771-797 Mamre Road, Kemps Creek

Threatened Species Assessment

GPT Group Pty Ltd

2 December 2022

Final

(02) 9868 1933 | PO Box 2474 Carlingford Court NSW 2118 | cumberlandecology.com.au

Report No. 21130RP2

The preparation of this report has been in accordance with the brief provided by the Client and has relied upon the data and results collected at or under the times and conditions specified in the report. All findings, conclusions or commendations contained within the report are based only on the aforementioned circumstances. The report has been prepared for use by the Client and no responsibility for its use by other parties is accepted by Cumberland Ecology.

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Approved by:	Matthew Freeman
Position:	Senior Project Manager/Ecologist
Signed:	
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Glossary

Abbreviation / Term	Definition
BC Act	NSW *Biodiversity Conservation Act 2016*
CBD	Central Business District
CPCP	Cumberland Plain Conservation Plan
DA	Development Application
DAWE	Commonwealth Department of Agriculture, Water and the Environment
DBH	Diameter at Breast Height over bark
EHG	NSW Environment and Heritage
EP&A Act	NSW *Environmental Planning and Assessment Act 1979*
EPBC Act	Commonwealth *Environment Protection and Biodiversity Conservation Act 1999*
ha	Hectares
MNES	Matters of National Environmental Significance
NSW	New South Wales
PCT	Plant Community Types
Project	The redevelopment of the Yirbana Logistics Estate West
RFEF	River-flat Eucalypt Forest
Subject land	771-797 Mamre Road, Kemps Creek (Lot 23 and 24 of DP 258414)
TEC	Threatened Ecological Communities
ToS Guidelines	Threatened Species Test of Significance Guidelines
TSA	Threatened Species Assessment

1. Introduction

Cumberland Ecology was commissioned by GPT Group Pty Ltd (the 'client') to prepare a Threatened Species Assessment (TSA) for land located at 771-797 Mamre Road, Kemps Creek (the 'subject land') for the proposed redevelopment of Yiribana Logistics Estate West (the 'project') (see **Figure 1**). This TSA will support a Development Application (DA) for the project under Part 4 - Division 4.7 of the New South Wales (NSW) *Environmental Planning and Assessment Act 1979* (EP&A Act).

1.1. Purpose

The purpose of this TSA is to document the findings of ecological investigations completed across the subject land (see **Figure 1**). Biodiversity values considered include threatened ecological communities and species protected under the *NSW Biodiversity Conservation Act 2016* (BC Act) and the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act). The main objective of this TSA is to determine whether the project is likely to significantly affect threatened flora and fauna species within the subject land.

Specifically, the objectives of this TSA are to:

- Describe and map vegetation communities of the subject land, identifying threatened ecological communities (TECs) listed under the BC Act and/or the EPBC Act;
- Identify and map the location of threatened flora and fauna species (if present); and
- Assess the likelihood as to whether threatened flora and fauna species would occur within the subject land.

1.2. Background

1.2.1. Site Description

The subject land is located at 771-797 Mamre Road, Kemps Creek, NSW and comprises Lots 23 and 24 of DP 258414. The subject land is located within the Western Sydney Employment Area, approximately 40 km west of the Sydney Central Business District (CBD) and 12 km southeast of the Penrith CBD. It is also located within the Western Sydney Aerotropolis, approximately 6 km northeast of the Aerotropolis Core Precinct. The subject land is located entirely within the Penrith Local Government Area and covers an area of approximately 7.34 hectares (ha). The subject land is generally bounded by Bakers Lane to the north, Aldington Road to the east and Mamre Road to the south and west.

The Cumberland Plain Conservation Plan (CPCP) was finalised by the NSW Department of Planning and Environment in August 2022, which confirmed the extent of the bio-certified land and the Strategic Conservation Area, within the Cumberland Plain Conservation Area. The finalisation of the CPCP resulted in the entire subject land being identified as 'Certified – Urban Capable'. However, this TSA is required in accordance with the Mamre Road Development Control Plan for DAs for land within 500m of an E2 Environmental Conservation zone to determine the presence of threatened species or their habitat. As the subject land is located within 500m of an E2 zone a TSA is required for the project.

1.2.2. Project Description

The project comprises the development of the land and includes the following:

- Site preparation works including estate-wide clearing of vegetation (0.06 ha native and 0.71 ha exotic);
- Dewatering of existing dams;
- Bulk earthworks;
- Construction of retaining walls;
- Reconstruction and revegetation of the riparian corridor;
- Construction of an industrial collector road;
- Provision of site servicing infrastructure to allow the operation of the industrial unit for warehouse and distribution and/or other manufacturing industries;
- Construction and use of Warehouse 1 and 2 for the purpose of other manufacturing industries and/or warehouse and distribution centres and associated access roads; and
- Associated carparking and landscaping.

1.3. Relevant Legislation

1.3.1. Environment Protection and Biodiversity Conservation Act 1999

The EPBC Act is the Commonwealth Government's central piece of environmental legislation. It provides a legal framework to protect and manage nationally and internationally important flora, fauna, ecological communities and heritage places - defined in the EPBC Act as Matters of National Environmental Significance (MNES). Under the EPBC Act, any action (which includes a development, project or activity) that is considered likely to have a significant impact on MNES (including nationally listed TECs and species, and listed migratory species) must be referred to the Australian Government Minister for the Environment. The purpose of the referral is to allow a decision to be made about whether an action requires approval on a Commonwealth level. If an action is declared a "controlled action", then Commonwealth approval is required.

1.3.2. Environmental Planning and Assessment Act 1979

The EP&A Act is the overarching planning legislation in NSW. This act provides for the creation of planning instruments that guide land use. The EP&A Act also provides for the protection of the environment, including the protection and conservation of native animals and plants. This includes threatened species, communities, habitat and processes as listed under the BC Act and *Fisheries Management Act 1994*.

1.3.3. Biodiversity Conservation Act 2016

The BC Act is the key piece of legislation in NSW relating to the protection and management of biodiversity and threatened species. The purpose of the BC Act is to maintain a healthy, productive and resilient environment for the greatest well-being of the community, now and into the future, consistent with the principles of ecologically sustainable development. The BC Act is supported by a number of regulations, including the *Biodiversity Conservation Regulation 2017*.

2. Methodology

2.1. Literature Review

A review of relevant ecological literature was undertaken as part of this TSA to evaluate the flora and fauna values associated with the subject land. The information collected during the literature review guided the field surveys undertaken for the TSA. Information within the literature reviewed was also utilised in determining the likelihood of threatened species occurring within the subject land and assessing the potential impacts of the project.

As part of the desktop assessment, a literature review of the following documents was also undertaken:

- Final Determinations for TECs prepared by the NSW Scientific Committee; and
- The NSW BioNet VIS Vegetation Classification Database (EES 2022a).

2.2. Database Analysis

A number of databases were utilised during the preparation of this TSA. Key databases reviewed for this TSA include:

- Vegetation classification:
  - Vegetation Information System Classification Database.
- Species records/occurrences:
  - Environment and Heritage (EHG) BioNet Atlas (EHG 2022);
  - Commonwealth Department of Agriculture, Water and the Environment (DAWE) Protected Matters Search Tool (DAWE 2022a);
- Species profiles;
  - NSW Department of Planning and Environment Threatened Species Profile Database (EES 2022b); and
  - DAWE Species Profile and Threat Database (DAWE 2022b).

Database analysis was conducted for the locality using the EHG BioNet Atlas and the DAWE Protected Matters Search Tool. The locality is defined as the area within a 5 km radius of the subject land. The BioNet Atlas search facility was used to generate records of threatened flora and fauna species and populations listed under the BC Act and/or EPBC Act within the locality. The abundance, distribution and age of records generated within the search areas provided supplementary information for the assessment of likelihood of occurrence of those threatened species within the subject land. The Protected Matters Search Tool generated a list of potentially occurring MNES listed under the EPBC Act within the locality of the subject land.

2.3. Flora Surveys

Flora surveys were undertaken by Cumberland Ecology on 20 May 2021 and on the 20 October 2022. Surveys included vegetation mapping and plot-based vegetation survey. Further details of field survey methods are provided below.

2.3.1. Vegetation Mapping

Previous broad-scale mapping of the subject land and wider study area was reviewed prior to the survey in order to determine vegetation communities that could occur within the subject land. The vegetation mapping from these studies were accessed prior to the survey in order to determine vegetation communities that could occur within the subject land. The vegetation within the subject land was subsequently ground-truthed by Cumberland Ecology. Where vegetation community boundaries were found to differ from the existing mapping, records were made of new boundaries using a hand-held Global Positioning System and mark-up of aerial photographs. The data collected was analysed and the resultant information was synthesised using a Geographic Information System to produce a vegetation map of the subject land.

2.3.2. Plot-based Floristic Survey

A plot-based floristic survey was undertaken within the subject land. The survey was conducted in accordance with the Biodiversity Assessment Method and included establishment of one 20 m x 50 m plot within which the following data was collected:

- Composition for each growth form group by counting the number of native plant species recorded for each growth form group within a 20 m x 20 m plot;
- Structure of each growth form group as the sum of all the individual projected foliage cover estimates of all native plant species recorded within each growth form group within a 20 m x 20m plot;
- Cover of 'High Threat Exotic' weed species;
- Assessment of function attributes within a 20 m x 50 m plot, including:
    - Count of number of large trees;
    - Tree stem size classes, measured as 'diameter at breast height over bark' (DBH);
    - Regeneration based on the presence of living trees with stems <5 cm DBH;
    - The total length in metres of fallen logs over 10 cm in diameter;
- Assessment of litter cover within five 1 m x 1 m plots evenly spread within the 20 m x 50 m plot; and
- Number of trees with hollows that are visible from the ground within the 20 m x 50 m plot.

All vascular plants recorded or collected were identified using keys and nomenclature provided in *PlantNET* (Botanic Gardens Trust 2022).

2.3.3. Data Analysis

2.3.3.1. Plant Community Types

The primary nomenclature used within this report is locally defined map units that were determined following field investigations within the subject land. Where relevant, the locally defined map units were matched with the equivalent Plant Community Types (PCTs).

Identification of the PCTs occurring within the subject land was guided by the findings of the floristic survey. The data collected during surveys of the subject land was analysed in conjunction with a review of the PCTs held within the BioNet Vegetation Classification. Where locally defined map units were not readily able to be matched to PCTs, best-fit communities were selected, or noted as unassigned if comprised of planted or exotic vegetation.

2.3.3.2. Classification of Threatened Ecological Communities

Following review of potentially occurring TECs, the vegetation communities identified within the subject land were examined against the listings of TECs under the BC Act and EPBC Act.

For TECs listed under the BC Act, vegetation communities were examined against the final determinations for potentially occurring TECs. A component of this analysis was to compare the species recorded during the field surveys with the species lists provided in the final determinations. Additional information such as location and geology and landform aspects of each final determination were also considered in the assessment.

For TECs listed under the EPBC Act, vegetation communities were examined against the DAWE Species Profile and Threats Database and any associated documentation, such as listing advice and policy statements.

2.4. Fauna Surveys

Fauna surveys were undertaken by an ecologist on 20 May 2021 and included a general habitat assessment and incidental observations.

2.4.1. Habitat Assessment

A general fauna habitat assessment was undertaken within the subject land during field surveys on the 20 May 2021. This assessment included consideration of important indicators of habitat conditions and complexity as well as the occurrence of micro-habitats such as tree hollows, fallen logs and riparian areas. An assessment of the structural complexity of the vegetation, the age structure of the forest and the nature and extent of human disturbance was also undertaken. Notes were taken on specific habitat features that may be utilised by threatened fauna species known to occur in the locality.

2.4.2. Incidental Observations

Any incidental fauna species that were observed, heard calling, or otherwise detected on the basis of tracks or signs, were recorded and listed in the total species list for the subject land.

2.5. Limitations

The weather conditions at the time of the flora surveys were generally favourable for plant growth and production of features required for identification of most species, particularly in 2022 following extensive rainfall during a La Nina period.

The flora and fauna of the locality is well known based upon a sizeable database of past records and various published reports. The field survey undertaken by Cumberland Ecology added to this existing database and has helped to provide an indication of the likelihood that various species occur or are likely to occur within the subject land. The data obtained from database assessment and surveys of the subject land furnished an appropriate level of information to support this assessment.

It is considered that the flora and fauna species of conservation value have been adequately considered within the subject land to enable this TSA to be prepared. A range of threatened flora is known to occur in the locality, however based on ground conditions, none of these are likely to occur in the subject land. The field surveys were supplemented by literature review, database analysis and a fauna habitat assessment. The combination of these techniques is considered appropriate for assessing the habitat values of the site for threatened fauna within the subject land.

3. Results

3.1. Vegetation Communities

Approximately 0.06 ha of the subject land contains native vegetation, which is approximately 8% of the total area of the subject land. The remaining land within the subject land comprises exotic dominated vegetation and cleared land, including buildings and driveways.

The native vegetation community occurring within the subject land is River-flat Eucalypt Forest on Coastal Floodplains of the New South Wales North Coast, Sydney Basin and South East Corner Bioregions. This community is listed as an Endangered Ecological Community (EEC) under the BC Act and a Critically Endangered Ecological Community (CEEC) under the EPBC Act. Within the subject land, the occurrence of the community meets the listing of a TEC under the BC Act, however does not meet the listing criteria under the EPBC Act as it is a small patch less than 0.5ha and the perennial understorey vegetative cover present is not made up of 30% or more of native species as outlined in Table 4 of the EPBC Act Listing Advice (DAWE 2020).

The vegetation communities identified by Cumberland Ecology within the subject land and their corresponding PCT and listing status are shown in **Table 1**, and a summary of each community is provided in subsequent sections. A map of the vegetation communities occurring within the subject land and VMP area is shown in **Figure 1**.

Table 1 Vegetation communities and their listing status under the BC Act and EPBC Act within the subject land

Vegetation Community	PCT	BC Act Status	EPBC Act Status	Total Area in the Subject Land (ha)
River-flat Eucalypt Forest on Coastal Floodplains of the New South Wales North Coast, Sydney Basin and South East Corner Bioregions	835: Cumberland Riverflat Forest	EEC	-	0.06
Exotic Dominated Vegetation /Cleared Land	-	-	-	7.28

3.1.1. PCT 835: Cumberland Riverflat Forest

Cumberland Riverflat Forest is an open eucalypt forest situated on broad alluvial flats of the Hawkesbury and Nepean river systems. It also forms narrower ribbons alongside streams and creeks that drain the Cumberland Plain. Typically, the canopy includes *Angophora floribunda* (Rough-barked Apple), *Eucalyptus tereticornis* (Forest Red Gum) and/or *Eucalyptus amplifolia* (Cabbage Gum). *Casuarina glauca* (Swamp Oak) frequently occurs within Cumberland Riverflat Forest. The understorey within Cumberland Riverflat Forest is characterised by an occasional sparse to open small tree stratum of *Melaleuca* spp. (Paperbark) and *Acacia* spp. (Wattles). A sparse lower shrub layer features *Bursaria spinosa* (Native Blackthorn). The ground layer is characterised by an abundant cover of grasses with small herbs and ferns. Cumberland Riverflat Forest occurs at altitudes between one and 160 metres above sea level and with a mean annual rainfall of 750-1000 millimetres (NSW Scientific Commitee 2011).

Within the subject site Cumberland Riverflat Forest occurs as five small patches within a small area at lower elevations in the south-east of the site adjacent to Mamre Road. The canopy includes *Eucalyptus tereticornis* (Forest Red Gum) and *Eucalyptus amplifolia* (Cabbage Gum). The sub-canopy includes *Eucalyptus tereticornis* (Forest Red Gum) as well as *Casuarina glauca* (Swamp Oak). There is no intact native shrub layer. The shrub stratum includes the exotic species *Solanum sisymbriifolium*, *Lycium ferocissimum* (African Boxthorn) and *Rubus fruticosus* spp. agg. (Blackberry). The understorey is dominated by exotic grasses such as *Cenchrus clandestinus* (Kikuyu) and *Chloris gayana* (Rhodes Grass).

Photograph 1 Small patch of Cumberland Riverflat Forest comprising a native canopy and an exotic dominated understorey

3.2. Exotic Dominated Vegetation / Cleared Land

Exotic dominated vegetation/ cleared land (7.28 ha) occurs throughout the subject land. Exotic dominated vegetation consists of predominantly exotic dominated grassland (6.6 ha) with small patches of exotic dominated woody vegetation (0.08 ha). Small areas of cleared land are also present which include existing driveways and dwellings (0.53 ha).

Exotic dominated grassland is dominated by the grass species *Chloris gayana* (Rhodes Grass), *Paspalum dilatatum* (Paspalum), *Cenchrus clandestinus* (Kikuyu Grass), *Cynodon dactylon* (Couch) and in some areas *Eragrostis curvula* (African Lovegrass). Native species present include *Juncus usitatus*, *Sporobolus creber* (Slender Rat's Tail Grass) and *Rytidosperma* sp. (Wallaby Grass). Other exotic species present include and *Rumex crispus* (Curly Dock). An example of exotic dominated grassland within the subject site is shown in **Photograph 2.**

The exotic dominated woody vegetation is found surrounding the dwellings on the subject site. The exotic species present include *Pinus radiata* (Radiata Pine), *Ficus carica* (Fig), *Pyrus communis* (Pear), *Rubus fruticosus* spp. agg. (Blackberry). Other exotic species present include *Solanum sisymbriifolium*, *Senecio madagascariensis* (Fireweed), *Cenchrus clandestinus* (Kikuyu) and *Hypochaeris radicata* (Catsear). A few non-endemic native trees and shrubs have been planted in one location primarily within garden areas around the dwelling in the east of the subject site including, *Grevillea robusta* (Silky Oak), *Callistemon viminalis* (Weeping Bottlebrush) and *Acacia* spp. An example of exotic dominated woody vegetation is shown in **Photograph 3**.

Furthermore, the native *Typha orientalis* (Bulrush) is associated with the drainage lines on the subject site. Three small patches are found surrounded by exotic grassland in the north east of the subject site. The vegetation is dominated by *Typha orientalis* (Bulrush) and *Cynodon dactylon* (Couch). Other species present include *Chloris gayana* (Rhodes grass) and *Rumex crispus* (Curly Dock). An example of the *Typha orientalis* within the drainage line is shown in **Photograph 4**. Although these areas comprise a few native species, they were considered too small to be mapped separately as a native vegetation community.

This community does not comprise a defined native vegetation unit and does not conform to a listing under the BC Act or EPBC Act.

Photograph 2 Exotic dominated grassland within the subject land

Photograph 3 Exotic dominated woody vegetation within the subject land

Photograph 4 Small patch of *Typha orientalis* (Bulrush) within the subject land

3.3. Flora Species

3.3.1. General Species

A total of 93 flora species were recorded within the subject land during field surveys, including 15 native species and 78 exotic species.

The floral assemblage across the subject land is a reflection of previous clearing for semi-rural development and current land uses which have resulted in the subject land being dominated by exotic ground cover and understorey, combined with native canopy species.

3.3.2. Threatened Flora Species

No threatened flora species were found during the survey of the subject land by Cumberland Ecology.

A total of 11 species listed under the BC Act and/or the EPBC Act have been recorded for the locality. An assessment of the likelihood of occurrence of these species in the subject land has been conducted and is presented in **Appendix A**. This assessment indicates that these species are unlikely to occur in the subject land either due to lack of habitat, historical disturbance or being conspicuous species that were not recorded during surveys.

3.4. Fauna

3.4.1. Fauna Habitat

The majority of the subject land is comprised of cleared land, dominated by exotic grassland vegetation which has limited value for native fauna. The small, isolated patches of vegetation provide some habitat for native fauna species however, no hollow-bearing trees or nests were recorded. As such, the vegetation within the subject land is considered to only comprise foraging habitat for native fauna species, although the habitat value of these patches is limited due to the lack of understorey and shrub vegetation.

There is one creek line, and three small farm dams present within the subject land that may provide habitat for a range of species including fish, amphibians and water birds. Furthermore, terrestrial fauna species may also utilise these dams as a water source.

Due to the general lack of habitat in the subject land and the lack of nearby large patches of bushland, the habitat within the subject land is considered to provide highly limited "stepping stone" habitat and impacts on fauna habitat are considered to be minor.

3.4.2. Threatened Fauna Species

No threatened fauna species have been recorded within the subject land.

A total of 19 threatened fauna species listed under the BC Act and/or EPBC Act, have been recorded in the locality. The likelihood of these species occurring within the subject land has been assessed and the results presented in **Appendix B**.

Based on the results of the site inspection and the habitat requirements of each threatened fauna species, seven threatened species are considered as having the potential to utilise habitats within the subject land. These are:

- Dusky Woodswallow (*Artamus cyanopterus cyanopterus*) - Vulnerable under the BC Act;
- Little Lorikeet (*Glossopsitta pusilla*) - Vulnerable under the BC Act;
- Yellow-bellied Sheathtail-bat (*Saccolaimus flaviventris*) – Vulnerable under the BC Act;
- Eastern Coastal Free-tailed Bat (*Micronomus norfolkensis*) - Vulnerable under the BC Act;
- Grey-headed Flying-fox (*Pteropus poliocephalus*) - Vulnerable under the BC Act and EPBC Act;
- Southern Myotis (*Myotis Macropus*) - Vulnerable under the BC Act; and
- Greater Broad-nosed Bat (*Scoteanax rueppellii)* – Vulnerable under the BC Act.

Five small patches of RFEF have been identified within the subject land which comprise potential foraging habitat for the aforementioned fauna species and will be impacted by the project.

These seven species listed above are assessed further, with additional information provided on the species and their habitat preferences in **Appendix B** and in Tests of Significance in **Appendix C**.

4. References

Botanic Gardens Trust. 2022. PlantNET. National Herbarium of NSW, Royal Botanic Gardens, Sydney.

DAWE. 2020. Commonwealth Conservation Advice for the River-flat eucalypt forest on coastal floodplains of southern New South Wales and eastern Victoria DAWE, Canberra, ACT.

DAWE. 2022a. EPBC Protected Matters Search Tool. Department of Agriculture, Water and the Environment, Canberra.

DAWE. 2022b. Species Profile and Threats Database. Department of Agriculture, Water and the Environment.

EES. 2022a. BioNet Vegetation Classification. Environment, Energy and Science.

EES. 2022b. Threatened Biodiversity Database Collection.*in* E. a. S. G. Environment, editor. Department of Planning, Industry and Environment.

EHG. 2022. BioNet Atlas. Environment and Heritage Group.

NSW Government. 2018. Threatened Species Test of Significance Guidelines. Office of Environment and Heritage, Sydney.

NSW Scientific Commitee. 2011. River-flat eucalypt forest on coastal floodplains of the NSW North Coast, Sydney Basin and South East Corner bioregions - endangered ecological community listing.

APPENDIX A :
Flora Likelihood of Occurrence

Table 2 Likelihood of occurrence – Threatened flora species

Family	Scientific Name	Common Name	BC Act Status	EPBC Act Status	Locality Count	Habitat Requirements	Likelihood of Occurrence
Apocynaceae	*Marsdenia viridiflora subsp. viridiflora*	Marsdenia viridiflora R. Br. subsp. viridiflora population in the Bankstown, Blacktown, Camden, Campbelltown, Fairfield, Holroyd, Liverpool and Penrith local government areas	EP	-	6	Occurs in vine thickets and open shale woodland. Recent records are known from Prospect, Bankstown, Smithfield, Cabramatta Creek and St Marys.	Unlikely to occur. Habitat within the subject land is highly degraded and not suitable for the species. A low number of records within the locality suggests the species is unlikely to occur. This species is conspicuous and was not identified during field surveys.

Family	Scientific Name	Common Name	BC Act Status	EPBC Act Status	Locality Count	Habitat Requirements	Likelihood of Occurrence
Campanulaceae	*Isotoma fluviatilis subsp. fluviatilis*		-	X	7	Currently known from only two adjacent sites on a single private property at Erskine Park in the Penrith LGA. Previous sightings are all from western Sydney, at Homebush and at Agnes Banks. Known to grow in damp places, on the Cumberland Plain, including freshwater wetland, grassland/alluvial woodland and an alluvial woodland/shale plains woodland (Cumberland Plain Woodland) ecotone.	Unlikely to occur. Habitat within the subject land is highly degraded and not suitable for the species. The species is currently listed as extinct under the EPBC Act and the subject land is not located within the two previously known populations. A low number of records within the locality suggests the species is unlikely to occur. This species is conspicuous and was not identified during field surveys.

Family	Scientific Name	Common Name	BC Act Status	EPBC Act Status	Locality Count	Habitat Requirements	Likelihood of Occurrence
Fabaceae (Faboideae)	*Dillwynia tenuifolia*		V	-	642	The core distribution is the Cumberland Plain from Windsor and Penrith east to Dean Park near Colebee. Other populations in western Sydney are recorded from Voyager Point and Kemps Creek in the Liverpool LGA, Luddenham in the Penrith LGA and South Maroota in the Baulkham Hills Shire. In western Sydney, may be locally abundant particularly within scrubby/dry heath areas within Castlereagh Ironbark Forest and Shale Gravel Transition Forest on tertiary alluvium or laterised clays. May also be common in transitional areas where these communities adjoin Castlereagh Scribbly Gum Woodland	Unlikely to occur. Although there have been a large number of records from the locality, the subject land is highly degraded due to previous disturbance and modification for farmland practices. The subject land also lacks associated vegetation communities. Surveys within the subject land did not detect this species, nor any other species within the same genus.

Family	Scientific Name	Common Name	BC Act Status	EPBC Act Status	Locality Count	Habitat Requirements	Likelihood of Occurrence
Fabaceae (Faboideae)	*Dillwynia tenuifolia*	Dillwynia tenuifolia, Kemps Creek	EP, V	-	92	The endangered population occurs in the area bounded by Western Road, Elizabeth Drive, Devonshire Road and Cross Street, Kemps Creek in the Liverpool Local Government Area.The population occurs on a small outlier of the Berkshire Park Soil Landscape. The site supports a transition from Castlereagh Ironbark Forest to Castlereagh Scribbly Gum Woodland. Portions of the site contain a form of Shale Gravel Transition Forest.	Unlikely to occur. Although there have been a large number of records from the locality, the subject land is highly degraded due to previous disturbance and modification for farmland practices. The subject land also lacks associated vegetation communities. Surveys within the subject land did not detect this species, nor any other species within the same genus.
Fabaceae (Faboideae)	*Pultenaea parviflora*		E	V	97	Endemic to the Cumberland Plain. Core distribution is from Windsor to Penrith and east to Dean Park. Found in scrubby/dry heath areas within Castlereagh Ironbark Forest and Shale Gravel Transition Forest on tertiary alluvium or laterised clays and in transitional areas where these communities adjoin	Unlikely to occur. Although there have been a large number of records from the locality, the subject land is highly degraded due to previous disturbance and modification for farmland practices. The subject land also lacks associated

Family	Scientific Name	Common Name	BC Act Status	EPBC Act Status	Locality Count	Habitat Requirements	Likelihood of Occurrence
						Castlereagh Scribbly Gum Woodland.	vegetation communities. Surveys within the subject land did not detect this species, nor any other species within the same genus.
Fabaceae (Mimosoideae)	*Acacia pubescens*	Downy Wattle	V	V	7	Occurs on alluviums, shales and at the intergrade between shales and sandstones. Occur in open woodland and forest, including Cooks River/Castlereagh Ironbark Forest, Shale/Gravel Transition Forest and Cumberland Plain Woodland. Concentrated around the Bankstown-Fairfield-Rookwood and Pitt Town areas.	Unlikely to occur. Habitat within the subject land is highly degraded and not suitable for the species. A low number of records within the locality suggests the species is unlikely to occur. This species is conspicuous and was not identified during field surveys.
Proteaceae	*Grevillea juniperina subsp. juniperina*	Juniper-leaved Grevillea	V	-	1293	Endemic to western Sydney. Recorded from Cumberland Plain Woodland, Castlereagh Ironbark Woodland, Castlereagh Scribbly Gum Woodland and Shale/Gravel Transition Forest.	Unlikely to occur. Although there have been a large number of records from the locality, the subject land is highly degraded due to previous

Family	Scientific Name	Common Name	BC Act Status	EPBC Act Status	Locality Count	Habitat Requirements	Likelihood of Occurrence
							disturbance and modification for farmland practices. The subject land lacks a native shrub layer. Surveys within the subject land did not detect this species.
Proteaceae	*Grevillea parviflora subsp. parviflora*	Small-flower Grevillea	V	V	15	Grows in light sandy or clay soils over thin shales, often with lateritic ironstone gravels and nodules. Is known to occur in Shale/Sandstone Transition Forest.	Unlikely to occur. Habitat within the subject land is highly degraded and not suitable for the species. A low number of records within the locality suggests the species is unlikely to occur. This species is conspicuous and was not identified during field surveys.
Proteaceae	*Macadamia integrifolia*	Macadamia Nut	-	V	1	Not known to occur naturally in NSW. Found in drier types of subtropical rainforest north from Currumbin Qld.	Unlikely to occur. Habitat within the subject land is highly degraded and not suitable for the species. Only one record of the species in the locality suggests it is unlikely to occur and this was

Family	Scientific Name	Common Name	BC Act Status	EPBC Act Status	Locality Count	Habitat Requirements	Likelihood of Occurrence
							supported by field surveys which did not detect the species.
Proteaceae	*Persoonia nutans*	Nodding Geebung	E	E	11	Northern populations are confined to aeolian and alluvial sediments and occur in a range of sclerophyll forest and woodland vegetation communities, with the majority of individuals occurring within Agnes Banks Woodland or Castlereagh Scribbly Gum Woodland and some in Cooks River / Castlereagh Ironbark Forests. Southern populations also occupy tertiary alluvium, but extend onto shale sandstone transition communities and into Cooks River / Castlereagh Ironbark Forest.	Unlikely to occur. Habitat within the subject land is highly degraded and not suitable for the species. A low number of records within the locality suggests the species is unlikely to occur. This species is conspicuous and was not identified during field surveys.

Family	Scientific Name	Common Name	BC Act Status	EPBC Act Status	Locality Count	Habitat Requirements	Likelihood of Occurrence
Thymelaeaceae	*Pimelea spicata*	Spiked Rice-flower	E	E	1	Found on well-structured clay soils in Cumberland Plain and Illawarra environments. In the inland Cumberland Plain sites, it is associated with Grey Box and Ironbark. In the coastal Illawarra it occurs commonly in Coast Banksia open woodland with a better developed shrub and grass understorey.	Unlikely to occur. Habitat within the subject land is highly degraded and not suitable for the species. Only one record of the species in the locality suggests it is unlikely to occur and this was supported by field surveys which did not detect the species.

Key: V = Vulnerable, E = Endangered, EP = Endangered, X = Extinct

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APPENDIX B :
Fauna Likelihood of Occurrence

Table 3 Likelihood of occurrence – Threatened fauna species

Class	Family	Scientific Name	Common Name	BC Act Status	EPBC Act Status	Locality Count	Habitat requirements	Likelihood of occurrence
Aves	Accipitridae	*Haliaeetus leucogaster*	White-bellied Sea-Eagle	V	-	10	The White-bellied Sea-Eagle is found in coastal habitats (especially those close to the sea-shore) and around terrestrial wetlands in tropical and temperate regions of mainland Australia and its offshore islands. The habitats occupied by the sea-eagle are characterised by the presence of large areas of open water.	Unlikely to occur. The subject land has been subject to a high level of disturbance and modification for farmland practices use and does not contain suitable habitat for this species. Furthermore, the subject land is not surrounded by large areas of open water.
Aves	Accipitridae	*Hieraaetus morphnoides*	Little Eagle	V	-	1	Occupies open eucalypt forest, woodland or open woodland. She-oak or acacia woodlands and riparian woodlands of interior NSW also used. Nests in tall living trees within a remnant patch, where pairs build a large stick nest in winter. Preys on birds, reptiles and	Unlikely to occur. The subject land has been subject to a high level of disturbance and modification for farmland practices use and does not contain suitable habitat for this species. Furthermore, a low number of records from the locality

Class	Family	Scientific Name	Common Name	BC Act Status	EPBC Act Status	Locality Count	Habitat requirements	Likelihood of occurrence
							mammals, occasionally adding large insects and carrion.	suggest the species is unlikely to occur.
Aves	Anatidae	*Stictonetta naevosa*	Freckled Duck	V	-	1	Prefer permanent freshwater swamps and creeks with heavy growth of Cumbungi, Lignum or Tea-tree. During drier times they move from ephemeral breeding swamps to more permanent waters such as lakes, reservoirs, farm dams and sewage ponds.	Unlikely to occur. The subject land has been subject to a high level of disturbance and modification for farmland practices use and does not contain suitable habitat for this species. Furthermore, a low number of records from the locality suggest the species is unlikely to occur.

Class	Family	Scientific Name	Common Name	BC Act Status	EPBC Act Status	Locality Count	Habitat requirements	Likelihood of occurrence
Aves	Artamidae	*Artamus cyanopterus cyanopterus*	Dusky Woodswallow	V	-	9	Occurs from Atherton Tableland in Queensland, down to Tasmania and west to the Eyre Peninsula in South Australia. In NSW it occurs from the coast to the western slopes of the Great Dividing Range and farther west. It breeds primarily on the western slopes of the Great Dividing Range in woodland and open dry forest. The species often occurs in eucalypt woodland and forest, though is also found in shrubland and heathland. It forages both above and below the canopy primarily for invertebrates, though will occasionally consume nectar, fruit and seed.	Potential to occur. The species may utilise the subject land for foraging as part of a broader foraging range.

Class	Family	Scientific Name	Common Name	BC Act Status	EPBC Act Status	Locality Count	Habitat requirements	Likelihood of occurrence
Aves	Estrildidae	*Stagonopleura guttata*	Diamond Firetail	V	-	1	Occurs in grassy eucalypt woodland, open forest and riparian areas.	Unlikely to occur. The subject land has been subject to a high level of disturbance and modification for farmland practices use and does not contain suitable habitat for this species. Furthermore, a low number of records from the locality suggest the species is unlikely to occur.
Aves	Neosittidae	*Daphoenositta chrysoptera*	Varied Sittella	V	-	2	Inhabits eucalypt forests and woodlands, especially those containing rough-barked species and mature smooth-barked gums with dead branches, mallee and Acacia woodland. Inhabits most of mainland Australia except the treeless deserts and open grasslands.	Unlikely to occur. The subject land has been subject to a high level of disturbance and modification for farmland practices use and does not contain suitable habitat for this species. Furthermore, a low number of records from the locality suggest the species is unlikely to occur.

Class	Family	Scientific Name	Common Name	BC Act Status	EPBC Act Status	Locality Count	Habitat requirements	Likelihood of occurrence
Aves	Psittacidae	*Glossopsitta pusilla*	Little Lorikeet	V	-	1	Forages mostly in the canopy of open Eucalyptus forest and woodland, on Eucalypt species, and species of Angophora, Melaleuca, and other trees. Riparian habitats are ideal for the species due to higher productivity of flowering feed species. Isolated trees in paddocks and roadside remnants, along with urban trees can help sustain populations of the species. The species roosts in tree tops, often some distance from food trees, though prefers to nest in close proximity to feed areas. The species nests in hollows with a small entrance (3 cm) and at a height of between two and fifteen metres. Often nest trees are in riparian areas, and	Potential to occur. Although no nesting habitat was identified within the subject land in the form of hollow-bearing trees, the species may utilise the subject land for foraging as part of a broader foraging range. A low number of records from the locality suggest the species is unlikely to be reliant on the small area of potential foraging habitat that is available.

Class	Family	Scientific Name	Common Name	BC Act Status	EPBC Act Status	Locality Count	Habitat requirements	Likelihood of occurrence
							include trees of species like Allocasuarina spp.	
Aves	Psittacidae	*Lathamus discolor*	Swift Parrot	E	CE	1	Migrates to the Australian south-east mainland between March and October. On the mainland they occur in areas where eucalypts are flowering profusely or where there are abundant lerp (from sap-sucking bugs) infestations.	Unlikely to occur. The subject land has been subject to a high level of disturbance and modification for farmland practices use and does not contain suitable habitat for this species. Furthermore, a low number of records from the locality suggest the species is unlikely to occur.

Class	Family	Scientific Name	Common Name	BC Act Status	EPBC Act Status	Locality Count	Habitat requirements	Likelihood of occurrence
Aves	Rostratulidae	*Rostratula australis*	Australian Painted Snipe	E	E	1	Inhabits fringes of shallow inland wetlands, swamps, dams and nearby marshy areas where there is a cover of grasses, lignum, low scrub or open timber.	Unlikely to occur. The subject land has been subject to a high level of disturbance and modification for farmland practices use and does not contain suitable habitat for this species. Furthermore, a low number of records from the locality suggest the species is unlikely to occur.

Class	Family	Scientific Name	Common Name	BC Act Status	EPBC Act Status	Locality Count	Habitat requirements	Likelihood of occurrence
Aves	Strigidae	*Ninox strenua*	Powerful Owl	V	-	1	The Powerful Owl requires large tracts of forest or woodland habitat but can occur in fragmented landscapes as well. It breeds and hunts in open or closed sclerophyll forests or woodlands and occasionally hunts in open habitats. Roosting during the day time occurs in dense vegetation of Eucalypts and species such as Syncarpia glomulifera (Turpentine), Angophora floribunda (Rough-barked Apple), and other species. Prey species are medium-sized arboreal mammals such as the Greater Glider, Common Ringtail Possum, and Sugar Glider. As most prey species require hollows and a shrub layer	Unlikely to occur. The subject land has been subject to a high level of disturbance and modification for farmland practices use and does not contain suitable habitat for this species. Furthermore, a low number of records from the locality suggest the species is unlikely to occur.

Class	Family	Scientific Name	Common Name	BC Act Status	EPBC Act Status	Locality Count	Habitat requirements	Likelihood of occurrence
							these are important habitat components also of the Powerful Owl. Nests are in large tree hollows (at least 0.5 m deep), in large eucalypts (diameter at breast height of 80-240 cm) that are at least 150 years old.	
Gastropoda	Camaenidae	*Meridolum corneovirens*	Cumberland Plain Land Snail	E	-	113	Primarily inhabits Cumberland Plain Woodland. Lives under litter of bark, leaves and logs, or shelters in loose soil around grass clumps. Lives in a very small area on the Cumberland Plain west of Sydney, from Richmond and Windsor south to Picton and from Liverpool west to the	Unlikely to occur. The subject land has been subject to a high level of disturbance and suitable habitat such as dense leaf litter, fallen bark and fallen branches are absent from the subject land. Despite several records from the locality, ongoing use of the

Class	Family	Scientific Name	Common Name	BC Act Status	EPBC Act Status	Locality Count	Habitat requirements	Likelihood of occurrence
							Hawkesbury and Nepean Rivers at the base of the Blue Mountains.	subject land for farmland practices has resulted in the maintenance of the land and subsequently the removal of habitat features required by the species. As such the species is considered unlikely to occur.
Mammalia	Emballonuridae	*Saccolaimus flaviventris*	Yellow-bellied Sheathtail-bat	V	-	1	Roosts singly or in groups of up to six, in tree hollows and buildings; in treeless areas they are known to utilise mammal burrows. When foraging for insects, flies high and fast over the forest canopy, but lower in more open country. Forages in most habitats across its very wide range, with and without trees; appears to defend an aerial territory.	Potential to occur. Although no roosting habitat was identified within the subject land in the form of hollow-bearing trees or dense foliage, the species may utilise the subject land for foraging as part of a broader foraging range. A low number of records from the locality suggest the species is unlikely to be reliant on the small area of potential

Class	Family	Scientific Name	Common Name	BC Act Status	EPBC Act Status	Locality Count	Habitat requirements	Likelihood of occurrence
								foraging habitat that is available.
Mammalia	Miniopteridae	*Miniopterus australis*	Little Bent-winged Bat	V	-	2	Inhabits moist eucalypt forest, rainforest, wet and dry sclerophyll forest, melaleuca swamps, dense coastal forests and banksia scrub, preferring well-timbered areas. Species roosts in caves, tunnels, stormwater drains, culverts, bridges and sometimes in buildings.	Unlikely to occur. The subject land has been subject to a high level of disturbance and modification for farmland practices use and does not contain suitable habitat for this species. Furthermore, a low number of records from the locality suggest the species is unlikely to occur.
Mammalia	Miniopteridae	*Miniopterus orianae oceanensis*	Large Bent-winged Bat	V	-	5	Roosts mainly in caves but also in tunnels, mines or buildings. Non-breeding populations disperse within a 300 km range of maternity caves. Hunting for moths and	Unlikely to occur. The subject land has been subject to a high level of disturbance and modification for farmland practices use and does not contain

Class	Family	Scientific Name	Common Name	BC Act Status	EPBC Act Status	Locality Count	Habitat requirements	Likelihood of occurrence
							other insects takes place in forested areas above the canopy.	suitable habitat for this species. Furthermore, a low number of records from the locality suggest the species is unlikely to occur.
Mammalia	Molossidae	*Micronomus norfolkensis*	Eastern Coastal Free-tailed Bat	V	-	17	Occur in dry sclerophyll forest and woodland east of the Great Dividing Range. Roosts in tree hollows but will also roost under bark or in man-made structures.	Potential to occur. Although no roosting habitat was identified within the subject land in the form of hollow-bearing trees, the species may utilise the subject land for foraging as part of a broader foraging range.
Mammalia	Pteropodidae	*Pteropus poliocephalus*	Grey-headed Flying-fox	V	V	37	Occur in subtropical and temperate rainforests, tall sclerophyll forests and woodlands, heaths and swamps as well as urban gardens and cultivated fruit crops. Commonly found in gullies, close to water, in vegetation with a dense canopy.	Potential to occur. Although no suitable habitat in the form of dense canopy vegetation was identified within the subject land, the species may utilise the subject land for

Class	Family	Scientific Name	Common Name	BC Act Status	EPBC Act Status	Locality Count	Habitat requirements	Likelihood of occurrence
								foraging as part of a broader foraging range.
Mammalia	Vespertilionidae	*Falsistrellus tasmaniensis*	Eastern False Pipistrelle	V	-	2	Favours hollow trunks of Eucalypt trees over 20m high in wet sclerophyll forest and coastal mallee.	Unlikely to occur. The subject land has been subject to a high level of disturbance and modification for farmland practices use and does not contain suitable habitat for this species. Furthermore, a low number of records from the locality suggest the species is unlikely to occur.
Mammalia	Vespertilionidae	*Myotis macropus*	Southern Myotis	V	-	25	Roosts close to water in caves, hollow-bearing trees, storm water channels, buildings, under bridges and in dense foliage. Forage over streams and pools catching insects and small fish. Known from a	Potential to occur. Although no roosting habitat was identified within the subject land in the form of hollow-bearing trees or dense foliage, the species may utilise the subject land

Class	Family	Scientific Name	Common Name	BC Act Status	EPBC Act Status	Locality Count	Habitat requirements	Likelihood of occurrence
							range of habitats close to water from lakes, small creeks to large lakes and mangrove lined estuaries	for foraging as part of a broader foraging range.
Mammalia	Vespertilionidae	*Scoteanax rueppellii*	Greater Broad-nosed Bat	V	-	7	Found mainly in the gullies and river systems that drain the Great Dividing Range. Usually roosts in tree hollows and buildings. Forages after sunset, flying slowly and directly along creek and river corridors at an altitude of 3 - 6 m. Open woodland habitat and dry open forest suits the direct flight of this species as it searches for beetles and other large, slow-flying insects. Species is not known to occur in areas of high urban density.	Potential to occur. Although no roosting habitat was identified within the subject land in the form of hollow-bearing trees, the species may utilise the subject land for foraging as part of a broader foraging range. A low number of records from the locality suggest the species is unlikely to be reliant on the small area of potential foraging habitat that is available.

Key: V = Vulnerable, E = Endangered, CE = Critically Endangered

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APPENDIX C :
Test of Significance

C.1. Introduction

This appendix presents formal Tests of Significance required under Section 7.3 of the BC Act, that have been prepared in accordance with the ToS Guidelines (NSW Government 2018). The Test of Significance provides a means by which to gauge the significance of predicted impacts to threatened species and communities listed under the BC Act.

Both direct and indirect impacts are considered within these assessments. Direct impacts have been quantified within the assessments and are represented by the subject land boundary. Whilst it is acknowledged that indirect impacts can potentially be significant for a variety of species, such impacts cannot be mapped or accurately calculated in advance.

Each component of the test of significance is provided in italicised text below, and a response supplied beneath in plain text.

C.2. Threatened Entities

Threatened fauna species present within the subject land, or with the potential to be impacted directly or indirectly by the project include:

- Threatened Ecological Communities:
  - River-flat Eucalypt Forest.
- Threatened Fauna species:
  - Dusky Woodswallow (*Artamus cyanopterus cyanopterus*);
  - Little Lorikeet (*Glossopsitta pusilla*);
  - Yellow-bellied Sheathtail-bat (*Saccolaimus flaviventris*);
  - Eastern Coastal Free-tailed Bat (*Micronomus norfolkensis*);
  - Grey-headed Flying-fox (*Pteropus poliocephalus*);
  - Southern Myotis (*Myotis Macropus*); and
  - Greater Broad-nosed Bat (*Scoteanax rueppellii*).

Tests of Significance for these entities is provided in separate subsections below.

C.2.1. River-flat Eucalypt Forest

(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

Not applicable.

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

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

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

The total area of River-flat Eucalypt Forest within the subject land is approximately 0.6 ha and the Project will result in the removal of all of the River-flat Eucalypt Forest vegetation within the Project footprint. The removal of the community within the Project footprint is not considered to modify the remaining extent of this community such that its local occurrence is likely to be placed at risk of extinction. Larger patches of the community exist within riparian corridors to the west along South Creek and Crosgroves Creek and to the east along Ropes Creek. These larger patches account for a significant portion of the local occurrence of the community which will not be impacted by the proposed development.

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

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

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

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

The proposed development will result in the removal of 0.6 ha of River-flat Eucalypt Forest within the subject land. Previous land uses have resulted in the modification and fragmentation of the community within the subject land and wider locality. Within the subject land, the community has been reduced to remnant canopy trees above a highly degraded and predominantly exotic understorey.

The removal of River-flat Eucalypt Forest within the subject land will not significantly increase fragmentation of this community beyond current conditions. The community occurs as small, isolated patches with little to no connectivity to adjacent habitat. Larger patches of the community are located within riparian corridors to the east and west which will not be impacted by the proposed development. Furthermore, the proposed development includes the revegetation of the riparian corridor within the subject land with species characteristic of River-flat Eucalypt Forest which will increase the area and condition of the community within the subject land in the long-term. As such the removal of 0.06 ha of the community is not considered important for the long-term survival of the community 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)

The BC Act currently lists the following AOBVs:

- Gould's Petrel habitat;
- Little Penguin population in Sydney's North Harbour habitat;
- Mitchell's Rainforest Snail in Stotts Island Nature Reserve; and
- Wollemi Pine habitat.

The project is not located within or in proximity to the aforementioned AOBVs and is therefore not likely to have an adverse effect on any AOBVs.

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

The project may result in the following key threatening process:

- 'Clearing of native vegetation', as this reduces the area of habitat available for threatened species and communities;
- 'Invasion and establishment of exotic vines and scramblers' as they can dominate and suppress native flora species; and
- 'Invasion of native plant communities by exotic perennial grasses' as they can dominate and suppress native flora species.

Whilst the project may result in the aforementioned key threatening processes, the increase in impacts of these processes is considered to be minor. Many of these key threatened processes are already occurring within the subject land. No significant impacts resulting from key threatened processes are considered to occur as a result of the project.

Conclusion

A small area (0.06 ha) of River-flat Eucalypt Forest that exists as remnant trees over a highly modified understorey will be impacted by the Project. Given the modified and fragmented nature of the vegetation within the subject land, the small scale of direct impacts, the Project is not considered likely to result in a significant impact to River-flat Eucalypt Forest.

C.2.2. Threatened Birds

The following bird species have been assessed collectively in the following Test if Significance:

- Dusky Woodswallow (*Artamus cyanopterus cyanopterus*); and
- Little Lorikeet (*Glossopsitta pusilla*).

a. in the case of a threatened species, whether the proposed development or activity is likely to have an adverse effect on the life cycle of the species such that a viable local population of the species is likely to be placed at risk of extinction

The Dusky Woodswallow and Little Lorikeet will primarily be impacted by the Project through direct removal of foraging habitat within the Project footprint. These species are highly mobile and would only likely utilise the subject land on occasion as part of a much broader foraging range. Due to the modified and fragmented nature of the habitat within the subject land, these species are not considered likely to breed within the subject land. It is more likely that these species roost and nest in vegetation northwest of the subject land or at Western Sydney Parklands to the east of the subject land. The habitat to be impacted within the Project footprint is not considered important for the long-term survival of the species within the locality. Accordingly, the Project is not considered to have an adverse effect on the life cycle of these species such that a viable local population 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 proposed development or activity:

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

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

Not applicable.

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

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

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

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

Approximately 0.14 ha, including 0.06 ha of native vegetation and 0.08 ha of exotic woody vegetation will be removed within the subject land which comprising potential foraging habitat for the assessed threatened bird species. The Project is not considered to significantly increase fragmentation of foraging habitat within the locality. The majority of the subject land has previously been cleared of treed vegetation for farmland practices.

Previous land uses have resulted in the modification of the habitat of the assessed threatened bird species within the subject land. The foraging habitat comprises remnant trees above a predominantly exotic understorey. Given the condition of the habitat and its fragmented nature, the small area of habitat directly impacted by the Project is not considered important for the long-term survival of these bird species in the locality.

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

The BC Act currently lists the following AOBVs:

- Gould's Petrel habitat;

- Little Penguin population in Sydney's North Harbour habitat;
- Mitchell's Rainforest Snail in Stotts Island Nature Reserve; and
- Wollemi Pine habitat.

No area of outstanding biodiversity value for the assessed threatened fauna species has currently been identified under the BC Act. No area of outstanding biodiversity value is located in the locality of the subject land. Therefore, the project is not likely to have an adverse effect on an area of outstanding biodiversity value (directly or indirectly).

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

The project will result in the key threatening process of clearing of native vegetation. The project will remove a small area (0.06 ha) of isolated, modified and mostly degraded native vegetation. The project is therefore not considered likely to substantially increase the impact of this key threatening process.

Conclusion

A relatively small area (0.06 ha) of potential foraging habitat for threatened birds will be removed by the project. Given the modified nature of the vegetation within the subject land and the small scale of direct impacts, the project will not result in a significant impact to the Dusky Woodswallow or Little Lorikeet.

C.2.3. Microchiropteran Bats

The following bat species have been assessed collectively in the following Test if Significance:

- Yellow-bellied Sheathtail-bat (Saccolaimus flaviventris);
- Eastern Coastal Free-tailed Bat (Micronomus norfolkensis);
- Grey-headed Flying-fox (Pteropus poliocephalus);
- Southern Myotis (Myotis Macropus); and
- Greater Broad-nosed Bat (Scoteanax rueppellii).

(a) in the case of a threatened species, whether the proposed development or activity is likely to have an adverse effect on the life cycle of the species such that a viable local population of the species is likely to be placed at risk of extinction

The majority of the subject land contains exotic grassland vegetation, with only a small area of woody exotic vegetation and remnant native vegetation. The Yellow-bellied Sheathtail-bat, Eastern Coastal Free-tailed Bat, Grey-headed Flying-fox, Southern Myotis and Greater Broad-nosed Bat may forage for insects above the 0.14 ha area of woody exotic and native vegetation to be impacted within the subject land.

The subject land does not contain any hollow-bearing trees or other suitable structures that could be utilised as roosting habitat by any of the threatened microchiropteran bats. The removal of a small area of potential

foraging habitat is not considered likely to have an adverse impact on the life cycle of the assessed species such that a viable local population 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 proposed development or activity:

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

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

Not applicable.

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

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

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

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

Approximately 0.14 ha, including 0.06 ha of native vegetation and 0.08 ha of exotic woody vegetation will be removed within the subject land which comprising potential foraging habitat for the assessed bat species. The project is not considered to significantly increase fragmentation of foraging habitat further than current conditions as the subject land is located within an extensively cleared and fragmented farm landscape.

Vegetation to be removed occurs in small isolated patches and the removal of potential habitat is not considered to increase fragmentation beyond current conditions. Furthermore, the assessed bat species are aerial and highly mobile and will readily move between areas of remaining surrounding habitat.

The habitat within the subject land is not considered to be highly important to the long-term survival of the assessed species in the locality. Historical clearing has resulted in the modification of the composition of the potential foraging habitat within the subject land. The potential habitat to be impacted mainly comprises isolated patches of native trees over an understorey of predominantly exotic vegetation as well as exotic woody vegetation.

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

The BC Act currently lists the following AOBVs:

- Gould's Petrel habitat;
- Little Penguin population in Sydney's North Harbour habitat;

- Mitchell's Rainforest Snail in Stotts Island Nature Reserve; and
- Wollemi Pine habitat.

The project is not located within or in proximity to the aforementioned AOBVs and is therefore not likely to have an adverse effect on any AOBVs.

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

The project will result in the key threatening process of clearing of native vegetation. The project will only remove a small area (0.14 ha) of isolated, modified and mostly degraded vegetation which may provide potential foraging habitat for these species. The project is therefore not considered likely to substantially increase the impact of this key threatening process.

Conclusion

A relatively small area (0.14 ha) of potential foraging habitat for threatened bats will be removed by the project. Given the modified nature of most of the vegetation within the subject land and the small scale of direct impacts, the project will not result in a significant impact to the Yellow-bellied Sheathtail-bat, Eastern Coastal Free-tailed Bat, Grey-headed Flying-fox, Southern Myotis and Greater Broad-nosed Bat.

FIGURES

Legend

Subject Land

Watercourse

2nd Order Stream

Plant Community Type

PCT 835: River-flat Eucalypt Forest

Exotic Vegetation/Cleared Land

Image Source:
Image © Nearmap (2022)
Dated: 29/10/2022

Coordinate System: MGA Zone 56 (GDA 94)

cumberland ecology

0 50 m

I:\...\21130\Figures\RP2\20221115\Figure 1. Plant community types within the subject land

Figure 1. Plant community types within the subject land