threatened fauna species listed in Schedule 1 of the BC Act (refer Table 4.1 and Figure 4.2). The 1.5 km site buffer area also contains parts of two sub-regional corridors of importance to a range of species (refer Section 4.1.1).

4.1.1 Habitat Corridors

The site does not lie within a regional or sub-regional corridor. The Koonyum and Wilsons sub-regional corridors occur within 1.5 km of the site with focal spp. identified as being Northern Long-eared Bat, Eastern Blossom, Koala and Stephens Banded Snake (refer Figure 4.1). Jerusalem and Goonengerry National Parks occur greater than 2.5 km to the west.

Table 4.1: Threatened fauna species recorded within 1.5 km of the site.

Class	Family	Scientific Name	Common Name	NSW Status	Cth Status
Amphibia	Myobatrachidae	<i>Assa darlingtoni</i>	Pouched Frog	V,P	
Aves	Accipitridae	<i>Circus assimilis</i>	Spotted Harrier	V,P	
Aves	Ardeidae	<i>Botaurus poiciloptilus</i>	Australasian Bittern	E1,P	E
Aves	Ciconiidae	<i>Ephippiorhynchus asiaticus</i>	Black-necked Stork	E1,P	
Aves	Petroicidae	<i>Petroica boodang</i>	Scarlet Robin	V,P	
Mammalia	Dasyuridae	<i>Dasyurus maculatus</i>	Spotted-tailed Quoll	V,P	E
Mammalia	Phascolarctidae	<i>Phascolarctos cinereus</i>	Koala	V,P	V
Mammalia	Pteropodidae	<i>Pteropus poliocephalus</i>	Grey-headed Flying-fox	V,P	V
Mammalia	Vespertilionidae	<i>Miniopterus australis</i>	Little Bentwing-bat	V,P	
Mammalia	Vespertilionidae	<i>Myotis macropus</i>	Southern Myotis	V,P	

V = Vulnerable; E = Endangered; CE = Critically Endangered pursuant to the BC Act.

4.2 Site Assessment

The on-ground assessment involved a meandering habitat survey of the site with regard for the suitability of the habitat for those threatened species recorded within 1.5 km of the site (NSW BioNet) and others with the potential to occur.

The site contains several available habitats which are suitable for a range of fauna classes. Habitat characteristics and disturbance parameters were assessed to provide an understanding of habitat quality and condition of the site and the potential for threatened fauna to occur (refer Table 4.2 and Figure 4.2).

Table 4.2: Habitat characteristics and disturbance parameters

Habitat Assessment Parameters	Community/Map Unit				
	1a	1b	1c	2a	3a
Hollows in trees and snags	1	2	2	0	0
Nests and roosts	1	2	3	2	0
Winter flowering eucalypts	0	0	0	0	0
Koala food trees	0	0	0	0	0
Natural burrows	1	2	2	0	0
Fallen logs (>10cm diam.)	2	3	4	1	1
Decorticating bark	2	3	3	2	0
Coarse litter (>2cm diam.)	4	4	5	3	0
Fine litter (<2cm diam.)	4	4	4	3	0
Bare ground	2	1	3	1	1
Grass	1	1	1	1	5
Stones (20-60cm)	0	3	4	0	0
Boulders (61cm-2m)	0	0	0	0	0
Large boulders (>2m)	0	0	0	0	0
Wetlands, streams, other waterbodies	1	4	4	0	3
Disturbance					
Wildfire/prescribed burn	0	0	0	0	0
Clearing/logging	-3	-2	-2	-3	-3
Grazing	-2	-2	-2	-2	-3
Weeds	-3	-3	-3	-3	-2
Erosion	0	-1	-1	0	-2
TOTAL	11	21	27	5	0

Characteristic Abundance Key:

0 = Nil; 1 = Rare; 2 = Rare to occasional; 3 = Occasional; 4 = Occasional to common; 5 = Common; 6 = Common to abundant; 7 = Abundant

Disturbance Rating Key:

0 = Nil; -1 = Rare to occasional; -2 = Common; -3 = Abundant

Total Habitat Rating Key:

0-21 = Low Value; 22-42 = Moderate Value; 43-63 = Good Value; 64-84 = High Value; 85-105 = Near Pristine

4.2.1 Threatened Fauna Habitat

The suitability of the site for threatened vertebrate fauna previously recorded within the 1.5km assessment circle is described in Table 4.3. This assessment has been undertaken following desktop spatial analysis, field habitat surveys, review of OEH Threatened Species Profiles and other literature.

The likelihood of occurrence for any of the threatened fauna species identified through the NSW Wildlife Atlas Database search (refer Table 4.1) have been considered in reference to habitat features and vegetation communities at the site. An indication of whether an Assessment of Significance is likely to be required is also provided, on the assumption that the Biodiversity Offset Scheme (BOS) is not triggered and a Biodiversity Development Assessment Report (BDAR) would not be required.



Plate 4.1: A majority of the site is low in biodiversity value in its current condition.

Table 4.3: Threatened species within 1.5km and site suitability assessment.

Scientific Name	Common Name	Site Habitat Suitability	Likelihood of Occurrence	AoS
Amphibia				
<i>Assa darlingtoni</i>	Pouched Frog	Prefers cooler, moist rainforest at higher altitudes such as those that occur west of the site along Koonyum Range. Records from within 1.5km assessment circle were recorded at elevations between approx. 140m and 200m.	Very Low	No
Aves				
<i>Botaurus poiciloptilus</i>	Australasian Bittern	Favours permanent freshwater wetlands with tall, dense vegetation, particularly <i>Typha</i> spp. and <i>Eleocharis</i> spp. Limited dense vegetation occurs at the site with most drainage lines occurring through open pasture or open camphor forest with little lower stratum vegetation preferred by this species. Negligible suitable habitat within drainage lines exists, and these areas are generally impacted by cattle with habitat quality considered poor.	Low	No
<i>Circus assimilis</i>	Spotted Harrier	Prefers grassy open woodland including <i>Acacia</i> and mallee remnants, inland riparian woodland, grassland and shrub steppe. It is found most commonly in native grassland, but also occurs in agricultural land, foraging over open habitats including edges of inland wetlands. The site is not considered to contain preferred habitat, although this species may forage over the site on occasion.	Low	No
<i>Ephippiorhynchus asiaticus</i>	Black-necked Stork	Most commonly associated with floodplain wetlands (swamps, billabongs, watercourses and dams) of the major coastal rivers. The site generally contains small drainage lines and no larger expanses of wetland habitat, and it would not be considered that the site represents preferred habitat.	Low	No
<i>Petroica boodang</i>	Scarlet Robin	Prefers dry eucalypt forests and woodlands with an open and grassy understorey. Abundant logs and fallen timber are important components of its habitat. The site does not contain preferred habitat nor sufficient habitat features.	Low	No
Mammalia				

Scientific Name	Common Name	Site Habitat Suitability	Likelihood of Occurrence	AoS
<i>Dasyurus maculatus</i>	Spotted-tailed Quoll	Utilises a range of habitat types, however, the site has limited hollow-bearing trees, no suitable fallen logs with hollows, and no suitable caves or rocky outcrops for dens.	Low	No
<i>Miniopterus australis</i>	Little Bentwing-bat	Marginal potential foraging and temporary roosting habitat occur at the site, particularly in association with Yankee Creek. Generally, prefer well-timbered areas. The site is not considered to contain preferred habitat, although there is potential for this species to utilise the site.	Low to Moderate	Yes
<i>Myotis macropus</i>	Southern Myotis	Marginal potential foraging over pools and temporary roosting habitat occur at the site, particularly in association with Yankee Creek. The site is not considered to contain preferred habitat, although there is potential for this species to utilise the site.	Low to Moderate	Yes
<i>Phascolarctos cinereus</i>	Koala	The site does not contain any primary koala feed trees, nor would it be considered to contain habitat important to this species. It is possible this species may infrequently pass through the site to reach more suitable habitat in the wider area.	Low	No
<i>Pteropus poliocephalus</i>	Grey-headed Flying-fox	The site contains some suitable foraging resources, primarily exotic species such as Camphor Laurel and planted fruit trees. The site contains limited native rainforest fruits, or nectars from rainforest or sclerophyll species. It is likely that this species would forage at the site on occasion.	Low	No



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Figure 4.1: Threatened fauna records within 1.5km and habitat corridors.



Legend

- Study Site
- Threatened fauna_1500m assessment circle
- FaunaCorridors_NE_NSW
- 1500m assessment circle
- Cadastre
- Contours
- Road Corridors
- Water Features

Vegetation_1500m assessment circle (BSC)

- Camphor Laurel >80%
- Camphor Laurel 51-80%
- Exotic
- North Coast Dry Sclerophyll Forests
- North Coast Wet Sclerophyll Forests
- Subtropical Rainforests

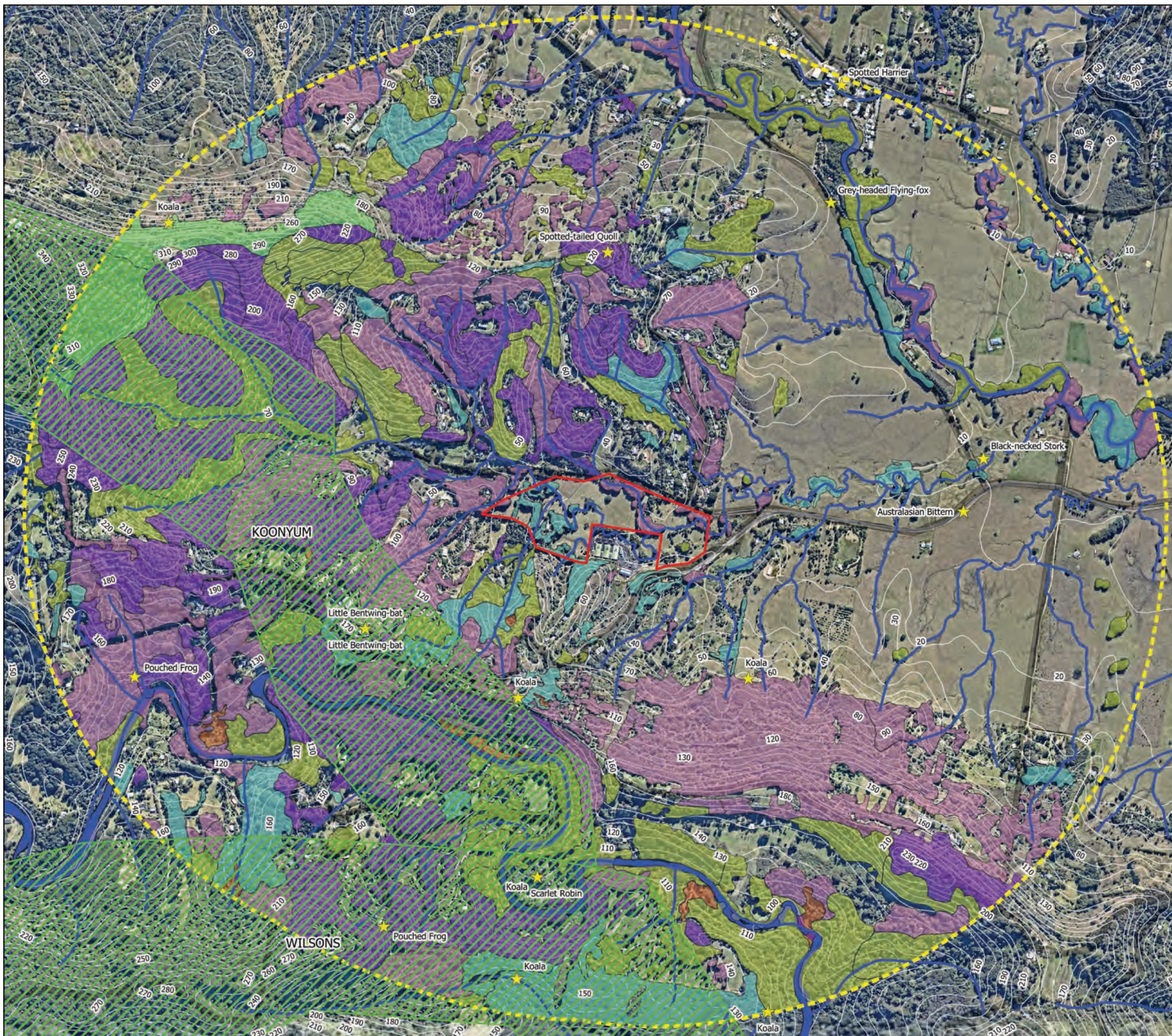
1:11,750

0 250 500 750 m

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Figure 4.2: Site fauna habitat parameters assessment.



Legend

- Study Site
- Cadastre
- Contours
- Road Corridors
- Water Features

Site fauna habitat scores and (%)

- 5/105 (4.8%)
- 11/105 (10.5%)
- 21/105 (20%)
- 27/105 (25.7%)

1:2,350



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4.3 Discussion

The site is situated at the base of the Koonyum Range on elevations between approx. 40m and 20m AHD. It is within 300m of the Koonyum sub-regional corridor and within 1,000m of the Wilsons sub-regional corridor. Jerusalem and Goonengerry National Parks occur greater than 2.5 km to the west.

The site has been extensively cleared, with remnant native species and important habitat structural features being rare. Forest vegetation at the site is dominated by the noxious weed Camphor Laurel, with regeneration across the site dominated by a suite of exotic vegetation.

Considering the significant historical impacts, and general low condition of habitat, the site represents mostly marginal habitat value for most native fauna. Vegetation is degraded, fragmented, and does not form part of an important habitat corridor. The habitat assessment survey indicated that the value of habitat at the site is of low to moderate quality (refer Table 4.2 and Figure 4.2). The presence of Yankee Creek and associated 2nd order streams are the most valuable habitat features present, although these drainage lines and associated riparian habitats are degraded and generally in low to very low condition.

The suitability of the site for threatened fauna previously recorded in the 1.5km assessment circle and likelihood of occurrence is assessed in Table 4.3. The suitability assessment has been undertaken following desktop spatial analysis, site habitat assessment and review of OEH Threatened Species Profiles.

It was generally concluded that the site does not represent significant habitat for any threatened species, however, an Assessment of Significance (AoS) would be required for those threatened fauna species with the potential to occur and to be impacted by the proposal.



Plate 4.2: Some potential habitat features occur predominantly in association with Yankee Creek, however, vegetation is degraded and fragmented.

5 Statutory Assessment and Constraints

The proposal has been examined in the context of relevant environmental legislation and planning instruments. The assessment considers the site attributes, threatened species records, vegetation condition and habitat potential.

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

- Biodiversity Conservation Act 2016 (BC Act);
- Biodiversity Conservation Regulation 2017 (BC Regulation);
- State Environmental Planning Policy No 44 – Koala Habitat Protection (SEPP 44);
- Water Management Act 2000 (WM Act); and
- Environment Protection and Biodiversity Conservation Act 1999 (EPBC Act).

5.1 Biodiversity Conservation Act 2016

Two (2) threatened flora species, consisting of a total of three (3) individuals, listed under the BC Act were recorded at the site (refer S3.2.2). No threatened fauna species were recorded, although targeted fauna surveys were not undertaken, and surveys focused on habitat suitability only.

An Assessment of Significance (AoS) under Clause 7.3 of the Act would be required for those species recorded at the site, and for those with potential to be impacted. It would be expected that careful concept design would enable impacts on biodiversity to be avoided and minimised, and such the proposal is not likely to result in any significant impacts to threatened species, populations, ecological communities or their habitats.

The rezoning proposal does not constitute an activity that will exceed the thresholds of the Biodiversity Offsets Scheme (BOS) under Clause 7.4 of the Act and Part 7 of the BC Regulation (refer S.5.2). Further assessment under the Act would be required for subdivision when additional layout details are provided.

5.2 Biodiversity Conservation Regulation 2017

Part 6 of the BC Regulation introduces the Biodiversity Offsets Scheme (BOS) with Clause 6.1 identifying additional biodiversity impacts to which scheme applies. These impacts on biodiversity values would need to be assessed under the BOS for any future development of the site. As the site is generally in low condition, it would be expected that concept design would be able to avoid and minimise impacts on the biodiversity of the site, mitigate for development impacts, and adopt strategies to improve the biodiversity values of the site.

Part 7 of the BC Regulation prescribes the biodiversity assessment and approvals under Planning Act and details when an activity exceeds a threshold and therefore requires assessment under the Biodiversity Offset Scheme (BOS). Three main threshold triggers apply.

1. Area clearing threshold (Clause 7.2) – depends on the minimum lot size under the relevant LEP

as defined in Table 4.3.

Table 5.1: Clearing thresholds Part 7.2 BC Regulation.

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

2. Biodiversity Values Map threshold (Clause 7.3) – clearing of native vegetation or additional biodiversity impacts (Clause 6.1) within Biodiversity Values (BV) Map exceeds threshold. Land incorporating a buffer along Yankee Creek is mapped on the BV Map (refer Figure 5.1) as protected riparian land, and therefore if native vegetation clearing is required within this mapped area, a Biodiversity Development Assessment Report (BDAR) would be required.

3. A threatened species ‘test of significance’ – 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.

5.3 SEPP No. 44 – Koala Habitat Protection

SEPP 44 provides a series of questions as a basis for the assessment of lands as potential and/or core Koala habitat. These questions are:

1. Does the Policy apply?

Does the subject land occur in an LGA identified in Schedule 1?

Yes

Is the landholding to which the DA applies greater than 1 hectare in area?

Yes, however, the proposal is for the rezoning of the site and there is no DA at this stage. It is submitted that Part 2 of SEPP 44 does not apply.

2. Is the land potential Koala habitat?

Does the site contain areas of native vegetation where the trees of types listed in Schedule 2 constitute at least 15% of the total number of trees in the upper or lower strata of the tree component?

No – the site is dominated by Camphor Laurel and no trees listed in Schedule 2 occur at the site. Therefore, the study site does not contain any areas of native vegetation where Schedule 2 trees constitute at least 15% of total trees and the site does not constitute potential habitat.

3. Is there core Koala habitat on the subject land?

No - Core Koala Habitat means an area of land with a resident population of Koalas, evidenced by attributes such as breeding females (that is, females with young) and recent sightings of and historical records of a population.

No records of Koalas occur at the site, no recent sightings or evidence of use have been observed. The site is also not within a regional or sub-regional corridor identified as being of importance to the Koala.

4. Is there a requirement for the preparation of a Plan of Management for identified core Koala habitat?

No - it is therefore concluded that the site does not meet the definitions of either 'core' or 'potential' Koala habitat and the SEPP 44 policy does not apply.

5.4 Water Management Act 2000

The *Water Management Act 2000* (WM Act) provides for the sustainable and integrated management of the water sources of the State for the benefit of both present and future generations. Controlled activity approvals (CAA) are required in certain circumstances to authorize its holder to carry out a specified controlled activity.

Guidelines for riparian corridors on waterfront land have been developed by NSW DPI Office of Water to provide recommended vegetated riparian zone (VRZ) width for watercourses based on their Strahler System watercourse type.

Where suitable, applicants may undertake non-riparian corridor works or development within the outer 50% of a VRZ, as long as they offset this activity by connecting an equivalent area to the RC within the development site.

5.5 Environment Protection and Biodiversity Conservation Act 1999

Species listed under the EPBC Act have been recorded at the site and these would require assessment for the subdivision DA. However, it is reasonably expected that the proposal and subsequent development of the site would be able to be accommodated without significant impact on any Matters of National Environmental Significance (MNES).

Where land may be subject to the EPBC Act, the Federal Minister for Environment has no power to prohibit the rezoning of land, because the rezoning of land is not an 'action' for the purposes of the EPBC Act.



Plate 5.1: Rough-shelled Bush Nut located along Yankee Creek is listed as vulnerable under the EPBC Act.



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Figure 5.1: Biodiversity Value Mapping for the study site.



Legend

- Study Site
- Biodiversity Values Mapping
- Cadastre
- Contours
- Road Corridors
- Water Features

Vegetation study site clipped

- Camphor Laurel >90%
- Camphor Laurel >80%
- Camphor Laurel 51-80%
- Mixed Plantings + Camphor Laurel
- Open Pasture
- Site_Threatened Flora Species

1:2,350



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6 Management Strategies to Minimise Impacts

The potential direct and indirect impacts taken into consideration for this assessment also include the future development of the site in accordance with the proposal. Potential impacts on flora and fauna are considered below with key mitigation measures provided.

6.1 Clearing or Fragmentation

Modification or removal of some native vegetation may be required at the site for the establishment of asset protection zones (APZ), infrastructure and services provision. It is considered that due to the abundance of exotic vegetation at the site, the proposal and subsequent development would be able to be accommodated with minimal impacts to native vegetation.

Vegetation at the site is already highly disturbed and fragmented and the proposal would not result in additional habitat fragmentation. Offsets could be accommodated on site if mitigation against any potential loss is required.

Mitigation Measures

- Area to be impacted to be clearly marked to ensure no residual impacts to adjacent areas.
- Native trees containing habitat features (i.e. hollows) would be retained as a priority.
- Native trees with a DBH of greater than 50cm would be retained as a priority.
- Native trees removed will be compensated for in an offset area to be identified.
- Landscaping would specify suitable locally occurring native species.

6.2 Habitat Loss or Disturbance

Habitat loss for native fauna is expected to be negligible due to the low condition habitat currently occurring at the site. Future development disturbances would generally be short term and restricted to the immediate proposal area. No areas of habitat significance would be impacted.

Mitigation Measures

- Implement mitigation measures identified in Section 6.1.
- Undertaken pre-clearing surveys of site vegetation.
- Establish tree protection zone (TPZ) fencing where required to protect significant trees.

6.3 Water Quality and Hydrology Impacts

There is some potential for sediment and nutrient loads to impact downstream environments during site preparation and future development. Appropriate planning and mitigation would be recommended to ensure any risk is further reduced.

Mitigation Measures

- Ensure implementation of best practice erosion and sediment controls prior to any vegetation removal or construction activities and monitor effectiveness.
- Maintain sediment and erosion controls and continue monitoring until the site is stabilised.
- Plan for revegetation and/or appropriate buffers of watercourse edges to further reduce potential impacts to aquatic and riparian habitats.



Plate 6.1: Creek buffers and erosion and sediment controls would be appropriate to mitigate potential construction and occupation impacts.

7 Summary and Conclusion

This ecological assessment has been prepared to inform the submission for a Planning Proposal/LEP Amendment Request to Byron Shire Council (BSC) for Lot 38, DP 1059938, No. 31 Alidenes Road, Wilsons Creek. The request involves the rezoning of the land from the current zoning RU2 Rural Landscape to R5 Large Lot Residential. Following a detailed assessment of all available information, threatened species records, habitat assessment of the site and potential impacts, the following conclusions are provided:

- The site is highly disturbed and dominated by exotic species;
- The site contains approximately 8ha of low constraint exotic grazing pasture with minimal ecological value, and approx. 4.2 ha of low condition Camphor Laurel forest with occasional rainforest species;
- Vegetation at the site is generally not considered to have significant ecological value or provide significant wildlife habitat as it is predominantly regrowth exotic vegetation (dominated by Camphor Laurel) occurring in isolated fragments;
- Vegetation at the site is not considered to contain sufficient elements or currently have natural regeneration potential to be included as a community listed in the NSW *Biodiversity Conservation Act 2016* or the *Environmental Protection and Biodiversity Conservation Act 1999*;
- Two (2) threatened flora species listed in Schedule 1 of the *Biodiversity Conservation Act 2016*, Rough-shelled Bush Nut, and Red Boppel Nut, were recorded at the site adjacent to the main central drainage line (Yankee Creek);
- As the site contains cleared low constraint land (8ha) and low condition vegetation (4.2ha), and contains limited habitat features, any impacts from future development would be unlikely to result in significant impacts for threatened fauna listed under the NSW *Biodiversity Conservation Act 2016* or the *Environmental Protection and Biodiversity Conservation Act 1999*;
- No trees or vegetation listed on Council’s Significant Vegetation Register (Appendix B2.1 DCP 2014) occur at the site;
- No Koala feed trees occur at the site and the site does not meet the definitions of ‘core’ or ‘potential’ habitat under *State Environmental Planning Policy 44 - Koala Habitat Protection*. The site is unlikely to require further assessment under the SEPP 44 policy or prevent granting consent to any future development application;
- Any native vegetation loss could be mitigated against by onsite offsets and native vegetation landscaping if required; and
- Potential impacts of the construction and occupation phases of the proposal would be mitigated sufficiently to ensure that direct and indirect impacts on biodiversity values would be negligible.

Based on these key points it is considered from an ecological perspective, that the site is entirely suitable for the proposal and subsequent development. The impacts of any vegetation loss would be able to be suitably offset on site to provide a net native vegetation gain at the site, and an improvement in biodiversity values in general.

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Appendices

Appendix A – Flora Species List

Species Name	Vernacular Name
<i>Acacia melanoxylon</i>	Blackwood
<i>Ageratina adenophora</i> *	Crofton Weed
<i>Ageratina riparia</i> *	Mistflower
<i>Ageratum houstonianum</i> *	Blue Billygoat Weed
<i>Ailanthus altissima</i> *	Tree of Heaven
<i>Ambrosia artemisiifolia</i> *	Annual Ragweed
<i>Archidendron muellerianum</i>	Veiny Laceflower
<i>Archirhodomyrtus beckleri</i>	Rose Myrtle
<i>Archontophoenix cunninghamiana</i>	Bangalow Palm
<i>Asimina triloba</i> *	Paw Paw
<i>Asparagus plumosus</i> *	Climbing Asparagus Fern
<i>Bidens pilosa</i> *	Cobblers Pegs
<i>Caesalpinia subtropica</i>	Corky Prickle-vine
<i>Calochlaena dubia</i>	Soft Bracken
<i>Cenchrus clandestinus</i> *	Kikuyu Grass
<i>Centella asiatica</i>	Pennywort
<i>Chloris gayana</i> *	Rhodes Grass
<i>Cinnamomum camphora</i> *	Camphor Laurel
<i>Cirsium vulgare</i> *	Spear Thistle
<i>Citrus x taitensis</i> *	Bush Lemon
<i>Commersonia bartramia</i>	Brown Kurrajong
<i>Conyza canadensis</i> *	Tall Fleabane
<i>Cordyline rubra</i>	Palm-lily
<i>Crassocephalum crepidioides</i> *	Thickhead
<i>Cupaniopsis anacardioides</i>	Tuckeroo
<i>Cuphea carthagenensis</i> *	Cuphea
<i>Cyperus brevifolius</i> *	Mullumbimby Couch
<i>Cyperus eragrostis</i> *	Umbrella Sedge
<i>Cyperus exaltatus</i>	Giant Sedge
<i>Cyperus pilosus</i>	Cyperus sp.

<i>Delonix regia</i> *	Poinciana
<i>Desmodium uncinatum</i> *	Silver-leaved Desmodium
<i>Eclipta prostrata</i>	Eclipta sp.
<i>Elaeocarpus obovatus</i>	Hard Quandong
<i>Elaeocarpus reticulatus</i>	Blueberry Ash
<i>Eleocharis cylindrostachys</i>	Eleocharis sp.
<i>Eleocharis equisetina</i>	Sag
<i>Erythrina x sykesii</i> *	Coral Tree
<i>Eucalyptus grandis</i>	Flooded Gum
<i>Ficus coronata</i>	Creek Sandpaper Fig
<i>Ficus fraseri</i>	Sandpaper Fig
<i>Ficus macrophylla</i>	Moreton Bay Fig
<i>Flindersia schottiana</i>	Cudgerie
<i>Glochidion ferdinandi</i>	Cheese Tree
<i>Guioa semiglauca</i>	Guioa
<i>Hibbertia scandens</i>	Climbing Guinea Flower
<i>Hicksbeachia pinnatifolia</i> #	Red Bopple Nut
<i>Hydrocotyle bonariensis</i>	Largeleaf Pennywort
<i>Hypochaeris radicata</i> *	Catsear
<i>Hypoestes phyllostachya</i> *	Freckle Face
<i>Hypolepis muelleri</i>	Harsh Ground Fern
<i>Jacaranda mimosifolia</i> *	Jacaranda
<i>Jagera pseudorhus</i>	Foambark
<i>Lantana camara</i> *	Lantana
<i>Ligustrum lucidum</i> *	Large-leaved Privet
<i>Ligustrum sinense</i> *	Small-leaved Privet
<i>Lomandra hystrix</i>	Mat Rush
<i>Lomandra longifolia</i>	Lomandra
<i>Lophostemon confertus</i>	Brush Box
<i>Ludwigia longifolia</i> *	Long Leaf Willow Primrose
<i>Ludwigia peruviana</i> *	Ludwigia
<i>Macadamia integrifolia</i>	Macadamia
<i>Macadamia tetraphylla</i> #	Rough-shelled Bush Nut
<i>Macaranga tanarius</i>	Macaranga

<i>Maclura cochinchinensis</i>	Cockspur
<i>Macroptilium atropurpureum</i> *	Siratro
<i>Mallotus philippensis</i>	Red Kamala
<i>Mangifera indica</i> *	Mango
<i>Melinis minutiflora</i> *	Molasses Grass
<i>Murraya paniculata</i> *	Orange Jessamine
<i>Myriophyllum aquaticum</i> *	Parrot's Feather
<i>Ochna serrulata</i> *	Bird's-Eye Bush
<i>Oplismenus aemulus</i>	Basket Grass
<i>Paspalum mandiocanum</i> *	Broadleaf Paspalum
<i>Paspalum notatum</i> *	Bahia Grass
<i>Paspalum distichum</i>	Water Couch
<i>Passiflora suberosa</i> *	Corky Passionflower
<i>Passiflora subpeltata</i> *	White Passionflower
<i>Persicaria attenuata</i>	Velvet Knotweed
<i>Persicaria decipiens</i>	Slender Knotweed
<i>Persicaria hydropiper</i>	Water Pepper
<i>Persicaria strigosa</i>	Spotted Knotweed
<i>Phytolacca octandra</i> *	Inkweed
<i>Pittosporum undulatum</i>	Sweet Pittosporum
<i>Platynerium bifurcatum</i>	Elk's-Horn Fern
<i>Platynerium superbum</i>	Staghorn Fern
<i>Prunus persica</i> *	Peach
<i>Psidium guajava</i> *	Yellow Guava
<i>Pteridium esculentum</i>	Bracken
<i>Rivina humilis</i> *	Coral Berry
<i>Rubus spp.</i> *	Blackberry
<i>Rumex brownii</i> *	Hooked Dock
<i>Rumex crispus</i> *	Curled Dock
<i>Sansevieria trifasciata</i> *	Mother-in-law's Tongue
<i>Schefflera actinophylla</i> *	Umbrella Tree
<i>Senecio madagascariensis</i> *	Fireweed
<i>Senna pendula</i> *	Winter Senna
<i>Setaria sphacelata</i> *	Setaria

<i>Sida rhombifolia</i> *	Paddy's Lucerne
<i>Smilax australis</i>	Native Sarsaparilla
<i>Solanum mauritianum</i> *	Tobacco Bush
<i>Solanum nigrum</i> *	Black Nightshade
<i>Sonchus oleraceus</i> *	Common Sow Thistle
<i>Sphagneticola trilobata</i> *	Singapore Daisy
<i>Stenotaphrum secundatum</i> *	Buffalo Grass
<i>Stephania japonica</i>	Snake Vine
<i>Syagrus romanzoffiana</i> *	Cocos Palm
<i>Syzygium smithii</i>	Lilly Pilly
<i>Taraxacum officinale</i> *	Dandelion
<i>Tradescantia fluminensis</i> *	Trad
<i>Trifolium spp.</i> *	Clover
<i>Verbena bonariensis</i> *	Purple-Top