

13 January 2021

Our ref: 20SYD - 16542

TAFE NSW
Level 2, Building A
Mary Ann Street
Ultimo NSW 2007

Attention: Paul Georgiades

Dear Paul,

RE: Western Sydney Construction Hub TAFE NSW Kingswood Campus – Biodiversity Development Assessment Report Waiver

Eco Logical Australia Pty Ltd (ELA) was engaged by TAFE NSW to provide a Biodiversity Development Assessment Report for the proposed vegetation removal for the Western Sydney Construction Hub on the TAFE NSW Kingswood Campus, located at 2-44 O'Connell Street, Kingswood (Lot 1 DP 866081) ('the development site'). The proposed development is likely to be assessed as a State Significant Development (SSD) by the Department of Planning, Industry and Environment (DPIE) (SSD-8571481).

ELA ecologist Carolina Mora conducted a field survey of the development footprint for 2 person hours on 10 July 2020 with a focus on the following:

- Validation of existing vegetation mapping, determining type, condition and extent within the development footprint
- Threatened flora and fauna habitat assessment, including spatially recording important habitat features, such as, hollow bearing trees, rocky outcrops, deep leaf litter, or waterways
- Diurnal inspection of human-made structures for microchiropteran bats (microbats) or signs of suitable habitat for microbats with torches
- Opportunistic fauna sightings.

Field survey and subsequent assessment of potential impacts to biodiversity values and concluded that the development will not have a significant impact on biodiversity values.

As an SSD, Section 7.9 (2) of the *Biodiversity Conservation Act 2016* (BC Act) states the following:

"Any such application is to be accompanied by a biodiversity development assessment report unless the Planning Agency Head and the Environment Agency Head determine that the proposed development is not likely to have any significant impact on biodiversity values."

The BC Act also outlines the assessment requirements to determine whether a proposed development or activity is likely to significantly affect threatened species or ecological communities, or their habitats under Section 7.3 of the Act, and whether the Biodiversity Offsets Scheme (BOS) will be triggered. If thresholds for the BOS and application of the Biodiversity Assessment Method (BAM) are triggered, a Biodiversity Development Assessment Report (BDAR) would be required. Triggers for the BOS and BAM are as follows:

- Exceeding a native vegetation area clearance threshold relative to minimum lot size under the Local Environmental Plan, or actual lot size where not minimum lot size is not provided; or
- Clearing of native vegetation identified on the NSW Government Biodiversity Values Map; or
- A significant impact on a threatened species or ecological community (as assessed by a qualified ecologist).

The proposal includes clearing of up to 0.18 ha of vegetation identified as planted natives/ exotics. The development site does not have a specified minimum lot size under the Penrith Local Environmental Plan (LEP) 2010 and has an actual lot size of approximately 23 ha. This does not trigger the area clearing threshold (0.5 ha or more). Vegetation proposed for removal is not mapped on the NSW Government Biodiversity Values Map (accessed 13 July 2020). Based on the attached assessment of likelihood of occurrence of threatened species and the subsequent application of Tests of Significance under the BC Act and Significant Impact Criteria under the *Commonwealth Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) (also attached), it was determined that the development will not have a significant impact on biodiversity values. The proposed development therefore does not trigger the BOS.

Therefore, it was determined that the applicant should seek a waiver from the need to prepare a BDAR. The attached tables describe the biodiversity values and impact in accordance with the NSW Department of Planning & Environment's 2018 *Biodiversity development assessment report waiver determinations for SSD and SSI applications fact sheet*. It is noted that Secretary's Environmental Assessment Requirements (SEARs) have not yet been issued for this project. The SEARs may require other biodiversity issues to be addressed.

Regards,



Carolina Mora
Ecologist

Biodiversity Development Assessment Report waiver request information

The information requirements for a BDAR waiver request, as outlined in the NSW Department of Planning and Environment's Guidelines, are provided in Table 1 and Table 2.

Table 1: BDAR waiver request information requirements

Requirement	Information
Administration	<p>Proponent: TAFE NSW</p> <p>Project ID: SSD-8571481</p> <p>Progress: Prepare EIS</p> <p>Completed by: Carolina Mora – Ecologist (Eco Logical Australia), B.Sc. (Advanced, Honours Class I)</p> <p>Reviewed by: Kirsten Velthuis – Senior Ecological Consultant, BAM accredited assessor 19048 (Eco Logical Australia), B.A.Sc. and David Bonjer – Senior Environmental Planner, (Eco Logical Australia, M.A.Sc.).</p>
Site Details	<p>Street address: 2-44 O'Connell Street, Kingswood</p> <p>Lot and DP: Lot 1 DP 866081</p> <p>Local government area (LGA): Penrith City Council. The site is currently zoned as SP2: Infrastructure under the Penrith LEP 2010.</p> <p>Existing development site: The site is approximately 23 ha comprising multiple large, active TAFE NSW Kingswood campus buildings, car parks and gardens. The proposed development is limited to an area along the eastern boundary of the lot ('the development footprint'). The development site does not have a specified minimum lot size under the Penrith Local Environmental Plan (LEP) 2010 and has an actual lot size of approximately 23 ha and is zones as SP2: Infrastructure. The development footprint is not mapped under the NSW Government Biodiversity Values Map (accessed 13 July 2020).</p> <p>A location map is presented in Figure 1.</p>
Proposed Development	<p>The proposal for the Western Sydney Construction Hub seeks consent for the clearing of 0.18 ha of vegetation identified as planted natives/ exotics located along the eastern boundary of 2-44 O'Connell Street, Kingswood. Vegetation to be removed is comprised of planted native and exotic trees and exotic grasslands maintained as mown lawn.</p> <p>The preliminary site plan is presented in Figure 2.</p>

Location



Legend

- Development Site
- Development Footprint
- Strahler Stream Order
- 1st Order
- 2nd Order

0 27 54 108
Metres

Datum/Projection:
GDA 1994 MGA Zone 56

N
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Prepared by: JK Date: 22/12/2020

Figure 1: Location of the proposed works.

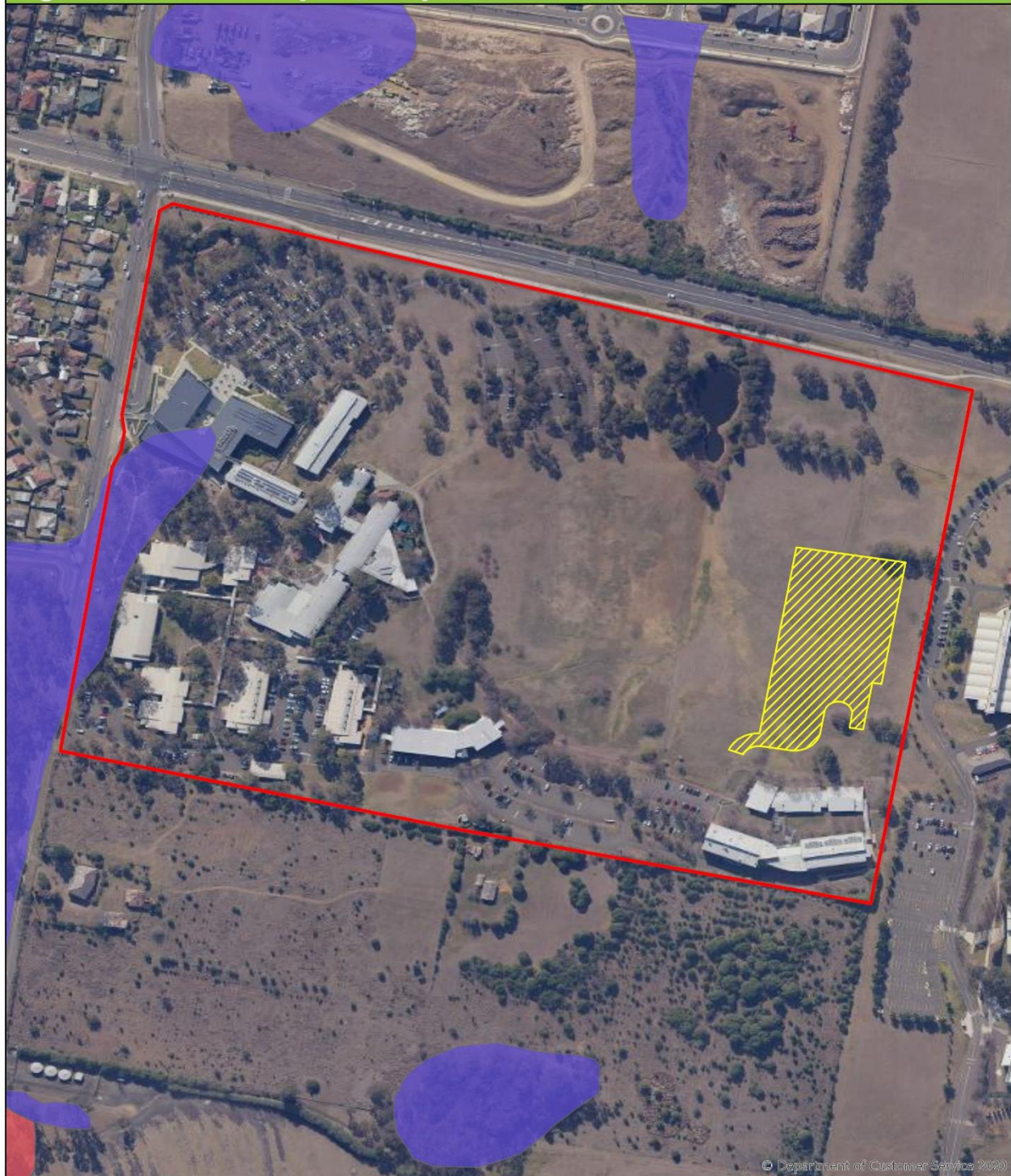
Table 2: Criteria to assess biodiversity under the BC Act and BC Regulation

Biodiversity Value	Meaning	Relevant	Discussion of values within the site
Biodiversity Conservation Regulation (Clause 1.4)			
Threatened Abundance	Species The occurrence and abundance of threatened species or threatened ecological communities, or their habitat, at a particular site.	N/A	<p>No threatened ecological communities have been previously mapped in the development footprint (OEH 2013) (Figure 3), nor were any observed during field survey. The vegetation present within the footprint was identified as Planted Natives/ Exotics (0.18 ha) and exotic lawn (Figure 4 and Figure 5). The removal of 0.18 ha of planted vegetation will not trigger the BOS threshold for a lot with the actual lot size of approximately 23 ha (0.5 ha or more).</p> <p>No threatened flora species were observed within the footprint during the survey (0), nor are there any BioNet (Atlas of NSW Wildlife) records of flora species previously recorded within the site (Figure 6). No habitat was available for threatened flora species due to the high level of modification of vegetation within the footprint. An assessment of the likelihood of occurrence of threatened flora species within the development footprint is provided in Appendix B.</p> <p>No threatened fauna species were observed within the footprint during the survey, nor are there any BioNet records of fauna species previously recorded within the site (Figure 7). No habitat for threatened fauna species (such as human-made structures, hollow bearing trees, deep leaf litter or rocks) or signs of use by threatened fauna species, (such as scats, tracks or scratches) were identified during survey. An assessment of the likelihood of occurrence of threatened fauna species within the development footprint is provided in Appendix B.</p> <p>Due to the limited amount of planted native vegetation present, the footprint does not contain enough foraging resources to sustain any threatened fauna species. At best, native plantings have the potential to provide marginal seasonal foraging habitat for the highly mobile species Grey-headed Flying-fox. The removal of this potential foraging habitat was considered in both the BC Act Test of Significance (Appendix C) and the EPBC Act Significant Impact Criteria (Appendix D). In accordance with these assessments, the proposed development will not result in a significant impact to this threatened species.</p>
Vegetation Abundance	The occurrence and abundance of vegetation at a particular site.	N/A	<p>The majority of vegetation present within the development footprint consisted of an exotic understorey managed as mown lawn, dominated by <i>Cenchrus clandestinus</i> (Kikuyu), <i>Taraxacum officinale</i> (Dandelion) and <i>Plantago lanceolata</i> (Plantain). Weed species identified within the footprint included one Weed of National Significance and five Priority Weeds listed in the Greater Sydney Strategic Weed Management Strategy 2017-2022 (0).</p> <p>Native vegetation within the development footprint was limited to planted native trees, including <i>Casuarina glauca</i> (Swamp Oak), <i>Corymbia maculata</i> (Spotted Gum), <i>Eucalyptus microcorys</i> (Tallowwood), <i>Eucalyptus tereticornis</i> (Forest Red Gum), <i>Melaleuca styphelioides</i> (Prickly-leaved Paperbark) and <i>Acacia floribunda</i> (White Sally Wattle). Vegetation identified as planted natives/ exotics also contained exotic trees, <i>Fraxinus</i> sp. (Claret Ash). Based on the modified soil landscape and footprint location, vegetation within the footprint was not consistent with any remnant native vegetation</p>

Biodiversity Value		Meaning	Relevant	Discussion of values within the site
				<p>communities and did not conform to any listed Plant Community Types (PCTs).</p> <p>A full list of flora species identified during field survey is presented in O.</p>
Habitat Connectivity		The degree to which a particular site connects different areas of habitat of threatened species to facilitate movement of those species across their range.	N/A	<p>Vegetation within the footprint is part of a highly fragmented urbanised landscape.</p> <p>Vegetation within the footprint is isolated within mown lawn area with the nearest mapped native plant community type mapped approximately 220 m away (Figure 3). As such, this vegetation does not provide any significant level of connectivity to facilitate movement of threatened species across their range.</p>
Threatened Species Movement		The degree to which a particular site contributes to the movement of threatened species to maintain their lifecycle;	N/A	<p>The development site contains minimal vegetation which is dominated by exotic grasslands. Movement for less mobile threatened fauna, such as mammals (not including bats), across the footprint is highly unlikely due to a lack connective vegetation. Opportunities for movement across the footprint for more mobile threatened fauna including birds and bats are available, however the footprint is not considered to be significant for the movement of any threatened species to maintain their lifecycle.</p>
Flight Path Integrity		The degree to which the flight paths of protected animals over a particular site are free from interference.	N/A	<p>Given the limited vegetation within the footprint, and the absence of connectivity in the canopy, it is unlikely that the footprint would be a significantly important flight path for protected animals to travel between areas of habitat.</p>
Water Sustainability		The degree to which water quality, water bodies and hydrological processes sustain threatened species and threatened ecological communities at a particular site.	N/A	<p>No natural water courses are present within the footprint. Two unnamed drainage lines are present in the north and south of the development footprint and are mapped as a first order stream under the Strahler classification order (Figure 1). The drainage lines are narrow trenches dominated by exotic ground cover (Figure 8). In its current state, the footprint is highly disturbed and does not contain water bodies or drainage structures that contribute to hydrological processes that sustain threatened species or ecological communities within or adjacent to the footprint.</p>
Biodiversity Conservation Act (Clause 1.5 (2))				
Vegetation Integrity		The degree to which the composition, structure and function of vegetation at a particular site and the surrounding landscape has been altered from a near natural state.	N/A	<p>Due to previous and current land management practices, vegetation and soils within the footprint have been highly modified or disturbed and lack natural resilience. Native species – some of which are outside their natural range of distribution – have been planted within the footprint as landscape specimens in an urban environment. Other vegetation within the footprint includes opportunistic weeds and planted exotic species. Vegetation present within the footprint was not consistent with any listed Plant Community Type.</p> <p>Overall, vegetation within the footprint is highly modified and altered from its natural state. Therefore, the development will not compromise the vegetation integrity of the footprint.</p>
Habitat Suitability		The degree to which the habitat needs of	N/A	<p>Suitable habitat for threatened species is highly limited within the footprint. Soils within the site have been highly modified and provide</p>

Biodiversity Value	Meaning	Relevant	Discussion of values within the site
	threatened species are present at the particular site.		<p>no habitat for any threatened flora species. Due to the limited amount of planted native vegetation present, the footprint does not contain sufficient foraging resources to sustain any threatened fauna species. The removal of 0.18 ha planted natives and exotics, which may provide marginal seasonal foraging habitat for the Grey-headed Flying-fox, will not result in a significant impact to the species. The footprint lacks geological features, hollow bearing trees, derelict human-made structures or non-native vegetation with the potential to provide nesting or roosting habitat for any threatened fauna species.</p> <p>Therefore, the proposed development will not compromise habitat suitability for threatened species.</p>

Vegetation Communities (OEH, 2013)



Legend

Development Site

Development Footprint

Vegetation Communities (OEH, 2013)

Forest Red Gum - Rough-barked Apple grassy woodland on alluvial flats of the Cumberland Plain, Sydney Basin Bioregion

Grey Box - Forest Red Gum grassy woodland on flats of the Cumberland Plain, Sydney Basin Bioregion

0 27 54 108
Metres

Datum/Projection:
GDA 1994 MGA Zone 56

N
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Prepared by: JK Date: 22/12/2020

Figure 3: Previously mapped vegetation (OEH 2013).

Vegetation Communities (ELA, 2020)



Figure 4: Validated vegetation (ELA 2020).



Figure 5: Left: Trees with the potential to be removed. Right: Vegetation within the development footprint.

Threatened Flora (BioNet)

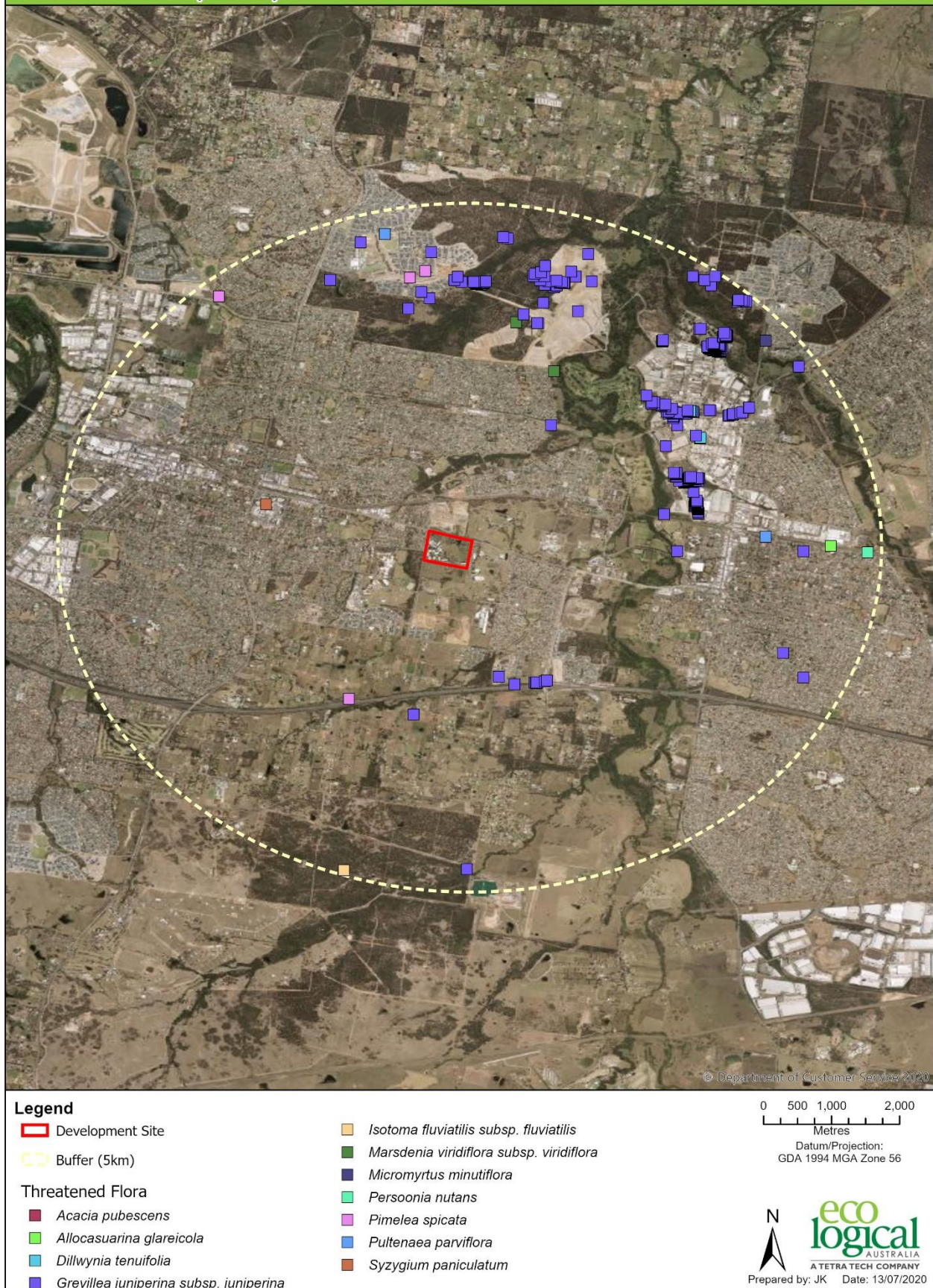


Figure 6: Threatened flora records within 5 km radius of the site.

Threatened Fauna (BioNet)

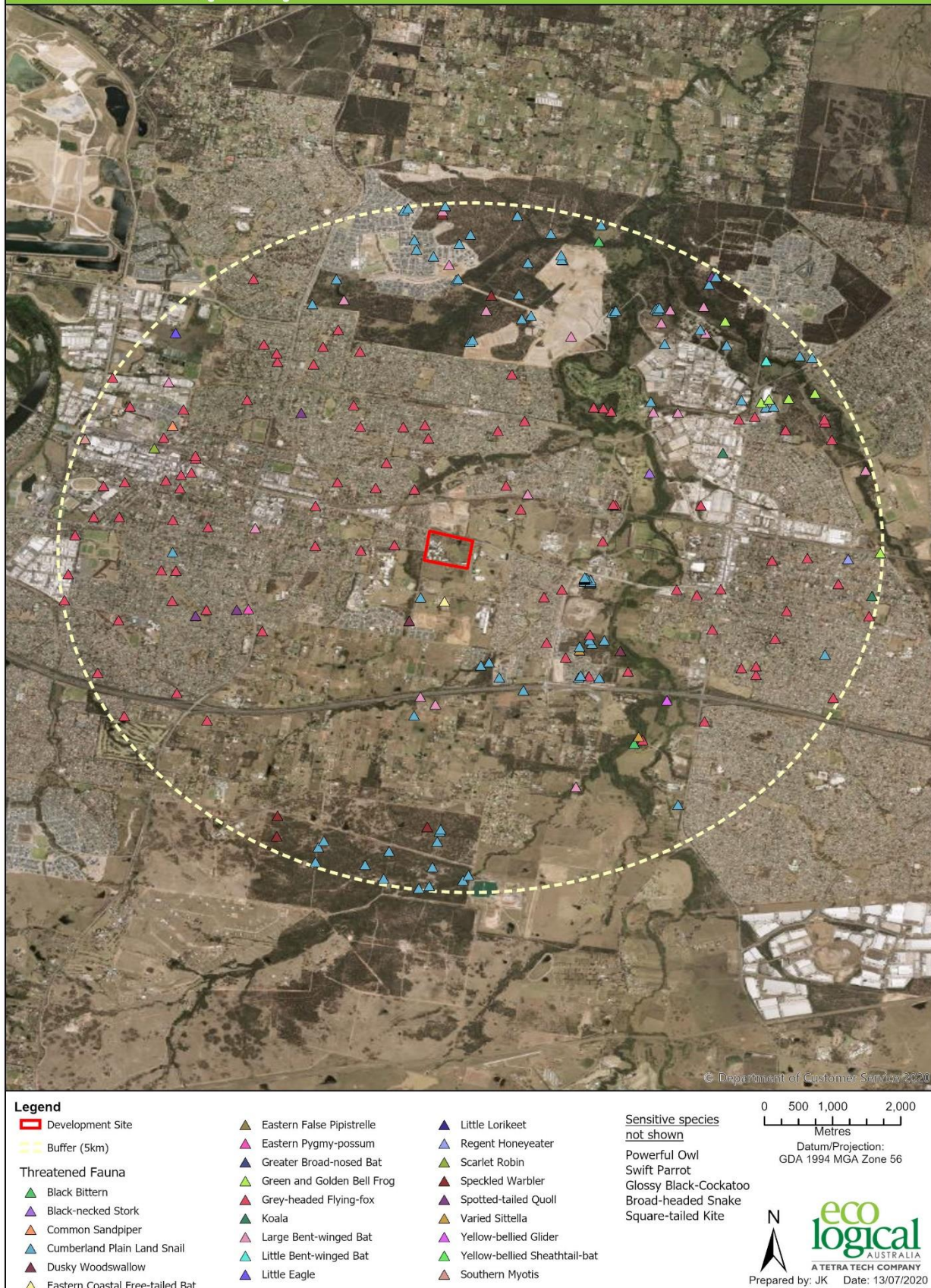


Figure 7: Threatened fauna records within 5 km radius of the site. Note: the Grey-headed Flying-fox record is outside the boundaries of the development site.



Figure 8: Drainage line within the development footprint.

Appendix A Species List

Table 3: Indicative flora species list recorded in the footprint during survey.

Family	Scientific name	Common name	Native (N) / Exotic (E)
Asteraceae	<i>Cirsium vulgare</i>	Spear-thistle	E
Asteraceae	<i>Hypochaeris radicata</i>	Flatweed	E
Asteraceae	<i>Senecio madagascariensis</i>	Fireweed	E (WoNS, PW*)
Asteraceae	<i>Sonchus oleraceus</i>	Common Sowthistle	E
Asteraceae	<i>Taraxacum officinale</i>	Dandelion	E
Casuarinaceae	<i>Casuarina glauca</i>	Swamp Oak	N (Planted)
Chenopodiaceae	<i>Einadia nutans</i>	Climbing Saltbush	N
Fabaceae (Faboideae)	<i>Glycine tabacina</i>		N
Fabaceae (Faboideae)	<i>Medicago polymorpha</i>	Burr Medic	E
Fabaceae (Faboideae)	<i>Trifolium repens</i>	White Clover	E
Fabaceae (Mimosoideae)	<i>Acacia floribunda</i>	White Sally Wattle	N (Planted)
Malvaceae	<i>Malva parviflora</i>	Small-flowered Mallow	E
Malvaceae	<i>Modiola caroliniana</i>	Red-flowered Mallow	E
Myrtaceae	<i>Corymbia maculata</i>	Spotted Gum	N (Planted)
Myrtaceae	<i>Eucalyptus microcorys</i>	Tallowwood	N (Planted)
Myrtaceae	<i>Eucalyptus tereticornis</i>	Forest Red Gum	N (Planted)
Myrtaceae	<i>Melaleuca styphelioides</i>	Prickly-leaved Paperbark	N (Planted)
Oleaceae	<i>Olea europaea</i> subsp. <i>cuspidata</i>	African Olive	E (PW**)
Plantaginaceae	<i>Plantago lanceolata</i>	Plantain	E
Poaceae	<i>Bothriochloa macra</i>	Red-leg Grass	N
Poaceae	<i>Cenchrus clandestinus</i>	Kikuyu	E (PW***)
Poaceae	<i>Chloris gayana</i>	Rhodes Grass	E (PW***)
Poaceae	<i>Sporobolus africanus</i>	Parramatta Grass	E
Solanaceae	<i>Solanum linnaeanum</i>	Apple of Sodom	E (PW***)

Key: WoNS = Weeds of National Significance, PW = Priority Weed: * State Level, ** Regional Level, *** Other Weed of Regional Concern.

Appendix B Likelihood of occurrence

An assessment of likelihood of occurrence was made for threatened and migratory species identified from the database search. Five terms for the likelihood of occurrence of species are used in this report. This assessment was based on database or other records, presence or absence of suitable habitat, features of the proposal site, results of the site inspection and professional judgement. Some Migratory or Marine species identified from the Commonwealth database search have been excluded from the assessment, due to lack of habitat. The terms for likelihood of occurrence are defined below:

- “known” = the species was or has been observed on the site
- “likely” = a medium to high probability that a species uses the site
- “potential” = suitable habitat for a species occurs on the site, but there is insufficient information to categorise the species as likely to occur, or unlikely to occur
- “unlikely” = a very low to low probability that a species uses the site
- “no” = habitat on site and in the vicinity is unsuitable for the species.

A test of significance was conducted for threatened species or ecological communities that were recorded within the study area or had a higher likelihood of occurring and were not recorded during the site visit. It is noted that some threatened fauna species that are highly mobile, wide ranging and vagrant may use portions of the study area intermittently for foraging. For these fauna species, the habitat present and likely to be impacted is not considered to be important to the threatened species, particularly in relation to the amount of similar habitat remaining in the surrounding landscape. As such, a test of significance in reference to State or Commonwealth legislation was not considered necessary.

The records column refers to the number of records occurring within 5 km of the study area, as provided by the Atlas of NSW Wildlife (BioNet) and Protected Matters Search Tool database search.

Information provided in the habitat associations’ column has primarily been extracted (and modified) from the Commonwealth Species Profile and Threats Database and the NSW Threatened Species Profiles.

Table 4: Likelihood of occurrence assessment for threatened flora

Scientific name	Common Name	BC Act Status	EPBC Act Status	Distribution and Habitat	Number of Records within 5 km	Likelihood of Occurrence	Impact Assessment Required
FLORA							
<i>Acacia bynoeana</i>	Bynoe's Wattle	E1	V	Found in central eastern NSW, from the Hunter District (Morisset) south to the Southern Highlands and west to the Blue Mountains. Heath or dry sclerophyll forest on sandy soils.	0	No - suitable habitat not recorded within the development footprint, no local records, not identified during survey.	No
<i>Acacia pubescens</i>	Downy Wattle	V	V	Restricted to the Sydney region around the Bankstown-Fairfield-Rookwood and Pitt Town area, with outliers occurring at Barden Ridge, Oakdale and Mountain Lagoon. Open woodland and forest, including Cooks River/Castlereagh Ironbark Forest, Shale/Gravel Transition Forest and Cumberland Plain Woodland. Occurs on alluviums, shales and at the intergrade between shales and sandstones.	1	No - suitable habitat not recorded within the development footprint, vegetation is substantially degraded, not identified during survey.	No
<i>Allocasuarina glaireicola</i>	-	E1	E	Primarily restricted to the Richmond (NW Cumberland Plain) district, but with an outlier population found at Voyager Point, Liverpool. Castlereagh woodland on lateritic soil.	1	No - suitable habitat not recorded within the development footprint, vegetation is substantially degraded, not identified during survey.	No
<i>Cynanchum elegans</i>	White-flowered Wax Plant	E1	E	Restricted to eastern NSW, from Brunswick Heads on the north coast to Gerroa in the Illawarra region, and as far west as Merriwa in the upper Hunter River valley. Found in ry rainforest; littoral rainforest; <i>Leptospermum laevigatum</i> - <i>Banksia integrifolia</i> subsp. <i>integrifolia</i> (Coastal Tea-tree- Coastal Banksia) coastal scrub; <i>Eucalyptus</i>	0	No - suitable habitat not recorded within the development footprint, no local records, not identified during survey.	No

Scientific name	Common Name	BC Act Status	EPBC Act Status	Distribution and Habitat	Number of Records within 5 km	Likelihood of Occurrence	Impact Assessment Required
				<i>tereticornis</i> (Forest Red Gum) or <i>Corymbia maculata</i> (Spotted Gum) open forest and woodland; and <i>Melaleuca armillaris</i> (Bracelet Honeymyrtle) scrub.			
<i>Dillwynia tenuifolia</i>	-	V	-	Mainly on the Cumberland Plain, but also Bulga Mountains at Yengo in the north, and Kurrajong Heights and Woodford in the Lower Blue Mountains. Scrubby/dry heath areas within Castlereagh Ironbark Forest and Shale Gravel Transition Forest, transitional areas where these communities adjoin Castlereagh Scribbly Gum Woodland, and disturbed escarpment woodland on Narrabeen sandstone.	26	No - suitable habitat not recorded within the development footprint, vegetation is substantially degraded, not identified during survey.	No
<i>Genoplesium baueri</i>	Bauer's Midge Orchid	E1	E	Has been recorded from locations between Nowra and Pittwater and may occur as far north as Port Stephens. Dry sclerophyll forest and moss gardens over sandstone. Heath and shrubby woodland to open forest on sandy or light clay soils usually over thin shales.	0	No - suitable habitat not recorded within the development footprint, no local records, not identified during survey.	No
<i>Grevillea juniperina</i> subsp. <i>juniperina</i>	Juniper-leaved Grevillea	V	-	Endemic to Western Sydney, centred on an area bounded by Blacktown, Erskine Park, Londonderry and Windsor with outlier populations at Kemps Creek and Pitt Town. Cumberland Plain Woodland, Castlereagh Ironbark Woodland, Castlereagh Scribbly Gum Woodland and Shale/Gravel Transition Forest, on reddish clay to sandy soils derived from Wianamatta Shale and Tertiary alluvium.	3548	No - suitable habitat not recorded within the development footprint, vegetation is substantially degraded, not identified during survey.	No
<i>Haloragis exalata</i> subsp. <i>exalata</i>	Square Raspwort	V	V	Disjunct distribution in the Central Coast, South Coast and North Western Slopes botanical subdivisions of NSW. Protected and shaded damp situations in riparian habitats.	0	No - suitable habitat not recorded within the development footprint, no local	No

Scientific name	Common Name	BC Act Status	EPBC Act Status	Distribution and Habitat	Number of Records within 5 km	Likelihood of Occurrence	Impact Assessment Required
						records, not identified during survey.	
<i>Isotoma fluviatilis</i> subsp. <i>fluviatilis</i>	-	E1	X	Currently known from only one property at Erskine Park in the Penrith LGA. Previously sighted at Homebush and at Agnes Banks. Damp places on the Cumberland Plain, including freshwater wetland, grassland/alluvial woodland, and alluvial woodland/shale plains woodland.	1	No - suitable habitat not recorded within the development footprint, vegetation is substantially degraded, not identified during survey.	No
<i>Marsdenia viridiflora</i> subsp. <i>viridiflora</i>	<i>Marsdenia viridiflora</i> R. Br. subsp. <i>viridiflora</i> population in the Bankstown, Blacktown, Camden, Campbelltown, Fairfield, Holroyd, Liverpool and Penrith local government areas	E2	-	Razorback Range, also recorded at Prospect, Bankstown, Smithfield, Cabramatta Creek and St Marys. Vine thickets and open shale woodland.	17	No - suitable habitat not recorded within the development footprint, vegetation is substantially degraded, not identified during survey.	No
<i>Micromyrtus minutiflora</i>	-	E1	V	Restricted to the general area between Richmond and Penrith, western Sydney. Castlereagh Scribbly Gum Woodland, Ironbark Forest, Shale/Gravel Transition	2	No - suitable habitat not recorded within the development footprint, vegetation is substantially	No

Scientific name	Common Name	BC Act Status	EPBC Act Status	Distribution and Habitat	Number of Records within 5 km	Likelihood of Occurrence	Impact Assessment Required
				Forest, open forest on tertiary alluvium and consolidated river sediments.		degraded, not identified during survey.	
<i>Persicaria elatior</i>	Tall Knotweed	V	V	Beside streams and lakes, swamp forest or disturbed areas.	0	No - suitable habitat not recorded within the development footprint, no local records, not identified during survey.	No
<i>Persoonia hirsuta</i>	Hairy Geebung	E1	E	Scattered distribution around Sydney, from Singleton in the north, along the east coast to Bargo in the south and the Blue Mountains to the west. Sandy soils in dry sclerophyll open forest, woodland and heath on sandstone.	0	No - suitable habitat not recorded within the development footprint, no local records, not identified during survey.	No
<i>Persoonia nutans</i>	Nodding Geebung	E1	E	Restricted to the Cumberland Plain in western Sydney, between Richmond in the north and Macquarie Fields in the south. Northern populations: sclerophyll forest and woodland (Agnes Banks Woodland, Castlereagh Scribbly Gum Woodland and Cooks River / Castlereagh Ironbark Forest) on aeolian and alluvial sediments. Southern populations: tertiary alluvium, shale sandstone transition communities and Cooks River / Castlereagh Ironbark Forest.	13	No - suitable habitat not recorded within the development footprint, vegetation is substantially degraded, not identified during survey.	No
<i>Pimelea curviflora</i> - var. <i>curviflora</i>		V	V	Confined to the coastal area of the Sydney and Illawarra regions between northern Sydney and Maroota in the north-west and Croom Reserve near Albion Park in the south. Woodland, mostly on shaley/lateritic soils over sandstone and shale/sandstone transition soils on ridgetops and upper slopes.	0	No - suitable habitat not recorded within the development footprint, no local records, not identified during survey.	No

Scientific name	Common Name		BC Act Status	EPBC Act Status	Distribution and Habitat	Number of Records within 5 km	Likelihood of Occurrence			Impact Assessment Required
<i>Pimelea spicata</i>	Spiked flower	Rice-	E1	E	Two disjunct areas; the Cumberland Plain (Marayong and Prospect Reservoir south to Narellan and Douglas Park) and the Illawarra (Landsdowne to Shellharbour to northern Kiama). Well-structured clay soils. <i>Eucalyptus moluccana</i> (Grey Box) communities and in areas of ironbark on the Cumberland Plain. Coast Banksia open woodland or coastal grassland in the Illawarra.	38	No recorded development vegetation degraded, not identified during survey.	- suitable habitat within the footprint, is substantially	not	No
<i>Pomaderris brunnea</i>	Brown Pomaderris		E1	V	In NSW, found around the Colo, Nepean and Hawkesbury Rivers, including the Bargo area and near Camden. It also occurs near Walcha on the New England tablelands. Moist woodland or forest on clay and alluvial soils of flood plains and creek lines.	0	No recorded development records, not identified during survey.	- suitable habitat within the footprint, no local	not	No
<i>Pterostylis saxicola</i>	Sydney Plains Greenhood		E1	E	Restricted to western Sydney between Freemans Reach in the north and Picton in the south. Small pockets of shallow soil in depressions on sandstone rock shelves above cliff lines, adjacent to sclerophyll forest or woodland on shale/sandstone transition soils or shale soils.	0	No recorded development records, not identified during survey.	- suitable habitat within the footprint, no local	not	No
<i>Pultenaea parviflora</i>	-		E1	V	Endemic to the Cumberland Plain. Mainly from Windsor to Penrith and east to Dean Park, with outlier populations at Kemps Creek and Wilberforce. Dry sclerophyll forest, especially Castlereagh Ironbark Forest, Shale Gravel Transition Forest and transitional areas where these communities adjoin Castlereagh Scribbly Gum Woodland.	25	No recorded development vegetation degraded, not identified during survey.	- suitable habitat within the footprint, is substantially	not	No
<i>Syzygium paniculatum</i>	Magenta Lilly Pilly		E1	V	Only in NSW, in a narrow, linear coastal strip from Upper Lansdowne to Conjola State Forest. Subtropical and littoral rainforest on gravels, sands, silts and clays.	1	No recorded development vegetation is substantially	- suitable habitat within the footprint,	not	No

Scientific name	Common Name	BC Act Status	EPBC Act Status	Distribution and Habitat	Number of Records within 5 km	Likelihood of Occurrence	Impact Assessment Required
<i>Thesium australe</i>	Austral Toadflax	V	V	In eastern NSW it is found in very small populations scattered along the coast, and from the Northern to Southern Tablelands. Grassland on coastal headlands or grassland and grassy woodland away from the coast.	0	degraded, not identified during survey. No - suitable habitat not recorded within the development footprint, no local records, not identified during survey.	No

BC Act key: E1 = endangered, E2= endangered population, E4 = Extinct, E4A = critically endangered, V = vulnerable.

EPBC Act Key: M = migratory, Mar = marine CE = critically endangered, E = endangered, V = vulnerable, X = extinct.

Table 5: Likelihood of occurrence assessment for threatened fauna

Scientific name	Common Name	BC Act Status	EPBC Act Status	Distribution and Habitat	Number of Records within 5 km	Likelihood of Occurrence	Impact Assessment Required
FAUNA							
<i>Actitis hypoleucos</i>	Common Sandpiper	-	M	Summer migrant. In NSW, widespread along coastline and also occurs in many areas inland. Coastal wetlands and some inland wetlands, especially muddy margins or rocky shores. Also, estuaries and deltas, lakes, pools, billabongs, reservoirs, dams and claypans, mangroves.	1	Unlikely - lack of suitable habitat for this species within the development footprint.	No
<i>Anthochaera phrygia</i>	Regent Honeyeater	E4A	CE	Inland slopes of south-east Australia, and less frequently in coastal areas. In NSW, most records are from the North-West Plains, North-West and South-West Slopes, Northern Tablelands, Central Tablelands and Southern Tablelands regions; also recorded in the Central Coast and Hunter Valley regions. Eucalypt woodland and open forest, wooded farmland and urban areas with mature eucalypts, and riparian forests of <i>Casuarina cunninghamiana</i> (River Oak).	2	Unlikely - lack of suitable habitat for this species within the development footprint.	No
<i>Apus pacificus</i>	Fork-tailed Swift	-	M	Recorded in all regions of NSW. Riparian woodland., swamps, low scrub, heathland, saltmarsh, grassland, Spinifex sandplains, open farmland and inland and coastal sand-dunes.	0	No - lack of suitable habitat for this species within the development footprint.	No
<i>Ardea alba</i>	Great Egret		Marine	Widespread, occurring across all states/territories. Also a vagrant on Lord Howe and Norfolk Island. Swamps and marshes, grasslands, margins of rivers and lakes, salt pans, estuarine mudflats and other wetland habitats.	0	No - lack of suitable habitat for this species within the development footprint.	No
<i>Ardea ibis</i>	Cattle Egret	-	Marine	Widespread and common across NSW. Grasslands, wooded lands and terrestrial wetlands. Primarily inhabit dry, open eucalypt forests and woodlands, including mallee associations, with an open or sparse understorey of eucalypt	0	No - lack of suitable habitat for this species	No

Scientific name	Common Name	BC Act Status	EPBC Act Status	Distribution and Habitat	Number of Records within 5 km	Likelihood of Occurrence	Impact Assessment Required
				saplings, acacias and other shrubs, and ground-cover of grasses or sedges and fallen woody debris. It has also been recorded in shrublands, heathlands and very occasionally in moist forest or rainforest. Also found in farmland, usually at the edges of forest or woodland.		within the development footprint.	
<i>Artamus cyanopterus cyanopterus</i>	Dusky Woodswallow	V	#N/A	Widespread in NSW from coast to inland including the western slopes of the Great Dividing Range and farther west. Species have also been recorded in southern and southwestern Australia. Woodlands and dry open sclerophyll forest, usually eucalypts and mallee associations. Also have recordings in shrub and heathlands and various modified habitats, including regenerating forests. In western NSW, this species is primarily associated with River Red Gum/Black Box/Coolabah open forest/woodland and associated with larger river/creek systems.	2	Unlikely - lack of suitable habitat for this species within the development footprint.	No
<i>Botaurus poiciloptilus</i>	Australasian Bittern	E1	E	Found over most of NSW except for the far north-west. Permanent freshwater wetlands with tall, dense vegetation, particularly <i>Typha</i> spp. (bullrushes) and <i>Eleocharis</i> spp. (spikerushes).	0	No – lack of suitable aquatic flora that represent required habitat for this species in the development footprint.	No
<i>Calidris ferruginea</i>	Curlew Sandpiper	E1	CE, M	Occurs along the entire coast of NSW, and sometimes in freshwater wetlands in the Murray-Darling Basin. Littoral and estuarine habitats, including intertidal mudflats, non-tidal swamps, lakes and lagoons on the coast and sometimes inland.	0	No - lack of suitable habitat for this species within the development footprint.	No

Scientific name	Common Name	BC Act Status	EPBC Act Status	Distribution and Habitat	Number of Records within 5 km	Likelihood of Occurrence	Impact Assessment Required
<i>Calidris melanotos</i>	Pectoral Sandpiper	-	M	Summer migrant to Australia. Widespread but scattered in NSW. East of the Great Divide, recorded from Casino and Ballina, south to Ulladulla. West of the Great Divide, widespread in the Riverina and Lower Western regions. Shallow fresh to saline wetlands, including coastal lagoons, estuaries, bays, swamps, lakes, inundated grasslands, saltmarshes, river pools, creeks, floodplains and artificial wetlands.	0	No - lack of suitable habitat for this species within the development footprint.	No
<i>Calyptorhynchus lathamii</i>	Glossy Black-Cockatoo	V		In NSW, widespread along coast and inland to the southern tablelands and central western plains, with a small population in the Riverina. Open forest and woodlands of the coast and the Great Dividing Range where stands of sheoak occur.	12	Unlikely - lack of suitable habitat for this species within the development footprint.	No
<i>Chalinolobus dwyeri</i>	Large-eared Pied Bat	V	V	Recorded from Rockhampton in Qld south to Ulladulla in NSW. Largest concentrations of populations occur in the sandstone escarpments of the Sydney basin and the NSW north-west slopes. Wet and dry sclerophyll forests, Cyprus Pine dominated forest, woodland, sub-alpine woodland, edges of rainforests and sandstone outcrop country.	0	No - lack of suitable habitat for this species within the development footprint.	No
<i>Chthonicola sagittata</i>	Speckled Warbler	V	-	From south-eastern Qld, the eastern half of NSW and into Victoria, as far west as the Grampians, mostly on hills and tablelands of the Great Dividing Range and rarely on coast. Eucalyptus-dominated communities with a grassy understorey and sparse shrub layer, often on rocky ridges or in gullies.	13	Unlikely - lack of suitable habitat for this species within the development footprint.	No
<i>Daphoenositta chrysoptera</i>	Varied Sittella	V	-	Distribution in NSW is nearly continuous from the coast to the far west. Inhabits eucalypt forests and woodlands, mallee and Acacia woodland.	6	Unlikely – this highly mobile species may occasionally fly over the	No

Scientific name	Common Name	BC Act Status	EPBC Act Status	Distribution and Habitat	Number of Records within 5 km	Likelihood of Occurrence	Impact Assessment Required
						development footprint on feeding forays. However, vegetation within the footprint is isolated planted vegetation in an urban area, which does not represent the preferred habitat for this species (forests and woodlands) and is therefore unlikely to be used.	
<i>Dasyurus maculatus</i>	Spotted-tailed Quoll	V	E	Found on the east coast of NSW, Tasmania, eastern Victoria and north-eastern Qld. Rainforest, open forest, woodland, coastal heath and inland riparian forest, from the sub-alpine zone to the coastline.	4	Unlikely - lack of suitable habitat for this species within the development footprint.	No
<i>Falsistrellus tasmaniensis</i>	Eastern False Pipistrelle	V	-	South-east coast and ranges of Australia, from southern Qld to Victoria and Tasmania. In NSW, records extend to the western slopes of the Great Dividing Range. Tall (greater than 20 m) moist habitats.	3	Unlikely – lack of hollow bearing trees, which represent roosting habitat for this species, were identified within the development footprint.	No
<i>Gallinago hardwickii</i>	Latham's Snipe	-	M	Migrant to east coast of Australia, extending inland west of the Great Dividing Range in NSW. Freshwater, saline or brackish wetlands up to 2000 m above sea-level; usually freshwater swamps, flooded grasslands or heathlands.	0	No - lack of suitable habitat for this species within the development footprint.	No

Scientific name	Common Name	BC Act Status	EPBC Act Status	Distribution and Habitat	Number of Records within 5 km	Likelihood of Occurrence	Impact Assessment Required
<i>Glossopsitta pusilla</i>	Little Lorikeet	V	-	In NSW, found from the coast westward as far as Dubbo and Albury. Dry, open eucalypt forests and woodlands, including remnant woodland patches and roadside vegetation.	1	Unlikely - lack of suitable habitat for this species within the development footprint.	No
<i>Grantiella picta</i>	Painted Honeyeater	V	V	Widely distributed in NSW, predominantly on the inland side of the Great Dividing Range but avoiding arid areas. Boree, Brigalow and Box-Gum Woodlands and Box-Ironbark Forests.	0	No - lack of suitable habitat for this species within the development footprint.	No
<i>Haliaeetus leucogaster</i>	White-bellied Sea-Eagle	V	Marine	Distributed along the coastline of mainland Australia and Tasmania, extending inland along some of the larger waterways, especially in eastern Australia. Freshwater swamps, rivers, lakes, reservoirs, billabongs, saltmarsh and sewage ponds and coastal waters. Terrestrial habitats include coastal dunes, tidal flats, grassland, heathland, woodland, forest and urban areas.	0	Unlikely - lack of suitable habitat for this species within the development footprint.	No
<i>Heleioporus australiacus</i>	Giant Burrowing Frog	V	V	South eastern NSW and Victoria, in two distinct populations: a northern population in the sandstone geology of the Sydney Basin as far south as Ulladulla, and a southern population occurring from north of Narooma through to Walhalla, Victoria. Heath, woodland and open dry sclerophyll forest on a variety of soil types except those that are clay based.	0	No - lack of suitable habitat for this species within the development footprint.	No
<i>Hieraetus morphnoides</i>	Little Eagle	V	-	Throughout the Australian mainland, with the exception of the most densely forested parts of the Dividing Range escarpment. Open eucalypt forest, woodland or open woodland, including sheoak or Acacia woodlands and riparian woodlands of interior NSW.	1	Unlikely - lack of suitable habitat for this species within the development footprint.	No

Scientific name	Common Name	BC Act Status	EPBC Act Status	Distribution and Habitat	Number of Records within 5 km	Likelihood of Occurrence	Impact Assessment Required
<i>Hirundapus caudacutus</i>	White-throated Needletail	-	M	All coastal regions of NSW, inland to the western slopes and inland plains of the Great Divide. Occur most often over open forest and rainforest, as well as heathland, and remnant vegetation in farmland.	0	No - lack of suitable habitat for this species within the development footprint.	No
<i>Hoplocephalus bungaroides</i>	Broad-headed Snake	E1	V	Largely confined to Triassic and Permian sandstones within the coast and ranges in an area within approximately 250 km of Sydney. Dry and wet sclerophyll forests, riverine forests, coastal heath swamps, rocky outcrops, heaths, grassy woodlands.	1	Unlikely - lack of suitable habitat for this species within the development footprint.	No
<i>Lathamus discolor</i>	Swift Parrot	E1	CE	Migrates from Tasmania to mainland in Autumn-Winter. In NSW, the species mostly occurs on the coast and south west slopes. Box-ironbark forests and woodlands.	93	Unlikely - lack of favoured feed trees which represent suitable foraging habitat for this species in the study area.	No
<i>Litoria aurea</i>	Green and Golden Bell Frog	E1	V	Since 1990, recorded from ~50 scattered sites within its former range in NSW, from the north coast near Brunswick Heads, south along the coast to Victoria. Records exist west to Bathurst, Tumut and the ACT region. Marshes, dams and stream-sides, particularly those containing <i>Typha</i> spp. (bullrushes) or <i>Eleocharis</i> spp. (spikerushes). Some populations occur in highly disturbed areas.	6	Unlikely - lack of suitable habitat for this species within the development footprint.	No
<i>Lophoictinia isura</i>	Square-tailed Kite	V	-	In NSW, it is a regular resident in the north, north-east and along the major west-flowing river systems. It is a summer breeding migrant to the south-east, including the NSW south coast. Timbered habitats including dry woodlands and open forests, particularly timbered watercourses.	1	Unlikely - lack of suitable habitat for this species within the development footprint.	No

Scientific name	Common Name	BC Act Status	EPBC Act Status	Distribution and Habitat	Number of Records within 5 km	Likelihood of Occurrence	Impact Assessment Required
<i>Meridolum corneovirens</i>	Cumberland Plain Land Snail	E1	-	Areas of the Cumberland Plain west of Sydney, from Richmond and Windsor south to Picton and from Liverpool, west to the Hawkesbury and Nepean Rivers at the base of the Blue Mountains. Primarily inhabits Cumberland Plain Woodland. Also known from Shale Gravel Transition Forests, Castlereagh Swamp Woodlands and the margins of River-flat Eucalypt Forest.	287	Unlikely - lack of suitable habitat for this species within the development footprint.	No
<i>Merops ornatus</i>	Rainbow Bee-eater		Marine	Distributed across much of mainland Australia, including NSW. Open forests and woodlands, shrublands, farmland, areas of human habitation, inland and coastal sand dune systems, heathland, sedgeland, vine forest and vine thicket.	0	No - lack of suitable habitat for this species within the development footprint.	No
<i>Micronomus norfolkensis</i>	Eastern Coastal Free-tailed Bat	V	-	Found along the east coast from south Qld to southern NSW. Dry sclerophyll forest, woodland, swamp forests and mangrove forests east of the Great Dividing Range.	9	Unlikely - lack of hollow bearing trees or human-made structures, which represent suitable habitat, for this species within the development footprint.	No
<i>Miniopterus australis</i>	Little Bentwing-bat	V	-	East coast and ranges south to Wollongong in NSW. Moist eucalypt forest, rainforest, vine thicket, wet and dry sclerophyll forest, Melaleuca swamps, dense coastal forests and banksia scrub.	1	Unlikely - lack of hollow bearing trees or human-made structures, which represent suitable habitat, for this species within the development footprint.	No
<i>Miniopterus orianae oceanensis</i>	Large Bent-winged Bat	V	-	In NSW it occurs on both sides of the Great Dividing Range, from the coast inland to Moree, Dubbo and Wagga Wagga.	66	Unlikely - lack of caves or human-made	No

Scientific name	Common Name	BC Act Status	EPBC Act Status	Distribution and Habitat	Number of Records within 5 km	Likelihood of Occurrence	Impact Assessment Required
				Rainforest, wet and dry sclerophyll forest, monsoon forest, open woodland, paperbark forests and open grassland. Moist eucalypt forest, rainforest, vine thicket, wet and dry sclerophyll forest, Melaleuca swamps, dense coastal forests and banksia scrub.		structures, which represent habitat for this species within the development footprint.	
<i>Monarcha melanopsis</i>	Black-faced Monarch	-	M	In NSW, occurs around the eastern slopes and tablelands of the Great Divide, inland to Coutts Crossing, Armidale, Widden Valley, Wollemi National Park and Wombeyan Caves. It is rarely recorded farther inland. Rainforest, open eucalypt forests, dry sclerophyll forests and woodlands, gullies in mountain areas or coastal foothills, Brigalow scrub, coastal scrub, mangroves, parks and gardens.	0	No - lack of suitable habitat for this species within the development footprint.	No
<i>Motacilla flava</i>	Yellow Wagtail	-	M	Regular summer migrant to mostly coastal Australia. In NSW recorded Sydney to Newcastle, the Hawkesbury and inland in the Bogan LGA. Swamp margins, sewage ponds, saltmarshes, playing fields, airfields, ploughed land, lawns.	0	No - lack of suitable habitat for this species within the development footprint.	No
<i>Myiagra cyanoleuca</i>	Satin Flycatcher	-	M	In NSW, widespread on and east of the Great Divide and sparsely scattered on the western slopes, with very occasional records on the western plains. Eucalypt-dominated forests, especially near wetlands watercourses, and heavily vegetated gullies.	0	No - lack of suitable habitat for this species within the development footprint.	No
<i>Myotis macropus</i>	Southern Myotis	V	-	In NSW, found in the coastal band. It is rarely found more than 100 km inland, except along major rivers. Foraging habitat is waterbodies (including streams, or lakes or reservoirs) and fringing areas of vegetation up to 20 m.	31	Unlikely - lack of human-made structures, which represent suitable habitat, for this species within the development footprint.	No

Scientific name	Common Name	BC Act Status	EPBC Act Status	Distribution and Habitat	Number of Records within 5 km	Likelihood of Occurrence	Impact Assessment Required
<i>Ninox strenua</i>	Powerful Owl	V	-	In NSW, it is widely distributed throughout the eastern forests from the coast inland to tablelands, with scattered records on the western slopes and plains. Woodland, open sclerophyll forest, tall open wet forest and rainforest.	4	Unlikely – this highly mobile species may occasionally fly over the development footprint on feeding forays. However, vegetation within the footprint is isolated planted vegetation in an urban area, which does not represent the preferred habitat for this species (forests) and is therefore unlikely to be used.	No
<i>Numenius madagascariensis</i>	Eastern Curlew	-	CE, M	Summer migrant to Australia. Primarily coastal distribution in NSW, with some scattered inland records. Estuaries, bays, harbours, inlets and coastal lagoons, intertidal mudflats or sandflats, ocean beaches, coral reefs, rock platforms, saltmarsh, mangroves, freshwater/brackish lakes, saltworks and sewage farms.	0	No - lack of suitable habitat for this species within the development footprint.	No
<i>Petauroides volans</i>	Greater Glider	-	V	In Eastern Australia, it is found from the Windsor Tableland in north Queensland through to central Victoria (Wombat State Forest). Eucalypt forests and woodlands. It is typically found in highest abundance in taller, montane, moist eucalypt forests with relatively old trees and abundant hollows.	0	No - lack of suitable habitat for this species within the development footprint.	No
<i>Petrogale penicillata</i>	Brush-tailed Rock-wallaby	E1	V	In NSW they occur from the Qld border in the north to the Shoalhaven in the south, with the population in the Warrumbungle Ranges being the western limit. Rocky	0	No - lack of suitable habitat for this species	No

Scientific name	Common Name	BC Act Status	EPBC Act Status	Distribution and Habitat	Number of Records within 5 km	Likelihood of Occurrence	Impact Assessment Required
				escarpments, outcrops and cliffs with a preference for complex structures with fissures, caves and ledges.		within the development footprint.	
<i>Petroica boodang</i>	Scarlet Robin	V		In NSW, it occurs from the coast to the inland slopes. Dry eucalypt forests and woodlands, and occasionally in mallee, wet forest, wetlands and tea-tree swamps.	1	Unlikely - lack of suitable habitat for this species within the development footprint.	No
<i>Phascolarctos cinereus</i>	Koala	V	V	In NSW it mainly occurs on the central and north coasts with some populations in the west of the Great Dividing Range. There are sparse and possibly disjunct populations in the Bega District, and at several sites on the southern tablelands. Eucalypt woodlands and forests.	2	Unlikely - lack of suitable habitat for this species within the development footprint.	No
<i>Pseudomys novaehollandiae</i>	New Holland Mouse	-	V	Fragmented distribution across eastern NSW. Open heathlands, woodlands and forests with a heathland understorey, vegetated sand dunes.	0	No - lack of suitable habitat for this species within the development footprint.	No
<i>Pteropus poliocephalus</i>	Grey-headed Flying-fox	V	V	Along the eastern coast of Australia, from Bundaberg in Qld to Melbourne in Victoria. Subtropical and temperate rainforests, tall sclerophyll forests and woodlands, heaths and swamps as well as urban gardens and cultivated fruit crops.	340	Potential – suitable foraging habitat for this species was identified within the development footprint.	Yes
<i>Rhipidura rufifrons</i>	Rufous Fantail	-	M	Coastal and near coastal districts of northern and eastern Australia, including on and east of the Great Divide in NSW. Wet sclerophyll forests, subtropical and temperate rainforests. Sometimes drier sclerophyll forests and woodlands.	0	No - lack of suitable habitat for this species within the development footprint.	No
<i>Rostratula australis</i>	Australian Painted Snipe	E1	E	In NSW most records are from the Murray-Darling Basin. Other recent records include wetlands on the Hawkesbury	0	No - lack of suitable habitat for this species	No

Scientific name	Common Name	BC Act Status	EPBC Act Status	Distribution and Habitat	Number of Records within 5 km	Likelihood of Occurrence	Impact Assessment Required
				River and the Clarence and lower Hunter Valleys. Swamps, dams and nearby marshy areas.		within the development footprint.	
<i>Saccolaimus flaviventris</i>	Yellow-bellied Sheath-tail-bat	V	-	There are scattered records of this species across the New England Tablelands and North West Slopes. Rare visitor in late summer and autumn to south-western NSW. Almost all habitats, including wet and dry sclerophyll forest, open woodland, open country, mallee, rainforests, heathland and waterbodies.	1	Unlikely - lack of hollow bearing trees or human-made structures, which represent suitable habitat, for this species within the development footprint.	No
<i>Scoteanax rueppellii</i>	Greater Broad-nosed Bat	V	-	Both sides of the great divide, from the Atherton Tableland in Qld to north-eastern Victoria, mainly along river systems and gullies. In NSW it is widespread on the New England Tablelands. Woodland, moist and dry eucalypt forest and rainforest.	2	Unlikely - lack of hollow bearing trees or human-made structures, which represent suitable habitat, for this species within the development footprint.	No
<i>Tringa nebularia</i>	Common Greenshank	-	M	Summer migrant to Australia. Recorded in most coastal regions of NSW; also, widespread west of the Great Dividing Range, especially between the Lachlan and Murray Rivers and the Darling River drainage basin, including the Macquarie Marshes, and north-west regions. Terrestrial wetlands (swamps, lakes, dams, rivers, creeks, billabongs, waterholes and inundated floodplains, claypans, saltflats, sewage farms and saltworks dams, inundated rice crops and bores) and sheltered coastal habitats (mudflats, saltmarsh, mangroves, embayments, harbours, river estuaries, deltas, lagoons, tidal pools, rock-flats and rock platforms).	0	Unlikely - lack of suitable habitat for this species within the development footprint.	No

Scientific name	Common Name	BC Act Status	EPBC Act Status	Distribution and Habitat	Number of Records within 5 km	Likelihood of Occurrence	of Impact Assessment Required
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BC Act key: E1 = endangered, E2= endangered population, E4 = Extinct, E4A = critically endangered, V = vulnerable.
 EPBC Act Key: M = migratory, Mar = marine CE = critically endangered, E = endangered, V = vulnerable, X = extinct.

Appendix C Biodiversity Conservation Act 2016 Test of Significance

Section 7.3 of the *Biodiversity Conservation Act 2016* (BC Act) requires a number of factors 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. These factors are addressed below for the species likely to be impacted by the proposed development.

C1 *Pteropus poliocephalus* (Grey-headed Flying-fox)

The Grey-headed Flying-fox is listed as vulnerable under the BC Act and EPBC Act. The distribution and habitat of this species is presented in Table 5. This species was not recorded on site during the survey but has been recorded within 5 km of the site. There is a Flying-fox Camp approximately 6 km northwest of the development footprint at Emu Plains, and another Flying-fox Camp approximately 6.35 km southeast of the development footprint at Ropes Creek. The proposed development will remove 0.18 ha of planted native vegetation – some of which includes species that are potential seasonal foraging habitat for this species. No camps will be affected by the proposed development.

BC Act	Question	Response
7.3.1 a)	In the case of a threatened species: whether the proposed development or activity is likely to have an adverse effect on the life cycle of the species such that a viable local population of the species is likely to be placed at risk of extinction	The proposed development will remove 0.18 ha of planted native and exotic vegetation which may provide marginal seasonal foraging opportunities for the species, including <i>Eucalyptus tereticornis</i> . Given the proximity of landscaped gardens, street trees and parks to the development footprint, the loss of vegetation is unlikely to adversely affect the Grey-headed Flying-fox such that its population will be placed at risk of extinction.
7.3.1 b) i	In the case of an endangered ecological community or critically endangered ecological community, whether the proposed development or activity: 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, this species is not an endangered or critically endangered ecological community.
7.3.1 b) ii	In the case of an endangered ecological community or critically endangered ecological community: Whether the proposed development or activity 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, this species is not an endangered or critically endangered ecological community.
7.3.1 c) i	In relation to the habitat of a threatened species or ecological community: The extent to which habitat is likely to be removed or modified as a result of the proposed development or activity	The 0.18 ha of planted native and exotic vegetation being removed as part of the proposed development represents marginal foraging habitat for the Grey-headed Flying-Fox. However, given that potential foraging habitat is available in the area surrounding the development footprint this impact

BC Act	Question	Response
		is likely minor. Additionally, this species is highly mobile and is likely to utilise foraging resources within the locality.
7.3.1 c) ii	<p>In relation to the habitat of a threatened species or ecological community:</p> <p>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</p>	<p>The area of potential foraging habitat to be removed forms part of highly modified and planted trees which contains a mix of planted native and exotic vegetation. There are large amounts of similar vegetation available immediately adjacent to the development footprint. The proposed development is unlikely to have an adverse impact on habitat connectivity. The species is highly mobile and will continue to use the surrounding locality for foraging.</p>
7.3.1 c) iii	<p>In relation to the habitat of a threatened species or ecological community:</p> <p>The importance of the habitat to be removed, modified, fragmented or isolated to the long-term survival of the species, population or ecological community in the locality.</p>	<p>The 0.18 ha of marginal foraging habitat to be removed is considered a minor amount compared with adjacent foraging habitat recorded in the locality. The vegetation within the development footprint is not considered important for the long-term survival of the Grey-headed Flying-fox population due to the availability of similar vegetation adjacent to the development footprint. No camps were recorded in the development footprint.</p>
7.3.1 d)	<p>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).</p>	<p>The proposed development will not directly or indirectly impact any declared area of outstanding biodiversity value.</p>
7.3.1 e)	<p>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.</p>	<p>The clearing of native vegetation is one key threatening process relevant to the proposed development. However, with respect to the Grey-headed Flying-Fox, the proposed development involves a minimal impact to potential foraging habitat in the context of the locality.</p>
Conclusion	<p>Is there likely to be a significant impact?</p>	<p>No. The proposed removal of planted native and exotic vegetation is unlikely to have a significant impact on the Grey-headed Flying Fox for the following reasons:</p> <ul style="list-style-type: none"> • Foraging habitat within the footprint is marginal and would provide seasonal foraging opportunities, at best. • Similar foraging habitat is abundant immediately adjacent to the development footprint. • Roosting habitat was not identified within the study area and will not be impacted by the proposed development.

Appendix D - Environment Protection and Biodiversity Conservation Act 1999 Significant Impact Criteria

The following assessment was prepared in accordance with the *EPBC Act Matters of National Environmental Significance: Significant Impact Guidelines 1.1*. These guidelines have been established to assist proponents to determine whether a proposed action is likely to result in a significant impact on a matter of national environmental significance.

D1 *Pteropus poliocephalus* (Grey-headed Flying-fox)

Criterion	Question	Response
An action is likely to have a significant impact on a vulnerable species if there is a real chance or possibility that it will:		
1)	lead to a long-term decrease in the size of an important population of a species	No roosting habitat (camps) will be affected by the proposed action. However, the proposed action will remove 0.18 ha of planted native and exotic vegetation, some of which comprises marginal seasonal foraging habitat for the Grey-headed Flying-fox. The Grey-headed Flying-fox is recorded as travelling long distances (up to 50 km) on feeding forays. Given the proximity of more suitable habitat within the development footprint, the removal of this potential foraging habitat would not lead to the long-term decrease in the size of an important population of Grey-headed Flying-fox.
2)	reduce the area of occupancy of an important population	The proposed action would reduce the amount of potential foraging habitat for this species by 0.18 ha. The Grey-headed Flying-fox is not known to occupy the development footprint in the form of a camp but may occasionally forage within the footprint when feed trees are flowering. The Grey-headed Flying-fox is recorded as travelling long distances on feeding forays and would likely utilise the potential foraging habitat outside of the development footprint. Therefore, the proposed action would reduce the areas of occupancy by 0.18 ha of seasonal foraging habitat.
3)	fragment an existing important population into two or more populations	The proposed action will remove 0.18 ha of vegetation, some of which comprises seasonal foraging habitat for the Grey-headed Flying-fox. No camps will be directly, or indirectly removed, and other areas of foraging habitat are present directly adjacent to the development footprint. The species is highly mobile; therefore it is considered that the proposed action will not fragment an existing important population into two or more populations.
4)	adversely affect habitat critical to the survival of a species	The Draft Recovery Plan for the Grey-headed Flying-fox 2017 identifies 'a continuous temporal sequence of productive foraging habitats, linked by migration corridors or stopover habitats, and suitable roosting habitat within nightly commuting distance of foraging areas' as habitat critical to the survival of the species. No camps will be directly or indirectly removed by the proposed action. The proposed action will remove 0.18 ha of native and exotic

Criterion	Question	Response
		vegetation, some of which comprises seasonal foraging habitat for the Grey-headed Flying-fox. The Grey-headed Flying-fox is recorded as travelling long distances (50 km) on feeding forays and suitable habitat is available outside of the development footprint. Therefore, it is considered the proposed action will not adversely affect habitat critical to the survival of the species.
5)	disrupt the breeding cycle of an important population	The proposed action will remove 0.18 ha of vegetation, some of which comprises marginal seasonal foraging habitat for the Grey-headed Flying-fox. The proposed action will not disrupt the breeding cycle of the Grey-headed Flying-fox given that no camps will be removed by the proposed action and larger areas suitable foraging habitat is available adjacent to the development footprint and within the broader locality.
6)	modify, destroy, remove or isolate or decrease the availability or quality of habitat to the extent that the species is likely to decline	The proposed action will remove 0.18 ha of vegetation, which includes seasonal foraging habitat for the Grey-headed Flying-fox. Grey-headed Flying-fox camps will not be removed or disturbed, and more suitable foraging and roosting habitat is available outside of the development footprint.
7)	result in invasive species that are harmful to a vulnerable species becoming established in the vulnerable species' habitat	The proposed action is unlikely to result in the establishment of an invasive species that is harmful to the Grey-headed Flying-fox.
8)	introduce disease that may cause the species to decline, or	Grey-headed Flying-fox are reservoirs for the Australian bat lyssavirus, Hendra Virus and Menangle virus, and can cause clinical disease and mortality in Grey-headed Flying-fox. The proposed action would not increase the incidence of this disease.
9)	interfere substantially with the recovery of the species.	A Draft National Recovery Plan for the Grey-headed Flying-fox was developed in 2017. The relatively small amount of foraging habitat to be removed is unlikely to substantially interfere with the recovery of this species.
Conclusion	Is there likely to be a significant impact?	<p>No. The proposed removal of planted native and exotic vegetation is unlikely to have a significant impact on the Grey-headed Flying Fox for the following reasons:</p> <ul style="list-style-type: none"> • Foraging habitat within the footprint is marginal and would provide seasonal foraging opportunities, at best. • Similar foraging habitat is abundant in the locality. • Roosting habitat was not identified within the study area and will not be impacted by the proposed development.