BIODIVERSITY IMPACT ASSESSMENT

PROPOSED HIGHWAY SERVICE CENTRE FACILITY

37-41, PACIFIC HIGHWAY,

COOLONGOLOOK-NORTHBOUND

MIDCOAST LOCAL GOVERNMENT AREA

Prepared for

GALEN PROPERTY PTY LTD

AUGUST, 2018

PREPARED BY

DANNY O'BRIEN

ENVIRONMENTAL ASSESSMENTS PTY LTD

(Ecological, Heritage & Bushfire Consultants)

I acknowledge the Traditional Custodians of the lands on which I work and pay my respects to Elders past, present and future.

This Biodiversity Impact Assessment & Tests of Significance provides a true and fair review of the proposal in relation to its potential effects on the environment in particular the impacts on the removal of vegetation and habitat located within 37-41, Bengal Road (Pacific Highway) at Coolongolook and also considering both direct and indirect impacts to biodiversity including threatened species, endangered populations and ecological communities as described under the *Biodiversity Conservation Act, 2016* within the vicinity of the subject site. It addresses to the fullest extent possible all matters affecting or likely to affect the biotic environment as a result of the proposal.

ENVIRONMENTAL ASSESSMENTS PTY LTD

A.B.N. 47 128 424 288

P.O. BOX 314,

GOSFORD, NSW 2250

Tel: 0405 585 557

E: environmental@ozemail.com.au

Document Control

Version	Date	Issue	Author	Review / Approved
A	20/8/18	Issued to Turnbull Planning P/L	DO	

CONTENTS

EXECUTIVE SUMMARY

Galen Property Pty Limited commissioned Environmental Assessments Pty Limited to prepare a Biodiversity Impact Assessment & 'Tests of Significance' for the proposed highway service centre facility at No's 37-41, Bengal Road (Pacific Highway) Coolongolook (northbound) within the Midcoast Local Government Area. The subject site is approximately 6,220m2 in area. The subject site is located on the western side of the Pacific Highway at Coolongolook. This biodiversity impact assessment report is prepared and reflected in the update in, or changes to various environmental legislation including the repealing of the *Threatened Species Conservation Act, 1995* and the replacement with the *Biodiversity Conservation Act, 2016* and the repealing *inter alia* the former *Noxious Weeds Act, 1993* with the *Biosecurity Act, 2015*.

This biodiversity impact assessment report includes consideration of Section 1.7 of the *Environmental Planning & Assessment Act, 1979* and Tests of Significance under Section 7.3 of the *Biodiversity Conservation Act, 2016* has been prepared for the proposed service station facility.

The subject site is mostly cleared and disturbed although some small scattered trees and shrubs are located throughout the subject site. Considerable past disturbances including weed invasion effects, drainage works and recontouring works have impacted on the subject site's ecological values.

No threatened species of flora, ROTAPs (Rare Or Threatened Australian Plants) or endangered ecological communities listed under the *Biodiversity Conservation Act, 2016* or under the *EPBC Act, 1999* were recorded within the subject site. However, locally significant species of flora recorded included the Kurrajong, Cabbage Tree Palm and the Elkhorn.

Broadly suitable habitat of several threatened species are present within the broader context of the subject site including (but not limited to) the Masked Owl (Vulnerable, *Biodiversity Conservation Act, 2016)* and the Southern Myotis (Vulnerable, *Biodiversity Conservation Act, 2016)*. Other species likely to utilise the site include (but not limited to) the Little Lorikeet (Vulnerable *Biodiversity Conservation Act, 2016*) and the Grey-headed Flying Fox (Vulnerable, *Biodiversity Conservation Act, 2016* & Vulnerable under the *EPBC Act, 1999*).

Other threatened species of fauna likely to forage within or in adjacent areas to the subject site include (but not limited to) the Eastern Bentwing Bat, Little Bentwing Bat, Powerful Owl, etc based on habitat parameters and broadly suitable habitat being present within the site area or within the environs of the subject site.

One locally significant fauna species was recorded within the subject site being a deceased Northern Brown Bandicoot; however other locally significant species expected to occur include the Diamond Python, Grey Goshawk (regionally significant), Peregrine Falcon, Cicadabird and the Musk Lorikeet.

Priority weed species listed under the *Biosecurity Act, 2015* identified during investigations include the Fireweed, Lantana and the Blackberry. Other weeds of regional concern present include Camphor Laurel and the Moth Vine.

Due to the limited size, degradation of the site, it is concluded that the proposal would not have a significant effect on threatened species, populations or endangered ecological communities as described under the *Biodiversity Conservation Act, 2016* and the *Environment Protection & Biodiversity Conservation Act, 1999* respectively and that the proposal would not result in the permanent loss of biodiversity characteristics of the vicinity of the subject site or their habitats, providing the recommendations of this ecological assessment are fully implemented.

The recommendations of this ecological assessment report are as follows:

Recommendation No.1. That vegetation to be removed is to be clearly defined and controlled on the site to eliminate any unnecessary or accidental removal or damage of vegetation outside of the clearing zone within the subject site. “No-go Areas” should be implemented prior to any clearing works,

Recommendation No.2. That cleared vegetation be taken to the appropriate green-waste facility in accordance with any guidelines prescribed by the Midcoast Council including the disposal of environmental weeds,

Recommendation No.3. That erosion and sediment control devices be installed to ensure that all sediments and erosional impacts and weed propagules are contained within the subject site so as to not to impact on nearby bushland areas, and waterways including local creek systems, especially drainage lines that lead to nearby environmentally sensitive receivers such as the nearby Coolongolook River to the east of the subject site.

1.0 INTRODUCTION & BACKGROUND

Galen Property Partners Pty Limited commissioned Environmental Assessments Pty Limited to prepare a Biodiversity Impact Assessment & Tests of Significance for the proposed Highway Service Centre (service station) facility at numbers 37-41, Bengal Road (Pacific Highway) at Coolongolook-northbound. The cadastral details of the subject site are Lots 7-9, Section 10 DP:758278, Parish of Curreeki, County of Glouchester within the Midcoast Local Government Area. The subject site is approximately 6,220m2 in area. The site is located within the north-western end of the township of Coolongolook; the subject site is zoned RU5 under the former Great Lakes Local Environmental Plan (2014) and that the proposed Highway Service Station facility is consistent with the use of this site as zoned for the purposes for the development proposal.

In August, 2017, the NSW *Threatened Species Conservation Act, 1995* was repealed and replaced with the NSW *Biodiversity Conservation Act, 2016* and the *Biodiversity Conservation Regulation 2017.* The *Biodiversity Conservation* (Savings and Transitions) *Regulation 2017* has allowed for Development Applications and planning applications to be determined under the former NSW *Threatened Species Conservation Act* as opposed to the new *Biodiversity Conservation Act, 2016* in the interim for certain designated Local Government Authorities. Several Region Local Government Areas such as the Central Coast LGA and the Lake Macquarie LGA and certain western Sydney Councils were granted as interim designated areas under Clause 27 (3) of the Savings and Transitional Regulation. As the subject site at Coolongolook is located within the Midcoast Local Government Area (an LGA excluded from the Savings and Transitions Regulation), this biodiversity impact assessment has been prepared under the new *Biodiversity Conservation Act, 2016*.

1.1 SUBJECT SITE

The subject site forms part of three separate but consecutive lots that incorporates Lots 7,8 and 9 and is located on the western side of the Pacific Highway at Coolongolook. The subject site is primarily cleared, however Lots 8 and 9 still retain scattered remnant trees as well as areas of dense exotic vegetation. Lot 7 is mostly cleared. There has also been previous recontouring works on the site affecting natural drainage patterns on the site.

The subject site can be found on the Coolongolook 1: 25000 topographical map (Series 9333-1S, 3rd Edition). The subject site is bounded by a ‘paper road’ (Nelson Street) to the north, an existing residential dwelling in Lot 6 to the south, the Pacific Highway to the east and a laneway to the west.

The subject land is rectangular in configuration in a north-south axis on generally flat terrain with a slight slope and drains to the west via a drainage line located along the western boundary of the site. This unnamed drainage line extends northwards and then traverses under the Pacific Highway towards the east and drains directly into the nearby Coolongolook River to the east ultimately discharging into the Tasman Sea.

1.2 THE PROPOSAL

The proposed Highway Service Centre facility would be located on the northbound section of the Pacific Highway at Coolongolook and will be operate 24 hours per day, seven days per week. The proposed Highway Service Centre facility would comprise of a service station to cater for all vehicles including light vehicles, trucks and B-double vehicles. Parking bays for light vehicles (10 spaces) will be allocated on the southern side of the development; parallel parking spaces for B-doubles will be facilitated on the northern side of the site; an area for caravan parking will also be facilitated on-site **(refer to the Site Plan and the Development Application for details**). The facility will also incorporate a cafe/restaurant, take-away and drink premises and amenities. The proposed Highway Service Centre facility would be constructed in a single-stage only. The existing dilapidated weatherboard dwelling and sheds and other remaining structures located within existing Lot 9 will be removed; all trees and vegetation present within the subject site will also be removed from the entire subject site.

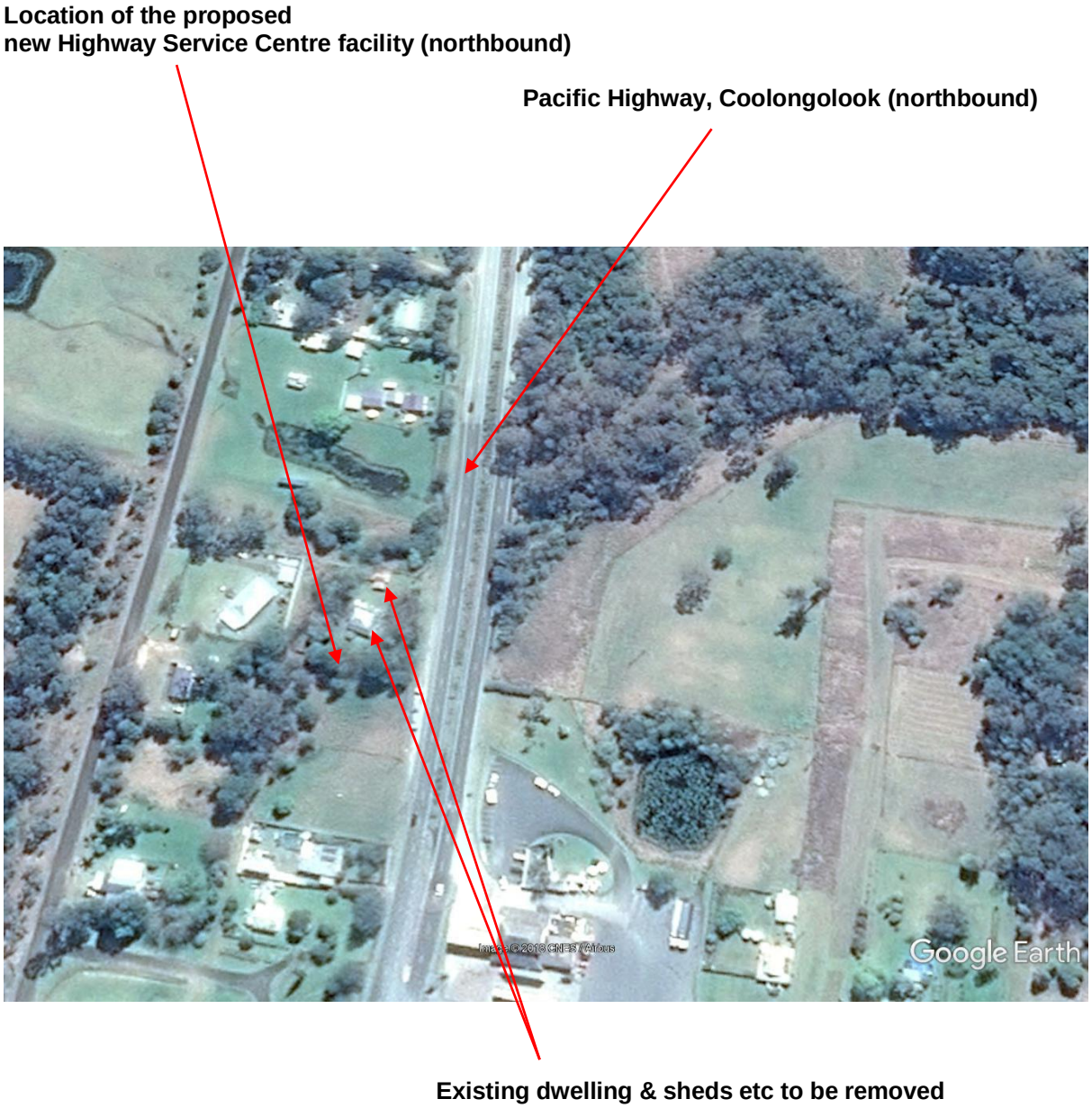

Figure 1: **View of the Subject Site and Key Geographic Features.**

1.3 SCOPE OF WORKS

This assessment primarily focuses on the potential impacts that may result from the construction and operation of the proposed Highway Service Centre facility (northbound) at numbers 37-41, Pacific Highway at Coolongolook.

The scope of this assessment includes the following tasks:

- Field investigations, inclusive of:
  - Inspections of the subject site and immediate environs to carry out field assessments.
  - Identification of areas of sensitivity and species which require consideration of the proposal.
  - Considerations of vegetation and wildlife corridor values of the subject site and adjoining areas of vegetation.
  - Consideration of removal of vegetation for the proposed facility as associated ecological and environmental impacts.

- 'Significance of Impacts Assessments' in accordance with the NSW *Environmental Planning & Assessment Act 1979* (EP&A Act), *Biodiversity Conservation Act, 2016* and the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) as required.
- Recommendations for avoidance of impacts, and mitigation measures to minimise the potential for impacts where avoidance is not possible.
- Issue a Biodiversity Impact Assessment and Tests of Significance report.

2.0 RELEVANT LEGISLATION

Galan Property Partners Pty Limited as the proponent and the consent authority being the Midcoast Council are required to consider all potential impacts on the site's biodiversity values pursuant to the *EP&A Act* and the following key environmental legislation.

- Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act)
- NSW *Biodiversity Conservation Act 2016* (BCA Act)
- NSW *Fisheries Management Act 1999* (FM Act)
- *Biosecurity Act, 2015*.

2.1 *ENVIRONMENT PROTECTION AND BIODIVERSITY CONSERVATION 1999*

The EPBC Act governs the Commonwealth environmental assessment process and requires that the following Matters of National Environmental Significance (NES) where relevant, be considered:

- World Heritage
- National Heritage Places
- Wetlands of International Significance (Ramsar Sites)
- Commonwealth Marine Areas
- Threatened Ecological Communities
- Threatened Species

- Migratory Species.

Approval under the EPBC Act is required when the Australian Department of Environment & Energy determines that there would be, or it is likely that there would be, a significant impact on any matters of NES.

2.2 *BIODIVERSITY CONSERVATION ACT, 2016*

The *Biodiversity Conservation Act, 2016* (BC Act) affectively replaced the former *Threatened Species Conservation Act, 1995* and provides a new framework for listing and declaration of threatened species, populations, endangered ecological communities, critical habitats and key threatening processes in NSW. The BC Act is administered by the NSW Office of Environment and Heritage (OEH).

Section 1.7 of the *Environmental Planning & Assessment Act, 1979* (EP&A Act) and Tests of Significance under Part 7, Section 7.3 of the *Biodiversity Conservation Act, 2016* has been prepared for the proposed Highway Service Centre-northbound facility taking into account whether the proposal is likely to significantly affect threatened species or ecological communities, or their habitats; threatened species of flora and fauna and populations are identified in Schedule 1 whereas threatened ecological communities are identified in Schedule 2 of the *Biodiversity Conservation Act, 2016*. Key threatening processes are listed in Schedule 4 under the BC Act, 2016.

A number of threatened species are present within the Central Coast Local Government Area including a number of threatened species that may occur on an ad hoc basis within, or immediate environs of the subject site. Therefore relevant comments/discussion is provided in Table 1 and Table 2 and Appendix 1 (Tests of Significance) respectively. Several key threatening processes are also relevant which are also addressed in the relevant sections of this biodiversity assessment report.

2.3 *FISHERIES MANAGEMENT ACT 1994*

The *Fisheries Management Act, 1994* (FM Act) provides for the conservation, protection and management of fisheries, aquatic systems and habitats in NSW. The Department of Primary Industries - Fisheries (DPI) manages the majority of the FM Act, although OEH has some responsibilities relating to endangered species and habitats.

The FM Act applies in relation to all waters that are within the limits of the State, and regulates certain activities that have the potential to impact on aquatic habitats. These activities include: dredging or reclamation works; works that would block the passage of fish in a bay, inlet, river or creek; the construction of structures within aquatic habitats (e.g. bridges, roads, causeways, pipelines); and activities that would cause any damage to or destruction of mangroves, seagrasses or seaweeds growing on public water land or the foreshore of public water land.

The proponent and approval authority is required to notify DPI prior to undertaking any of the above activities, with the exception of harm to 'marine vegetation' (mangroves, seagrasses etc) for which a permit would be required. The proposal would not involve any activities that require approval under the FM Act.

2.4 *BIOSECURITY ACT 2015*

The *Biosecurity Act 2015* has replaced *inter alia* the former *Noxious Weeds Act 1993* (NW Act) which part of the *Biosecurity Act 2015* establishes a system for the identification and control of priority (noxious) weeds in NSW. The *Biosecurity Act, 2015* is implemented and enforced by the Local Control Authority (LCA) and is administered by the Department of Primary Industries (DPI). The *Biosecurity Act* streamlines and modernises how weeds are managed in NSW (Hunter Regional Strategic Weed Management Plan 2017-2022). The *Biosecurity Act 2015* divides weeds into several categories which determine the level of control required. Responsibility for the control of noxious weeds lies with the owner and/or occupier of private land and Crown land, local councils and other public authorities on land they occupy. This obligation can be enforced by the issue of weed control notices by the Minister and Local Control Authorities. The subject site at Coolongolook and the wider Midcoast Local Government Area are located within the Hunter Region Local Land Services Region jurisdiction.

The *Biosecurity Act*, 2015 applies equally to all lands in NSW including public and privately owned land where under General Biosecurity Duty (GBD) means that '*any person dealing with plant matter [sic] must take measures to prevent, minimise or eliminate the biosecurity risk as far as is reasonably practicable'* (Hunter Regional Strategic Weed Management Plan 2017-2022).

Three (3) Priority weed species as defined in Appendix A1.1 (State level determined priority weeds) for the Hunter Local Land Services Region had been recorded within the subject site during the site investigation, however four (4) weed species were recorded as identified and defined in Appendix A2.1 (Additional species of concern) of the Hunter Regional Strategic Weed Management Plan 2017-2022 (see section 4.3 of this Biodiversity Impact Assessment report).

2.5 STATE ENVIRONMENTAL PLANNING POLICIES (SEPPs)

State Environmental Planning Policies (SEPPs) that are relevant to the subject site are summarised as follows:

SEPP-14 (Coastal Wetlands)

SEPP 14 aims to ensure the protection and preservation of wetlands which support an abundance of flora and fauna. The SEPP-14 policy restricts development in wetland areas. Land clearing, levee construction, drainage work or filling may only be carried out within these wetlands with the consent of Council and the agreement of the Director General of the NSW Department Planning & Environment.

There are numerous SEPP-14 wetlands present within the Midcoast (including the former Great Lakes) LGA. However, the subject site is not located within or adjacent to any SEPP-14 wetlands and that the proposal would not impact onto any SEPP-14 wetlands or any other wetlands of significance. The nearest SEPP-14 wetlands to the subject site are located to the north-east and east of Coolongolook and include wetlands #596, #597 and #598.

SEPP 26 (Littoral Rainforests)

SEPP 26 (Littoral Rainforests) is not applicable to the proposal as there are no littoral rainforest vegetation communities present within or adjacent to the subject site, therefore the proposed facility would not affect any areas of littoral rainforest. Nonetheless, there are several areas in the wider locality that contains areas of littoral rainforests (*Personal observation*).

SEPP 44 (Koala Habitat Protection)

In relation to SEPP 44 (Koala Habitat Protection), the subject site does not qualify as 'Potential Koala Habitat' under the terms of SEPP 44. This due to the subject site being less than one hectare in area, therefore the SEPP does not apply.

3.0 EXISTING ENVIRONMENT

3.1 CATCHMENT

The subject site lies within the Forester-Tuncurry local catchment area, and geographically is situated within a relatively low-lying landscape approximately 16m ASL. The subject site drains into an unnamed drainage line which then drains eastwards and directly into the Coolongolook River to the approximately 600 m to the east of the subject site. The Coolongolook River flows northwards and then discharges into the expansive Wallis Lake wetland system ultimately discharging into the Tasman Sea.

Many 1st-order and 2nd-order drainage lines in the vicinity are ephemeral, flowing only following rainfall, and in combination with the various anthropogenic modifications are unlikely to provide any significant habitat for any species either threatened or protected under the FM Act.

3.2 BIOREGIONAL CONTEXT

There are numerous vegetation communities and wildlife habitats present within the Midcoast LGA with broad habitats consisting of open forests, closed forests (rainforest communities and swamp sclerophyll forests), woodlands, coastal heaths, sedgelands, wetlands and extensive lacustrine, estuarine and aquatic habitats.

District and regional conservation areas include (but not limited to) the Wallingat National Park, Myall Lakes National Park, Tomaree National Park, Booti Booti National Park, Coolongolook Nature Reserve and the Wallamba Nature Reserve. There are also several offshore and inshore islands that are also incorporated into the coastal national parks system as Nature Reserves vested under the *National Parks & Wildlife Act*. These islands include Mills Island Nature Reserve, Yahoo Island Nature Reserve, Wallis Island Nature Reserve, Regatta Island Nature Reserve, Cabbage Tree Island, Shark Island and Boondelbah Island Nature Reserves, the latter few are located to the east and south-east of Port Stephens.

Botanically, the subject site is located within the North Coast Botanical Subdivision of New South Wales (Harden, 1992). This botanical sub-division contains an extremely rich biodiversity of flora and

fauna in NSW and is represented by a vast variety of habitats and is represented by a high degree of threatened flora and fauna species and endangered ecological communities that are poorly represented in the current localised national park estate system (for example threatened plants such as the Magenta Lilly Pilly *Syzygium paniculatum*, *Melaleuca biconvexa* and *Tetratheca juncea* and endangered ecological communities such as the and the River-flat Eucalypt Forest on coastal floodplains of the NSW North Coast, Sydney Basin and South East Corner bioregions- endangered ecological community). The faunal assemblages are typically Bassian, with the occasional Torresian faunal assemblage occurring during summer months when visitation by tropical migratory avifauna occurs usually between the months of October to March.

Most of the localised flora and fauna studies remain as unpublished reports for specific Development Applications however there are several flora and fauna reports that pertain to the broader area of the Midcoast LGA including the former Great Lakes LGA.

4.0 RESULTS

VEGETATION & FLORA

There are no indigenous vegetation communities remaining within the subject site *per se* due to the high degree of ecological disturbances to the overall site including (but not limited to) clearing and weed invasion impacts, however there are sporadic occurrences of remnant trees and to a lesser extend shrubs and a few monocotyledons remaining especially towards the western boundary of the subject site (*personal observation*).

4.1 METHODOLOGY

A full flora survey and assessment of the subject site was undertaken including transects and random meander surveys in accordance with the OEH's guidelines for flora and fauna surveys where appropriate. As the site area investigated is limited in area with any meaningful ecological communities and degree of ecological disturbance, no quadrats were carried out and were not necessary in this instance, however all floristic species observed were recorded within and adjacent to the subject site. All relevant threatened species of flora known to occur within the locality as well as any ROTAPs (**R**are **O**r **T**hreatened **A**ustralian **P**lants) were targeted and considered within the subject site.

4.2 RESULTS

Threatened Flora:

No threatened species of flora as described under the *Biodiversity Conservation Act, 2016* or the *Environment Protection & Biodiversity Conservation Act, 1999* and no ROTAPs (Rare Or Threatened Australian Plants) after Briggs & Leigh were recorded within the subject site *per se*.

However, three locally significant species of flora were recorded within the subject site consisting of the Kurrajong *Brachychiton populneus*, Cabbage Tree Palm *Livistona australis* and the Elkhorn *Platycerium bifurcatum*.

Table 1. Relevant Threatened Flora

RELEVANT THREATENED SPECIES OF FLORA

Common Name	Scientific Name	Scientific Name & BCA Status	Likelihood of Occurrence
White-flowered Wax Plant	*Cynanchum elegans*	E	Low, as species was not recorded within the subject site
Coast Groundsel	*Senecio spathulatus*	E	Low, as species was not recorded within the subject site
Dillwynia	*Dillwynia tenuifolia*	V	Low, as species was not recorded within the subject site
Tetratheca	*Tetratheca juncea*	V	Low, this species was not recorded within the subject site
Sand Spurge	*Chamaesyce psammogeton*	E	Low, as species was not recorded within the subject site
Guthrie's Grevillea	*Grevillea guthrieana*	E	Low, as species was not recorded within the subject site
Small-flowered Grevillea	*Grevillea parviflora ssp. parviflora*	V	Low, as species was not recorded within the subject site
Netted Bottlebrush	*Callistemon linearifolius*	V	Low, as species was not recorded within the subject site
Drooping Red Gum	*Eucalyptus parramattensis ssp. decadens*	V	Low, as species was not recorded within the subject site
Slaty Red Gum	*Eucalyptus glaucina*	V	Low, as species was not recorded within the subject site
Biconvex Paperbark	*Melaleuca biconvexa*	V	Low, this species was not recorded within the subject site
Grove's Paperbark	*Melaleuca groveana*	V	Low, this species was not recorded within the subject site

Common Name	Scientific Name	Scientific Name & BCA Status	Likelihood of Occurrence
Magenta Lilly Pilly	*Syzygium paniculatum*	E	Low, as species was not recorded within the subject site
Villous Mint Bush	*Prostanthera densa*	V	Low, this species was not recorded within the subject site
Thesium	*Thesium australe*	V	Low, this species was not recorded within the subject site
Lindernia	*Lindernia alsinoides*	E	Low, this species was not recorded within the subject site
Maundia	*Maundia triglochinoides*	V	Low, this species was not recorded within the subject site

Note: Bold type denotes that a Test of Significance has been applied to the species.

E denotes Endangered under the *Biodiversity Conservation Act, 2016*

V denotes *Vulnerable under the Biodiversity Conservation Act, 2016*

Priority Weeds

Priority weed species identified during investigations were confined to Lantana *Lantana camara*, Blackberry *Rubus fruticosus.* agg and the Fireweed *Senecio madagascariensis* only; these Priority weed species are listed in Appendix 1: Priority weeds for the *Hunter Local Land Services region in the Hunter Regional Strategic Weed Management Plan 2017-2022*.

4.3 RESULTS OF FIELD ASSESSMENTS-VEGETATION & FLORISTICS

TREES:

Indigenous tree species present are confined to a few scattered individuals of primarily eucalypts such as Northern Grey Ironbark *Eucalyptus sideroxylon,* Red Stringybark *Eucalyptus sp* and the Small-fruited Grey Gum *Eucalyptus propinqua.* Introduced tree species recorded include the Camphor Laurel *Cinnamomum camphora* (exotic), Coral Tree *Erythrina x sykesii* (exotic) and the Radiata Pine *Pinus radiata* (also exotic) are present as scattered individuals.

LOWER TREES:

The lower tree species present include the Cheese Tree *Glochidion ferdinandi*, Blue Lilly Pilly *Syzygium oleosum*, Kurrajong *Brachychiton populneus* ssp*. populneus*, Prickly Paperbark *Melaleuca styphelioides* and the Wild Tobacco *Solanum mauritianum.* Introduced lower tree species include Small-leaved Privet *Ligustrum sinense* (exotic) and the Large-leaved Privet *Ligustrum lucidum* (also exotic).

SHRUBS:

The shrub species include both erect shrubs and sub-shrubs primarily of exotic introduced taxa and include the Sweet Pittosporum *Pittosporum undulatum*, Cobblers Peg *Bidens pilosa* (exotic), *Senna pendula* (exotic), Paddy's Lucerne *Sida rhombifolia* (exotic), Lantana *Lantana camara* (exotic) and the Blackberry *Rubus sp* (exotic).

OTHERS:

Other species include monocotyledons such as a palm, herbs, ferns, climbers, grasses and graminoides including the Cabbage Tree Palm *Livistona australis*, Elkhorn *Platycerium bifurcatum*, Fishbone Fern *Nephrolepis cordifolia* (exotic), Spear Thistle *Cirsium vulgare* (exotic), Purple-top *Verbena bonariensis* (exotic), Fireweed *Senecio madagascariensis* (exotic), Viola *Viola hederaceae*, Spiny-headed Mat-rush *Lomandra longifolia*, Horehound *Plantago lanceolata* (exotic), Water Plantain *Alisma plantago-aquatica* (exotic), Passionfruit *Passiflora edulis* (exotic), Japanese Honeysuckle *Lonicera japonica* (exotic), Moth Vine *Araujia hortorum* (exotic), *Rubus hillii*, Redshank *Persicaria sp*, Juncus *Juncus sp*, Duckweed *Lemna trisulca* and *Eleocharis acuta*, Kikuyu *Pennisetum clandestinum* (exotic) and the Whisky Grass *Andropogon virginicus* (exotic).

COMMENTS:

No threatened species of flora were recorded and none are expected to occur and that no ROTAPs (Rare Or Threatened Australian Plants) were recorded and none are expected to occur. All species of flora recorded are common within the locality of the subject site and within the greater Hunter Bioregion. Finally, no species of flora or fauna with geographical limits within the area were recorded.

Locally significant species: Kurrajong *Brachychiton populneus* ssp*. populneus*, Cabbage Tree Palm *Livistona australis* and the Elkhorn *Platycerium bifurcatum*.

Priority weeds *Biosecurity Act, 2015*: Fireweed *Senecio madagascariensis*, Lantana *Lantana camara* and the Blackberry *Rubus fruticosus.* agg.

Other weeds of regional concern: Camphor Laurel *Cinnamomum camphora*, Fireweed *Senecio madagascariensis*, Lantana *Lantana camara* and the Moth Vine *Araujia hortorum.*

Key Threatening Processes (KTPs) (Plants)

Relevant KTPs relating to weeds include:

- Invasion and establishment of Exotic Vines and Scramblers (eg. Morning Glory, Bridal Creeper),
- Invasion of native plant communities by exotic perennial grasses (eg. Kikuyu Grass, Rhodes Grass, African Lovegrass, Vasey Grass, Paspalum),
- Invasion, establishment and spread of *Lantana camara*.

Figure 2 **View of the subject site and environs indicating wider geographical features.**

4.4 FAUNA & FAUNA HABITAT VALUES

METHODOLOGIES

The fauna assessment applied to the subject site was confined to habitat assessments only and that no spotlighting, trapping, frog and owl call playback methodologies were employed due to the small size of the site, the high degree of existing disturbances and degradation to habitats in addition to the limited area. The subject sit6e is bounded on all four sides by existing development and hostile environments. Nonetheless, habitat searches were carried out throughout the subject site.

The subject site is not significant habitat to any threatened species of fauna. However the site is potential habitat to localised and common fauna species such as the Common Ring-tail Possum *Pseudocheirus peregrinus*, Common Brush-tailed Possum *Trichosurus vulpecular*, Swamp Wallaby *Wallabia bicolor*, Antechinus species and indigenous bush rats and a range of common frog and reptile species. The site is also likely to be part foraging habitat to the Grey-headed flying fox *Pteropus poliocephalus* (Vulnerable, *Biodiversity Conservation Act, 2016*) is highly to forage on the subject site's eucalypts. The Red-necked Wallaby *Macropus rufogriseus* and a deceased Northern Brown Bandicoot *Isoodon macrourus* were recorded within the subject site during the field assessment phase.

A range of avifauna species were recorded including passerines and non-passerines consisting of forest and woodland species. Ubiquitous species of birds recorded included the Yellow-faced Honeyeater, Variegated Wren, Red-browed Finch, Eastern Silvereye, Striated Pardalote, Grey Fantail, Eastern Yellow Robin, Pied Butcherbird, Australian Crow, Indian Mynah (introduced), Pied Currawong, White Cockatoo, Musk Lorikeet and the Rainbow Lorikeet. The Yellow-tailed Black Cockatoo (a locally significant species) was is likely to forage within the subject site periodically and feed on the site's Radiata Pine's pine cones as this species frequently feed on this introduced tree species. Seasonal, nomadic or migratory species migrants expected to occur include (but also not limited to) the Dollarbird, Sacred Kingfisher, Channel-billed Cuckoo and the Koel. Stray cats, home-based domestic cats and the European Fox are also likely to predate on wildlife within the subject site. Evidence of diggings by the introduced European Rabbit was also observed within the subject site.

Threatened Fauna Species:

Table 2 provides a summary of threatened species that may occur within or in adjacent areas to the subject site.

Table 2. Relevant Threatened Fauna

RELEVANT THREATENED SPECIES OF FAUNA

Common Name	Scientific Name	Scientific Name & BCA Status	Likelihood of Impact
Wallum Froglet	*Crinia tinnula*	V	Low, due to lack of suitable habitat on-site but may occur in nearby areas of suitable habitat
Barred River Frog	*Mixophyes iteratus*	E	Low, due to lack of suitable habitat
Stuttering Frog	*Mixophyes balbus*	E	Low, due to lack of suitable habitat
Black-necked Stork	*Ephippiorhynchus asiaticus*	E	Low, due to lack of suitable habitat on-site, but is expected to forage within the nearby Coolongolook River
Australasian Bittern	*Botaurus poiciloptilus*	E	Low impact, no suitable habitat present
Black Bittern	*Ixobrychus flavicollis*	V	Low impact, no suitable habitat present
Eastern Osprey	*Pandion haliaetus*	V	Low, due to lack of suitable habitat on-site, but is expected to forage within the nearby habitat of Coolongolook River
Square-tailed Kite	***Lophoictina isura***	**V**	**Low, although the species is likely to predate on small birds foraging in the canopy of the subject site's trees on an *ad hoc* basis**
Barking Owl	*Ninox connivens*	V	Low, although the site may contain broad foraging habitat to the species only
Powerful Owl	***Ninox strenua***	**V**	**Low, although the site may contain broad foraging habitat to the species only where the Powerful Owl may predate on flying foxes foraging on the site's eucalypts**

Common Name	Scientific Name	Scientific Name & BCA Status	Likelihood of Impact
			periodically
Masked Owl	***Tyto novaehollandiae***	**V**	**Low, although the site may contain broad foraging habitat to the species only. The species may possibly predate on feral European rabbits on-site**
Superb Fruit Dove	*Ptilinopus superbus*	V	Low, due to lack of suitable habitat
Glossy Black Cockatoo	***Calyptorhynchus lathami***	**V**	**Low, as no food trees are present for the species and no tree hollows present however the species is highly likely to pass over the subject site on an ad hoc basis en-route to other foraging destinations where food plants (*Casuarina* and *Allocasuarina* trees) are present**
Little Lorikeet	***Glossopsitta pusilla***	**V**	**Low impact. However the species has a moderate possibility of occurrence as the site is likely to contain broad foraging habitat to the species as the species is nectivorous and may feed on the site's eucalypts when these trees enter into inflorescence**
Swift Parrot	*Lathamus discolor*	E	Low, species is very rare in the area and no keystone food trees present on-site
Varied Sittella	*Daphoenositta chrysoptera*	V	Low, due to lack of suitable habitat and structure
Regent Honeyeater	*Xanthomyza phrygia*	CE	Low, as the species is very rare in the district and there are no keystone food trees present on-site
New Holland Mouse	*Pseudomys novaehollandiae*	V	Low, due to lack of suitable habitat
Eastern Chestnut Mouse	*Pseudomys gracilicaudatus*	V	Low, due to lack of suitable habitat

Common Name	Scientific Name	Scientific Name & BCA Status	Likelihood of Impact
Eastern Quoll	*Dasyurus viverrinus*	E	Low, due to lack of suitable habitat-species is expected to be extinct in NSW
Spotted-tailed Quoll	*Dasyurus maculatus*	V	Low, due to lack of suitable habitat and the high chance of the occurrence of European Foxes in the area
Koala	*Phascolarctos cinereus*	V	Low impact, although the species has a moderate occurrence, but is highly unlikely to be significantly affected by the proposal. No designated SEPP-44 food trees present on-site
Squirrel Glider	*Petaurus norfolcensis*	V	Low impact, no significant habitat present and paucity of tree hollows and any meaningful wildlife corridors
Grey-headed Flying Fox	***Pteropus poliocephalus***	**V**	**Low impact, however species likely to forage within the subject site's trees and would also forage throughout the locality of the subject site on a regular basis**
Eastern Freetail Bat	*Mormopterus norfolkensis*	V	Low, due to paucity of tree hollows present on-site
Eastern Bent-wing Bat	***Miniopterus schreibersii***	**V**	**Low, due to lack of caves and other similar shelter sites, however species is likely to forage throughout the subject site and environs**
Little Bent-winged Bat	*Miniopterus australis*	V	Low, due to lack of caves and other similar shelter sites
Southern Myotis	***Myotis macropus***	**V**	**Low, however the species would forage throughout the wider area and environs especially along the nearby Coolongolook River to the east of the subject site**
Greater Broad-nosed Bat	***Scoteanax rueppellii***	**V**	**Low, however the species would forage throughout the wider area and environs, however species is likely to forage throughout the subject site and environs**

Table 2: Relevant Threatened Fauna - provides a summary of threatened species that may occur within or in adjacent areas to the subject site.

Bold-type indicates that a Test of Significance has been applied to the species.

5.0 DISCUSSION

5.1 ENVIRONMENTAL IMPACTS ON THREATENED SPECIES & ECOLOGICAL COMMUNITIES

No endangered ecological communities or threatened species of flora were recorded within the subject site and none are likely to occur. Moreover, no ROTAPs (Rare Or Threatened Australian Plants) were recorded and none are expected to occur although several locally significant species of flora were recorded within the subject site viz: Kurrajong, Cabbage Tree Palm and the Elkhorn the latter being an epiphyte. Nonetheless, several threatened species of fauna are likely to traverse through or over the subject site and immediate environs even if only on an *ad hoc* basis ie: the Grey-headed Flying Fox, Powerful Owl, Masked Owl, Little Lorikeet and the microbat species such as the Southern Myotis and Greater Broad-nosed Bat. There are no significant biodiversity values present within the subject site due to the high degree of previous clearing impacts, high degree of weed invasion effects, several elements of key threatening processes affecting the site's biota, limited size and configuration of the site, destruction of key wildlife corridors, the general paucity of tree hollows and other mainstream habitat features such as streams or rocky outcrops etc.

In light that several threatened species of fauna are likely to utilise the subject site in varying patterns and degree of occurrence, 'Tests of Significance' have been applied to a range of threatened species of fauna including the Powerful Owl, Masked Owl, Little Lorikeet, Australasian Bittern, Black Bittern, Grey-headed Flying Fox, Southern Myotis and the Greater Broad-nosed Bat. The proposed development (and operation) of the proposed Highway Service Centre facility at Coolongolook and associated works would not have a significant effect on any of the above threatened species of fauna. Nonetheless, the following descriptions of several threatened species of fauna and their habitats are described in more detail below on a species level.

Australasian (Brown) Bittern *Botaurus poiciloptilus*

Endangered, Biodiversity Conservation Act, 2016

The Australasian (Brown) Bittern is an uncommon but widespread semi-aquatic species inhabiting primarily freshwater habitats with a dense covering of reeds and semi-aquatic vegetation including *Typha* (Cumbungi Reedland) and spike-rushes *Eleoacharis* sp (DECCW-Threatened Species Profile-Australasian Bittern). There are no areas of *Typha* rushes present within the subject site although there is a very small area of Eleoacharis sp plants present within a small dam located within the subject site. However, this area of *Eleoacharis* is only a few square metres in area and does not constitute habitat of the Australasian Bittern in this instance. The proposal would not have a

significant effect on the species. The Australasian Bittern is more likely to be associated with the nearby Coolongolook River to the east of Coolongolook.

Black Bittern *Ixobrychus flavicollis*

Vulnerable, Biodiversity Conservation Act, 2016

The Black Bittern is a species that occurs in both terrestrial and estuarine wetlands with dense vegetation and near permanent water including areas of flooded grasslands, forests woodlands etc (DECCW, Threatened Species Profile-Black Bittern). The Black Bittern occurs in wetlands and mangroves. There is no significant area of habitat for this species present within the subject site.

Glossy Black Cockatoo *Calyptorhynchus lathami*

Vulnerable, Biodiversity Conservation Act, 2016

The Glossy Black Cockatoo was not recorded during the field assessment of the subject site and there is no foraging habitat for the species present within the sites based on the lack of food trees for the species. The Glossy Black Cockatoo in the locality appears to feed exclusively on the fruiting cones of the Forest Oak *Allocasuarina torulosa* and the Black She-oak *A. littoralis* (pers obs). These tree species are absent from the subject site, and that there are no suitable tree hollows present for the species to nest in. The proposed development would not have a significant effect on the Glossy Black Cockatoo although the Glossy Black Cockatoo is expected to pass over the subject site on an *ad hoc* basis en-route to feeding/foraging destinations and areas containing Casuarina trees.

Swift Parrot *Lathamus discolor*

Endangered, Biodiversity Conservation Act, 2016

There is no foraging habitat present within the subject site for the Swift Parrot present. The Swift Parrot within the region forages on the nectar laden flowers of winter flowering tree species such as the Broad-leaved Paperbark *Melaleuca quinquenervia* trees and the Swamp Mahogany *Eucalyptus robusta* trees. However, both of these tree species are absent from the subject site although these tree species are common in the locality of the subject site. The Swift Parrot is not expected to be affected by the proposed development as the species is very rare in the locality.

Little Lorikeet *Glossopsitta pusilla*

Schedule 2, *Threatened Species Conservation Act, 1995*

The subject site's adult eucalypts are potential foraging habitat to the Little Lorikeet. Although the proposal would result in the removal of some trees, these tree species are common in the area at

Coolongolook including the immediate vicinity of the site where these trees outside of the subject site would not be affected by the proposed development of the Highway Service Centre facility. Moreover, no hollow-bearing trees that Little Lorikeets would use for nesting sites are present within the subject site. It is considered that the proposed development would not have a significant effect on the Little Lorikeet in this instance. A Test of Significance has been applied to the species.

Powerful Owl *Ninox strenua*

Vulnerable, Biodiversity Conservation Act, 2016

The subject site may contain some potential marginal foraging habitat for the Powerful Owl. The species could enter the site at any stage for foraging purposes. The Powerful Owl could predate on flying foxes attracted to the site by the blossoms of the various eucalypts present. However, there are no suitable tree hollows for nesting purposes present or suitable roosting sites present for the species within the subject site as the site is largely cleared or ecologically disturbed. Therefore, the proposed development would not have a significant effect on the Powerful Owl. A Test of Significance has been applied to the species.

Masked Owl *Tyto novaehollandiae*

Vulnerable, Biodiversity Conservation Act, 2016

The Masked Owl prefers open forests and woodlands. The subject site is unlikely to be significant habitat for the species. The Masked Owl prefers rainforest and wet sclerophyll forest habitats in the district (pers obs). There is no significant prey-food items present within the subject site with the exception of the possibility of European Rabbits. The site is not suitable for roosting purposes for the species. The proposed development is unlikely to have a significant effect on the Masked Owl. A Test of Significance has been applied to the species.

Eastern Osprey *Pandion haliaetus*

Vulnerable, Biodiversity Conservation Act, 2016

There is no suitable habitat present within the subject site for the Eastern Osprey however the species is expected to forage within the nearby Coolongolook River located approximately 600m to the east of the subject site; the Eastern Osprey is a piscivorous (fish-eating) raptor. There are no suitable nesting sites for the Eastern Osprey within the subject site as trees are not large enough for the Eastern Osprey to nest in. The proposed Highway Service Centre (and operation of the facility) is unlikely to have a significant effect on the Eastern Osprey.

Regent Honeyeater *Xanthomyza phrygia*

Critically endangered, Biodiversity Conservation Act, 2016

The Swamp Mahogany, Spotted Gum and Broad-leaved Paperbark are important food trees to the Regent Honeyeater. Locally the species is generally associated with swamp sclerophyll forests containing a high number of the Swamp Mahogany *Eucalyptus robusta* being present in the locality. This tree species is a significant and reliable food tree species to the Regent Honeyeater. The proposed development is unlikely to have a significant impact on the Regent Honeyeater to place the species at localised extinction.

New Holland Mouse *Pseudomys novaehollandiae*

Vulnerable, Biodiversity Conservation Act, 2016

The subject site does not contain suitable habitat for the New Holland Mouse, therefore the proposed development would not have a significant effect on the New Holland Mouse in this instance.

Spotted-tailed Quoll *Dasyurus maculatus*

Vulnerable, Biodiversity Conservation Act, 2016

There is no suitable habitat for the Spotted-tailed Quoll present within the subject site due to the previous disturbance of the site and environs and the propensity of foxes to traverse into disturbed areas such as the subject site. The Spotted-tailed Quoll generally avoids contact with foxes and the species is likely to avoid such areas. Moreover, no scats of the Spotted-tailed Quoll were observed during the field assessment of the subject site. It is unlikely the Spotted-tailed Quoll utilises the subject site and it is therefore unlikely that the proposed Highway Service Centre facility would have a significant impact on the species.

Grey-headed Flying Fox *Pteropus poliocephalus*

Vulnerable, Biodiversity Conservation Act, 2016

The Grey-headed Flying Fox *Pteropus poliocephalus* may forage among the subject site's eucalypts and other trees in the vicinity of the subject site, although these tree species are highly widespread throughout the region and the loss of a eucalypts within the subject site as a result of the proposed development would be inconsequential to the Grey-headed Flying Fox. The subject site does not contain any areas of suitable roosting sites for the species. The proposed development of the Highway Service facility would not remove potential food trees to a significant degree. Therefore the proposal would not have a significant effect on the Grey-headed Flying Fox. A Test of Significance has been applied to the species.

Yellow-bellied Sheath-tail Bat *Saccolaimus flaviventris*

Vulnerable, Biodiversity Conservation Act, 2016

The Yellow-bellied Sheath-tail Bat occurs in a broad-range of habitat (Churchill, 1998) and the species roosts in tree hollows and forages above the canopy line. The subject site is unlikely to be of significance to the species and is unlikely to be affected by the action proposed i.e. the proposed development. There would be no removal of any tree hollows that may otherwise be used by the species.

Southern (Large-footed) Myotis *Myotis adversus*

Vulnerable, Biodiversity Conservation Act, 2016

The Southern (Large-footed) Myotis is chiefly a cave dweller however the species is also known to roost in tree hollows and can live in most habitats as long as those habitats are near water (Churchill, 1998). There are no trees with hollows present within the subject site and no caves or other similar features present within the subject site. The subject site is located to the west of the Coolongolook River where the Southern Myotis is most likely to forage along the river but may also forage over the subject site on an ad hoc basis. However the main habitat of the species (the adjacent waterways) would not be affected by the proposal. A Test of Significance has been applied to the species.

Greater Broad-nosed Bat *Scoteanax rueppellii*

Vulnerable, Biodiversity Conservation Act, 2016

The Greater Broad-nosed Bat prefers moist gullies in mature coastal forests or rainforests. The subject site is considered to be potential marginal foraging habitat for the species only. Nonetheless, proposed development would not have a significant effect on the species wider habitat in the area as there would be no significant amount of important foraging habitat removed as a result of the proposed development in this instance. Although the Greater Broad-nosed Bat is expected to forage within the site and adjacent areas, the proposed development would not have an impact on the species or its associated habitat areas. A Test of Significance has been applied to the species.

Little Bent-wing Bat *Miniopterus australis*

Vulnerable, Biodiversity Conservation Act, 2016

There is marginal potential foraging habitat for the Little Bent-wing Bat present within the subject site only, as the species tends to roost in caves, tunnels etc. There are no caves, tunnels or similar roosting habitat areas present within or adjacent to the subject site for the Little Bent-wing Bat. Therefore, the proposed development is unlikely to have a significant effect on the Little Bent-wing Bat or its associated foraging habitat.

Eastern (Common) Bent-wing Bat *Miniopterus schreibersii*

Vulnerable, Biodiversity Conservation Act, 2016

The Eastern Bent-wing Bat also roosts in caves, tunnels etc. There are no caves, tunnels or similar roosting habitat areas present within or adjacent to the subject site for the Eastern Bent-wing Bat. Therefore, the proposed development of the proposed Highway Service Centre facility is also unlikely to have a significant effect on the Eastern Bent-wing Bat.

Eastern Free-tail Bat *Mormopterus norfolcensis*

Vulnerable, Biodiversity Conservation Act, 2016

The Eastern Free-tail Bat roosts in tree hollows in dry eucalypt forests and woodlands (Churchill, 1998). There is no significant tree hollows present within the subject site. Therefore, the proposed development would not have a significant effect on the Eastern Free-tail Bat.

5.2 ENDANGERED POPULATIONS

There are three endangered populations as described under the *Biodiversity Conservation Act, 2016* present within the Mid Coast Local Government Area. These endangered populations include the Emu Population in the NSW North Coast Bioregion and Port Stephens Local Government Area, the Hawks Nest and Tea Gardens population of the Koala and *Rhizanthella slateri*. However, none of the above species were recorded within the subject site and that the proposed development is unlikely to have a significant effect on any of the above endangered populations in this instance. There are no endangered populations listed under the *Fisheries Management Act, 1994* or the Commonwealth's *Environment Protection & Biodiversity Conservation Act, 1999* present within the vicinity of the subject site.

5.3 WILDLIFE CORRIDORS & HABITAT FRAGMENTATION

There are no formally designated "wildlife corridors" present within or adjacent to the subject site. There are no important areas of tree and habitat linkages to contiguous areas of habitat or any significant linkages to Key Biodiversity Areas/areas **outstanding biodiversity value** in the locality or the wider regional landscape context. The majority of the vegetation links within the vicinity are primarily disjunct and severed from any meaningful 'wildlife corridors' in the vicinity as the site is located in a modified semi-rural environmental context. Importantly, the proposal would not result in the severing of any wildlife corridors at any location within the vicinity of the subject site as the more important areas of vegetation in the vicinity would be retained and unaffected by the proposal.

The biodiversity characteristics of the wider study area would not be significantly affected by the proposal and that the proposal would not cause habitat fragmentation impacts to any significant degree on the movement of fauna species or seed propagules within the locality of the subject site or

to have any significant impact on populations or flora or fauna to a significant degree than already exists and would not have a significant impact on any significant wildlife habitat values in the area.

6.0 CONCLUSIONS

Threatened Species-*Biodiversity Conservation Act, 2016*:

No threatened species listed under the *Biodiversity Conservation Act, 2016* or listed under the *EPBC Act, 1999* were recorded during the field assessment phase. However broadly suitable habitat of several threatened species are present within the subject site including (but not limited to) *inter alia* the Grey-headed Flying Fox, Greater Broad-nosed Bat, Southern Myotis, Eastern Bentwing Bat, Square-tailed Kite, Little Lorikeet, Powerful Owl and the Masked Owl (all listed vulnerable under the BC Act). Other threatened species likely to occur within the wider vicinity of the subject site include (but also not limited to) the Eastern Osprey and the Koala. The Eastern Osprey likely to be associated with the nearby Coolongolook River approximately 600 m to the east of the subject site although the Koala may enter into any area in the vicinity containing eucalypts.

Locally Significant Species:

Although no threatened species of flora or ROTAPs (Rare Or Threatened Australian Plants) were recorded within the subject site, locally significant species recorded within the subject site include the Kurrajong, Cabbage Tree Palm and the Elkhorn. One locally significant fauna species was recorded within the subject site being a deceased Northern Brown Bandicoot; however other locally significant species expected to occur include the Diamond Python, Grey Goshawk (regionally significant), Peregrine Falcon, Cicadabird and the Musk Lorikeet.

Priority Weed Species-*Biosecurity Act, 2015*:

Priority weed species listed under the *Biosecurity Act, 2015* identified during investigations include the Fireweed, Lantana and the Blackberry. Other weeds of regional concern present include Camphor Laurel and the Moth Vine. Appropriate weed control, weed dispersal prevention, and appropriate transport and disposal of weed materials must be included in the Project's Construction Environment Management Plan (CEMP) to ensure that the proponent's obligations under the Biosecurity are met.

Other Environmental Considerations:

Environmentally sensitive areas were identified within the vicinity of the subject site namely the Coolongolook River approximately 600m to the east of the subject site. There are no SEPP-14 (Coastal wetlands) present within the immediate vicinity of the subject site although several SEPP-14 wetlands are located to the east and north-east of Coolongolook. The proposed Highway Service Centre would not impinge on any environmentally sensitive areas as all environmentally sensitive areas are located distant and outside of the proposed development footprint.

It is concluded that the proposal would not have a significant effect on threatened species, populations or endangered ecological communities and that the construction and operation of the proposed Highway Service Centre facility at Coolongolook would not result in the permanent loss of

biodiversity characteristics of the vicinity (e.g. the foraging habitat of the Grey-headed Flying Fox) or their habitats, providing the recommendations of the biodiversity assessment are fully implemented. Furthermore, the proposal would not have a significant impact on any EPBC listed species or their habitats as well as any federally listed ecological communities.

The proposal would not result in the permanent disturbance of soils or cause erosion impacts that would otherwise ultimately cause the spread of weeds into the nearby waterways as strict environmental guidelines would be imposed at all times. In regards to SEPP-44 (Koala Habitat Protection), the subject site does not qualify as 'potential Koala habitat' under the terms of SEPP-44 as the site is less than 1 hectare in area and does not contain any SEPP-44 designated food tree species.

In regards to habitat fragmentation, the proposed development would not result in habitat fragmentation as the subject site and adjacent naturally vegetated areas in the vicinity are already fragmented from other areas of contiguous habitat. Finally, the proposal would not result in the severing of any wildlife corridors to a significant state than already exists, as the development would be largely constructed within the existing cleared or disturbed areas of the site, although there would be some removal of some residual trees and vegetation.

7.0 Recommendations

Recommendation No.1. That vegetation to be removed is to be clearly defined and controlled on the site to eliminate any unnecessary or accidental removal or damage of vegetation outside of the clearing zone within the subject site. "No-go Areas" should be implemented prior to any clearing works,

Recommendation No.2. That cleared vegetation be taken to the appropriate green-waste facility in accordance with any guidelines prescribed by the Midcoast Council including the disposal of environmental weeds,

Recommendation No.3. That erosion and sediment control devices be installed to ensure that all sediments and erosional impacts and weed propagules are contained within the subject site so as to not to impact on nearby bushland areas, and waterways including local creek systems, especially drainage lines that lead to nearby environmentally sensitive receivers such as the nearby Coolongolook River to the east of the subject site.

APPENDIX 1

TESTS OF SIGNIFICANCE

POWERFUL OWL *Ninox strenua*

Section 7.3 of the Biodiversity Conservation Act, 2016 '*Test for determining whether proposed development or activity likely to significantly affect threatened species or ecological communities, or their habitats'*.

(1) The following is to be taken into account for the purposes of determining whether a proposed development or activity is likely to significantly affect threatened species or ecological communities, or their habitats.

(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.

No, the subject site does not support a significant area of viable habitat of the Powerful Owl. Nonetheless, it is expected that the broader locality may have importance to the species as the Powerful Owl requires large tracts of bulk open forests and woodland and semi-cleared areas with trees for survival.

The proposed Highway Service Centre facility and development of the subject site would not have an adverse effect on the life cycle of the Powerful Owl to the extent that would place the species at risk of localised extinction. There would be no significant removal of habitat, no removal of nesting or roosting sites and no significant removal of prey-food items or their habitat. If the Powerful Owl does actually forage within the subject site, then it is likely to forage within the canopy trees on an *ad hoc* basis only.

The limited amount of vegetation to be removed as a result of the proposal would be inconsequential to the Powerful Owl and that the species would continue to persist in the area following the completion of the facility (and operation of the facility) and that the local viable population of the species is unlikely 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

Not applicable.

(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

No viable habitat of the Powerful Owl would be removed or modified as a result of the proposed Highway Service Centre facility in this instance.

(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

No viable habitat of the Powerful Owl would be fragmented or isolated from other areas of habitat to the species as a result of the proposed Highway Service Centre facility.

(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,

There are no important habitat values present within the subject site that would support the long-term survival of the Powerful Owl. However, it is expected that the broader locality may have importance to the species as the Powerful Owl requires large tracts of bulk open forests and woodland for survival.

(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),

There are no declared areas of outstanding biodiversity value within or adjacent to the subject site. Therefore the proposed Highway Service Centre facility would not have an adverse effect on any area of outstanding biodiversity value either directly or indirectly.

(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.

No, as the proposed Highway Service Centre facility would not constitute '*clearing of native vegetation'* KTP in this instance. Other key threatening processes include *continued loss of native hollow bearing trees* and r*emoval of course woody debris due to fire wood harvesting practices* and competition for tree hollows from *feral honeybees*. However, the proposal would not trigger or exacerbate any of the above key threatening processes.

MASKED OWL *Tyto novaehollandiae*

Section 7.3 of the Biodiversity Conservation Act, 2016 '*Test for determining whether proposed development or activity likely to significantly affect threatened species or ecological communities, or their habitats'*.

(1) The following is to be taken into account for the purposes of determining whether a proposed development or activity is likely to significantly affect threatened species or ecological communities, or their habitats.

(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.

No, the subject site does not support a significant area of viable habitat of the Masked Owl. Nonetheless, it is expected that the broader locality may have importance to the species as the Masked Owl requires large tracts of bulk open forests and woodland and semi-cleared areas with trees for survival.

The proposed Highway Service Centre facility and development of the subject site would not have an adverse effect on the life cycle of the Masked Owl to the extent that would place the species at risk of localised extinction. There would be no significant removal of habitat, no removal of nesting or roosting sites and no significant removal of prey-food items or their habitat. If the Powerful Owl does actually forage within the subject site, then it is likely to forage within the canopy trees on an *ad hoc* basis only. The limited amount of vegetation to be removed as a result of the proposal would be inconsequential to the Masked Owl and that the species would continue to persist in the area following the completion of the facility (and operation of the facility).

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

Not applicable.

(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

No, as no viable habitat of the Masked Owl would be removed or modified as a result of the proposed Highway Service Centre facility in this instance.

(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

No viable habitat of the Masked Owl would be fragmented or isolated from other areas of habitat to the species as a result of the proposed Highway Service Centre facility.

(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,

There are no important habitat values present within the subject site that would support the long-term survival of the Masked although it is expected that the broader locality may have importance to the species as the Masked Owl requires large tracts of bulk open forests and woodland for survival.

(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),

There are no declared areas of outstanding biodiversity value within or adjacent to subject site. Therefore the proposed Highway Service Centre facility would not have an adverse effect on any area of outstanding biodiversity value either directly or indirectly.

(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.

No, as the proposed Highway Service Centre facility would not constitute '*clearing of native vegetation'* KTP in this instance. Other key threatening processes include *continued loss of native hollow bearing trees* and r*emoval of course woody debris due to fire wood harvesting practices* and competition for tree hollows from *feral honeybees*. However, the proposal would not trigger or exacerbate any of the above key threatening processes affecting the Masked Owl or its habitats.

SQUARE-TAILED KITE *Lophoictina isura*

Section 7.3 of the Biodiversity Conservation Act, 2016 '*Test for determining whether proposed development or activity likely to significantly affect threatened species or ecological communities, or their habitats'*.

(1) The following is to be taken into account for the purposes of determining whether a proposed development or activity is likely to significantly affect threatened species or ecological communities, or their habitats.

(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.

No, the subject site does not support a significant area of viable habitat of the Square-tailed Kite. Nonetheless, it is expected that the broader locality may have importance to the species as the Square-tailed Kite requires large tracts of bulk open forests and woodland for survival including disturbed and semi-disturbed sites such as the subject site.

There would be no significant removal of any significant amount of habitat, no removal of nesting or roosting sites and no removal of prey-food items or their habitat that the species may depend upon. The Square-tailed Kite has a very large home-range and forages widely over large tracts of open forests and woodlands (pers obs). The Square-tailed Kite is regularly observed within the region. The limited amount of vegetation to be removed as a result of the proposal would be inconsequential to the Square-tailed Kite and that the species would continue to persist in the area following the completion (and the operation) of the Highway Service Centre facility and that the local viable population of the species is unlikely 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

Not applicable

(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

No viable habitat of the Square-tailed Kite would be removed or modified as a result of the proposed Highway Service Centre facility in this instance.

(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

No viable habitat of the Square-tailed Kite would be fragmented or isolated from other areas of habitat to the species as a result of the proposed Highway Service Centre facility.

(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,

There are no important habitat values present within the subject site that would support the long-term survival of the Square-tailed Kite. However, it is expected that the broader locality may have importance to the species as the Square-tailed Kite requires large tracts of bulk open forests and woodland for survival.

(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),

There are no declared areas of outstanding biodiversity value within or adjacent to the subject site. Therefore the proposed Highway Service Centre facility would not have an adverse effect on any area of outstanding biodiversity value either directly or indirectly.

(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.

No, *clearing of native vegetation* and *high frequency fires* are key threatening processes that affect the habitat of the Square-tailed Kite, however there is no significant habitat of the Square-tailed Kite present within the subject site. However, it is expected that the broader locality may have importance to the species as the Square-tailed Kite requires large tracts of bulk open forests and woodland for survival.

LITTLE LORIKEET *Glossopsitta pusilla*

Section 7.3 of the Biodiversity Conservation Act, 2016 '*Test for determining whether proposed development or activity likely to significantly affect threatened species or ecological communities, or their habitats'*.

(1) The following is to be taken into account for the purposes of determining whether a proposed development or activity is likely to significantly affect threatened species or ecological communities, or their habitats.

(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.

No, the subject site does not support a significant area of viable habitat of the Little Lorikeet although the Little Lorikeet is expected to foraging within the subject site's eucalypts on an ad hoc basis. The Little Lorikeet forages in a variety of open forest and woodland habitats.

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

Not applicable.

(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

No viable habitat of the Little Lorikeet would be removed or modified as a result of the proposed Highway Service Centre facility in this instance.

(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

No habitat of the Little Lorikeet would be fragmented or isolated from other areas of habitat to the species as a result of the proposed facility. The species can easily fly from one area of bushland or cluster of trees with considerable ease.

(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,

There are no important habitat values present within the subject site that would support the long-term survival of the Little Lorikeet.

(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),

There are no declared areas of outstanding biodiversity value within or adjacent to the subject site. Therefore the proposed Highway Service Centre facility would not have an adverse effect on any area of outstanding biodiversity value either directly or indirectly.

(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.

No, *clearing of native vegetation, high frequency fires* and *loss of hollow-bearing trees* are key threatening processes that affect the habitat of the Little Lorikeet however there is no significant habitat of the Little Lorikeet present within the subject site including tree hollows.

GLOSSY BLACK COCKATOO *Calyptorhynchus lathami*

Section 7.3 of the Biodiversity Conservation Act, 2016 '*Test for determining whether proposed development or activity likely to significantly affect threatened species or ecological communities, or their habitats'*.

(1) The following is to be taken into account for the purposes of determining whether a proposed development or activity is likely to significantly affect threatened species or ecological communities, or their habitats.

(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.

No, the subject site does not support viable habitat of the Glossy Black Cockatoo. The Glossy Black Cockatoo forages in a variety of open forest and woodland habitats. However, the Glossy Black Cockatoo is a specialist feeder preferring to forage on the fruiting cones of the Forest Oak *Allocasuarina torulosa* in the bioregion (*personal observation*) and to a lesser extent the Black She-oak *Allocasuarina littoralis*. There are no Forest Oak trees or other Casuarina species present within the subject site or tree hollows to sustain the species.

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

Not applicable

(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

No viable habitat of the Glossy Black Cockatoo would be removed or modified as a result of the proposed Highway Service Centre facility in this instance.

(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

No habitat of the Glossy Black Cockatoo would be fragmented or isolated from other areas of habitat to the species as a result of the proposed Highway Service Centre facility.

(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,

There are no important habitat values present within the subject site that would support the long-term survival of the Glossy Black Cockatoo.

(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),

There are no declared areas of outstanding biodiversity value within or adjacent to the subject site. Therefore the proposed Highway Service Centre facility would not have an adverse effect on any area of outstanding biodiversity value either directly or indirectly.

(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.

No, *clearing of native vegetation, high frequency fires* and *loss of hollow-bearing trees* are key threatening processes that affect the habitat of the Glossy Black Cockatoo, however there is no significant habitat of the Glossy Black Cockatoo present within the subject site including the lack of food plants and the paucity of potential nesting sites (large tree hollows).

GREY-HEADED FLYING FOX *Pteropus poliocephalus*

Section 7.3 of the Biodiversity Conservation Act, 2016 '*Test for determining whether proposed development or activity likely to significantly affect threatened species or ecological communities, or their habitats'*.

(1) The following is to be taken into account for the purposes of determining whether a proposed development or activity is likely to significantly affect threatened species or ecological communities, or their habitats.

(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.

No, the subject site does not support a significant area of viable habitat of the Grey-headed Flying Fox. The life cycle of the Grey-headed Flying Fox is unlikely to be disrupted by the proposed Highway Service Centre facility to the extent that it would have an adverse effect on the life cycle of the species such that a viable local population of the species would likely to be placed at risk of extinction. The Grey-headed Flying Fox is highly likely to forage widely within the wider locality as well as in the locality and the bioregion generally during inflorescence of the various eucalypts during the flowering period of each respective tree species throughout the bioregion including foraging within the subject site. However, the subject site does not contain suitable roosting habitat of the Grey-headed Flying Fox as the site is too exposed and contains no suitable roosting sites for the species. The limited amount of vegetation to be removed as a result of the proposal would be inconsequential to the Grey-headed Flying Fox and that the species would continue to persist in the area following the completion (and operation) of the Highway Service Centre facility and that the local viable population of the species is unlikely 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

Not applicable.

(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

No viable habitat of the Grey-headed Flying Fox would be removed or modified as a result of the proposed Highway Service Centre facility in this instance.

(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

No viable habitat of the Grey-headed Flying Fox would be fragmented or isolated from other areas of habitat to the species as a result of the proposed Highway Service Centre facility.

(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,

There are no important habitat values present within the subject site that would support the long-term survival of the Grey-headed Flying Fox. However, it is expected that the broader locality may have importance to the species as the species requires large tracts of bulk open forests and woodland for survival.

(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),

There are no declared areas of outstanding biodiversity value within or adjacent to the subject site. Therefore the proposed Highway Service Centre facility would not have an adverse effect on any area of outstanding biodiversity value either directly or indirectly.

(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.

Clearing of native vegetation and *high frequency fires* are formally declared as key threatening processes under the terms of the *Biodiversity Conservation Act*, 2016 that applies to the Grey-headed Flying Fox. However, the proposal would not trigger or exacerbate any of the above key threatening processes.

EASTERN BENT-WING BAT *Miniopterus schreibersii*

Section 7.3 of the Biodiversity Conservation Act, 2016 '*Test for determining whether proposed development or activity likely to significantly affect threatened species or ecological communities, or their habitats'*.

(1) The following is to be taken into account for the purposes of determining whether a proposed development or activity is likely to significantly affect threatened species or ecological communities, or their habitats.

(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.

No, the subject site does not support a significant area of viable habitat of the Easter Bent-wing Bat. The life cycle of the species is unlikely to be disrupted by the proposed Highway Service Centre facility to the extent that it would have an adverse effect on the life cycle of the species such that a viable local population of the species would likely to be placed at risk of extinction. The Eastern Bent-wing Bat is highly likely to forage widely within the wider locality as well as in the locality and the bioregion generally. In regards to potential roosting habitat, there is no roosting habitat present as the species tends to roost in caves, tunnels etc. These habitat features are not present within the subject site. It is considered that the species would continue to persist in the area following the completion of the Highway Service Centre facility and that any local viable population of the species (if present) is unlikely 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

Not applicable.

(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

No viable habitat of the Eastern Bent-wing Bat would be removed or modified as a result of the proposed Highway Service Centre facility in this instance.

(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

No viable habitat of the Eastern Bentwing Bat would be fragmented or isolated from other areas of habitat to the species as a result of the proposed Highway Service Centre facility.

(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,

There are no important habitat values present within the subject site that would support the long-term survival of the Eastern Bent-wing Bat. However, it is expected that the broader locality may have importance to the species as the species requires large tracts of bulk open forests and woodland for survival.

(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),

There are no declared areas of outstanding biodiversity value within or adjacent to the subject site. Therefore the proposed Highway Service Centre facility would not have an adverse effect on any area of outstanding biodiversity value either directly or indirectly.

(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.

No, the *clearing of native vegetation* and *high frequency fires* are expected to be relevant key threatening processes applicable to the Eastern Bent-wing Bat. However, the proposal would not constitute significant clearing of native vegetation habitat of the species in this context and would not result in the increase in the frequency of fires.

SOUTHERN MYOTIS *Myotis macropus*

Section 7.3 of the Biodiversity Conservation Act, 2016 '*Test for determining whether proposed development or activity likely to significantly affect threatened species or ecological communities, or their habitats'*.

(1) The following is to be taken into account for the purposes of determining whether a proposed development or activity is likely to significantly affect threatened species or ecological communities, or their habitats.

(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.

No, the subject site does not support a significant area of viable habitat of the Southern Myotis. The life cycle of the species is unlikely to be disrupted by the proposed Highway Service Centre facility to the extent that it would have an adverse effect on the life cycle of the species such that a viable local population of the species would likely to be placed at risk of extinction. The Southern Myotis is likely to forage widely within the wider locality of the subject site but its main habitat is expected to be the Coolongolook River located approximately 600m to the east of the Highway Service Centre facility.

The Southern Myotis frequently roosts in caves, tunnels etc. These habitat features are not present within the subject site. It is considered that the species would continue to persist in the area following the completion (and continued operation) of the Highway Service Centre facility and that the local viable population of the species is unlikely to be placed at risk of extinction as a result of the proposal.

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

Not applicable.

(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

No viable habitat of the Southern Myotis would be removed or modified as a result of the proposed Highway Service Centre facility. The more viable habitat features in the area to the Southern Myotis is the Coolongolook River to the east of Coolongolook; this river system would not be affected by the proposed Highway Service Centre facility.

(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

No viable habitat of the Southern Myotis would be fragmented or isolated from other areas of habitat to the species as a result of the proposed Highway Service Centre facility.

(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,

There are no important habitat values present within the subject site that would support the long-term survival of the Southern Myotis. However, it is expected that the broader locality may have importance to the species as the species requires large tracts of bulk open forests and woodland for survival. The species is a well known forager along watercourses, creeks and rivers etc such as Coolongolook River to the east of Coolongolook.

(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),

There are no declared areas of outstanding biodiversity value within or adjacent to the subject site. Therefore the proposed Highway Service Centre facility would not have an adverse effect on any area of outstanding biodiversity value either directly or indirectly.

(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.

No, the *clearing of native vegetation* and *high frequency fires* are expected to be relevant key threatening processes applicable to the Southern Myotis. However, the proposal would not constitute significant clearing of native vegetation habitat of the species in this context and would not result in the increase in the frequency of fires.

GREATER BROAD-NOSED BAT *Scoteanax rueppellii*

Section 7.3 of the Biodiversity Conservation Act, 2016 '*Test for determining whether proposed development or activity likely to significantly affect threatened species or ecological communities, or their habitats*'.

(1) The following is to be taken into account for the purposes of determining whether a proposed development or activity is likely to significantly affect threatened species or ecological communities, or their habitats.

(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.

No, the subject site does not support a significant area of viable habitat of the Greater Broad-nosed Bat. The life cycle of the species is unlikely to be disrupted by the proposed Highway Service Centre facility to the extent that it would have an adverse effect on the life cycle of the species such that a viable local population of the species would likely to be placed at risk of extinction. The Greater Broad-nosed Bat is likely to forage widely within the wider locality of the subject site and is expected to forage frequently along the Coolongolook River to the east of the Coolongolook. In regards to potential roosting habitat, the Greater Broad-nosed Bat frequently roosts in caves, tunnels etc but is also known to roost in tree hollows. These habitat features are not present within the subject site. It is considered that the species would continue to persist in the area following the completion of the Highway Service Centre facility and that the local viable population of the species (if present) is unlikely 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

Not applicable.

(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

No viable habitat of the Greater Broad-nosed Bat would be removed or modified as a result of the proposed Highway Service Centre facility. The more viable habitat features in the area to the Greater Broad-nosed Bat is the Coolongolook River and immediate environs to the east of Coolongolook; this river system would not be affected by the proposed Highway Service Centre facility.

(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

No viable habitat of the Greater Broad-nosed Bat would be fragmented or isolated from other areas of habitat to the species as a result of the proposed Highway Service Centre facility.

(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,

There are no important habitat values present within the subject site that would support the long-term survival of the Greater Broad-nosed Bat. It is expected that the broader locality may have importance to the species as the Greater Broad-nosed Bat requires large tracts of bulk open forests and woodland with creeks, streams etc for survival. The species is also a well known forager along watercourses, creeks and rivers etc such as Coolongolook River.

(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),

There are no declared areas of outstanding biodiversity value within or adjacent to the subject site. Therefore the proposed Highway Service Centre facility would not have an adverse effect on any area of outstanding biodiversity value either directly or indirectly.

(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.

No, the *clearing of native vegetation* and *high frequency fires* are expected to be relevant key threatening processes applicable to the Greater Broad-nosed Bat. However, the proposal would not constitute significant clearing of native vegetation habitat of the species in this context and would not result in the increase in the frequency of fires.

GLOSSARY OF TERMS

Anthropogenic waste:	Waste materials eg: dumped bricks, tyres, household rubbish, bottles etc.
Arboreal:	Pertaining to trees.
Arborescent:	Tree-like in form or appearance.
Aural:	Listening.
Bassian:	Fauna of temperate regions of Australian, generally the area from SE. Queensland, eastern NSW, Victoria and SE. South Australia. Excluding the tropical (Torresian) and arid zone Eyrean) regions of Australia.
Biota:	The flora and fauna of a given region.
Bioregional:	A regional perspective of plant and animal assemblages.
Critical-weight range fauna:	Medium-size mammals that have been significantly affected by European settlement and associated introduction of carnivorous mammals viz: cat, fox and dog. Many native mammals outside of this 'critical-weight range' have not been affected by these introductions.

Exotic:	An introduced plant or animal not native or indigenous.
FM Act:	*Fisheries Management Act, 1994.*
Indigenous:	A native plant or animal to any given area.
Lek	A temporary male territory for the sole purpose of attracting females.
Mesic (cf: xeric):	Plants that have a high degree of moisture content of the leaves. Rainforest species are generally mesic.
Rhizome:	A horizontal underground stem or root.
ROTAP:	'Rare Or Threatened Australian Plants'
Sap-site tree:	An individual tree that is used by several fauna species to extract phloem (sap/kino) from the cambium layer of selected tree species as a food source. The Yellow-bellied Glider is one of the best known examples that extract sap from selected tree species. Sap-site trees are usually distinguished by characteristic 'V' shaped incisions into the outer bark.
Seral:	An underdeveloped stage of a plant community or succession.

Sphere-of-influence:	Environmental or biological factors outside of a given study site that influence the biota within a study site.
Sympatric:	The ability of animals or plants having similar or near parallel ecological requirements cohabiting with another related or similar species within the same habitat.
Trap-Nights:	The number of traps set per night in a given area. Eg: 20 traps set for one night = 20 trap-nights.
Vegetatively (asexually):	Vegetative reproduction. Non-sexual reproduction.
Xeric (cf: mesic):	Plants that have a low moisture content of the leaves. Normally plants found in dry forests or woodlands and adapted to dry environmental conditions in this instance.