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APPENDIX D: DAIRY ROAD DEVELOPMENT
EPBC ACT REFERRAL – ASSESSMENT OF SIGNIFICANCE

Executive Summary

This self-assessment has been based on a detailed review of the potential environmental and ecological impacts of the Proposed Action, against the significant impact guidelines of the EPBC Act.

The Project Area, defined as the Dairy Road Precinct and the offsite works (along Dairy Road, the Monaro Highway, connecting to Canberra Avenue, and within the unleased territory land on the eastern boundary of the Jerrabomberra Wetlands Nature Reserve) **will have no direct impacts on any matters of national environmental significance** (MNES).

Due to the proximity of the Project Area to the Jerrabomberra Wetlands Nature Reserve (the Wetlands), a detailed assessment of potential indirect impacts has also been undertaken.

It concludes that while the Wetlands provides habitat for many birds (including some listed threatened and migratory species), it only meets the definition of 'important habitat' for Latham's snipe (*Gallinago hardwickii*). Based on the fact that the Dairy Road Precinct already has significant legally imposed controls which will work to mitigate light, noise, uncontrolled access, and water quality changes, the assessment considered the significant impact criteria for migratory birds, and determined that the Proposed Action **would not result in any significant impacts to Latham's snipe**.

1.0 Likelihood of Occurrence

The PMST Search tool identified two threatened ecological communities and 43 threatened species as potentially occurring within 10 km of the Project Area. Additional species that are listed under the ACT *Nature Conservation Act 2014* (NC Act) were also assessed for their likelihood of occurrence in the Project Area and the adjacent Jerrabomberra Wetlands. The likelihood of occurrence was determined through a review of online databases, previous site reports, reference to aerial imagery of the Project Area, known habitat features, and historical observation. It is based on the key described in **Table 1.1**. No detailed ecological investigations have been carried out.

Table 1.1 Key to Likelihood of Occurrence Assessments

Likelihood	Description
Known	The species has been recently recorded within the investigation area
High	It is highly likely that the species inhabits the project area and is dependent on identified suitable habitat (i.e., for breeding or important life cycle periods such as winter flowering resources), or is known or likely to maintain resident populations in the project area. Also includes species known or likely to visit the study area during regular seasonal movements or migration.
Moderate	Potential habitat is present in the project area. Species unlikely to maintain sedentary populations, however, may seasonally use resources within the study area opportunistically or during migration. The species is unlikely to be dependent on habitat within the project area (i.e., for breeding or important life cycle periods such as winter flowering resources), or habitat is in a modified or degraded state. Includes cryptic flowering flora species that were not seasonally targeted by surveys and that have not been recorded.
Low	It is unlikely that the species inhabits the project area. It may be an occasional visitor, but habitat similar to that within the project area is widely distributed in the local area, meaning that the species is not dependent on available habitat (i.e., for breeding or important life cycle periods such as winter flowering resources). Specific habitat is not present in the study area or the species are a non-cryptic perennial flora species that were specifically targeted by surveys and not recorded.

1.1 Threatened Species and Ecological Communities

The following **Table 1.2** describes the likelihood of occurrence of EPBC Act and NC Act Threatened Species and Ecological Communities. Any EPBC listed threatened species or ecological community with a 'moderate' or higher likelihood of occurring within or adjacent to the Project Area are discussed in detail in the following sections.

Table 1.2 Likelihood of Occurrence of EPBC Act and NC Act Threatened Species and Ecological Communities within the Project Area and the adjacent Jerrabomberra Wetlands

Scientific Name	Common Name	Status		Likelihood of Occurrence in the Project Area	Likelihood of Occurrence at the Jerrabomberra Wetlands
		EPBC Act	NC Act		
Natural Temperate Grassland of the South Eastern Highlands		CE	CE	**Low.** Vegetation in the Project Area is unlikely to meet the classification criteria for this critically endangered ecological community.	**Low.** Native vegetation within the Jerrabomberra Wetlands may meet the classification criteria for this critically endangered ecological community, however not in proximity to the Project Area.
White Box-Yellow Box-Blakely's Red Gum Grassy Woodland and Derived Native Grassland		CE	CE	**Low.** Vegetation in the Project Area is unlikely to meet the classification criteria for this critically endangered ecological community.	**Low.** Vegetation in the Project Area is unlikely to meet the classification criteria for this critically endangered ecological community.

Birds					
Anthochaera phrygia	regent honeyeater	CE	CE	**Low**. There is no suitable habitat in the Project Area.	**Low.** There is marginal habitat at the Jerrabomberra Wetlands.
Botaurus poiciloptilus	Australasian bittern	E	E	**Low**. There is no suitable habitat in the Project Area.	**Moderate.** May occur rarely in suitable habitat at the Jerrabomberra Wetlands.
Calidris ferruginea	curlew sandpiper	CE, Mi	-	**Low**. There is no suitable habitat in the Project Area.	**Known.** This species has been recorded at the Jerrabomberra Wetlands.
Climacteris picumnuc victoriae	brown treecreeper	-	V	**Low.** There is no suitable habitat in the Project Area. Recorded in the BioNet search area but has declined considerably, disappearing from remnant woodland in the ACT during the past two decades.	**Low.** There is no suitable habitat at the Jerrabomberra Wetlands.
Daphoenositta chrysoptera	varied sittella	-	V	**Low.** There is no suitable habitat in the Project Area.	**Known.** This species has been recorded at the Jerrabomberra Wetlands.
Falco hypoleucos	grey falcon	V	-	**Low**. There is no suitable habitat in the Project Area.	**Low.** There is no suitable habitat at the Jerrabomberra Wetlands.
Grantiella picta	painted honeyeater	V	V	**Low**. There is no suitable habitat in the Project Area.	**Low.** There is no suitable habitat at the Jerrabomberra Wetlands.
Hieraaetus morphnoides	little eagle	-	V	**Moderate**. There is no suitable habitat in the Project Area however this species is likely to forage above and/or adjacent to the Project Area.	**Known.** This species has been recorded at the Jerrabomberra Wetlands (including at the Billabong Loop between Kelly's Swamp and the Project Area).
Hirundapus caudacutus	white-throated needletail	V, Mi	V	**Moderate**. May utilise airspace of the Project Area. No suitable roosting habitat is present in the Project Area.	**Known.** This species has been recorded at the Jerrabomberra Wetlands.
Lalage tricolor	white-winged triller	-	V	**Moderate.** May occur in suitable habitat in the southern portion of the Project Area.	**Known.** This species has been recorded at the Jerrabomberra Wetlands.
Lathamus discolor	swift parrot	CE	CE	**Low**. There is no suitable habitat in the Project Area. No potential foraging habitat or important mapped habitat is present in the Project Area.	**Known.** This species has been recorded at the Jerrabomberra Wetlands.
Limosa lapponica baueri	bar-tailed godwit	V	-	**Low.** There is no suitable habitat in the Project Area.	**Low.** No suitable habitat is present at the Jerrabomberra Wetlands.
Melanodryas cucullata	hooded robin	-	V	**Low**. There is no suitable habitat in the Project Area.	**Low.** There is no suitable habitat at the Jerrabomberra Wetlands.
Numenius madagascariensis	far eastern curlew	CE, Mi	-	**Low**. There is no suitable habitat in the Project Area.	**Low.** There is no suitable habitat at the Jerrabomberra Wetlands.
Petroica boodang	scarlet robin	-	V	**Low**. There is no suitable habitat in the Project Area.	**Known.** This species has been recorded at the Jerrabomberra Wetlands.

Polytelis swainsonii	superb parrot	V	V	**Low.** There is no suitable habitat in the Project Area.	**Known.** This species has been recorded at the Jerrabomberra Wetlands.
Calyptorhynchus lathami	glossy black-cockato o	-	V	**Low**. There is no suitable habitat in the Project Area.	**Low.** There is no suitable habitat at the Jerrabomberra Wetlands.
Rostratula australis	Australian painted snipe	E	E	**Low**. There is no suitable habitat in the Project Area.	**Known.** This species has been recorded at the Jerrabomberra Wetlands.
Fish					
Maccullochella macquariensis	trout cod	E	E	**Low.** There is no suitable habitat in the Project Area.	**Low.** There is no suitable habitat at the Jerrabomberra Wetlands.
Maccullochella peelii	Murray cod	V	-	**Low.** There is no suitable habitat in the Project Area.	**Low.** There is marginal habitat at the Jerrabomberra Wetlands.
Macquaria australasica	Macquarie perch	E	E	**Low**. There is no suitable habitat in the Project Area.	**Low.** There is no suitable habitat at the Jerrabomberra Wetlands.
Frogs					
Litoria aurea	green and golden bell frog	V	V	**Low.** There is no suitable habitat in the Project Area.	**Low.** Potentially suitable habitat is present at the Jerrabomberra Wetlands however this species is extinct in the ACT.
Litoria booroolongensis	Booroolong frog	E	-	**Low.** There is no suitable habitat in the Project Area.	**Low.** There is no suitable habitat at the Jerrabomberra Wetlands.
Litoria castanea	yellow-spotte d tree frog	CE	CE	**Low.** There is no suitable habitat in the Project Area.	**Low.** Potentially suitable habitat is present at the Jerrabomberra Wetlands however this species is extinct in the ACT.
Litoria raniformis	southern bell frog	E	V	**Low.** There is no suitable habitat in the Project Area.	**Low.** Potentially suitable habitat is present at the Jerrabomberra Wetlands however this species is extinct in the ACT.
Insects					
Euastacus armatus	Murray River crayfish	-	V	**Low.** There is no suitable habitat in the Project Area.	**Low.** Potential suitable habitat is present at the Jerrabomberra Wetlands however this species is extinct in the Molonglo and Queanbeyan Rivers.
Perunga ochracea	Perunga grasshopper	-	E	**Low**. There is no suitable habitat in the Project Area.	**Low.** There is no suitable habitat at the Jerrabomberra Wetlands.
Synemon plana	golden sun moth	CE	E	**Low.** There is no suitable habitat in the Project Area.	**Low.** There is no suitable habitat at the Jerrabomberra Wetlands.
Mammals					
Chalinolobus dwyeri	large-eared pied bat	V	-	**Low.** There are no suitable habitat features present in the Project Area.	**Low.** There is no suitable habitat at the Jerrabomberra Wetlands.
Dasyurus maculatus	spotted-tailed quoll	E	V	**Low**. There is no suitable habitat in the Project Area.	**Low.** There is no suitable habitat at the Jerrabomberra Wetlands.

Petauroides volans	greater glider	V	V	**Low.** There are no suitable habitat features present in the Project Area and surrounding landscape.	**Low.** There is no suitable habitat at the Jerrabomberra Wetlands.
Petrogale penicillata	brush-tailed rock-wallaby	V	E	**Low.** There is no suitable habitat in the Project Area. Species presumed to be extinct in the wild in the ACT.	**Low.** There is no suitable habitat at the Jerrabomberra Wetlands.
Phascolarctos cinereus	koala	V	V	**Low**. There is no suitable habitat in the Project Area.	**Low.** There is no suitable habitat at the Jerrabomberra Wetlands.
Pteropus poliocephalus	grey-headed flying fox	V	V	**Low**. There is no suitable habitat in the Project Area. Recorded in the BioNet search area, known colony at Commonwealth Park approximately 4.5 km from the Project Area. May forage in the surrounding landscape but no potential roosting areas present in the Project Area.	**Known.** This species has been recorded at the Jerrabomberra Wetlands.
Plants					
Ammobium craspedioides	Yass Daisy	V	-	**Low.** There is no suitable habitat in the Project Area.	**Low.** There is no suitable habitat at the Jerrabomberra Wetlands.
Amphibromus fluitans	river swamp wallaby-grass	V	-	**Low.** There is no suitable habitat in the Project Area.	**Low.** Marginal habitat is present at the Jerrabomberra Wetlands however this species has not been recorded at this location.
Caladenia actensis	Canberra spider orchid	CE	CE	**Low.** There is no suitable habitat in the Project Area.	**Low.** There is no suitable habitat at the Jerrabomberra Wetlands.
Calotis glandulosa	mauve burr-daisy	V	-	**Low.** There is no suitable habitat in the Project Area. No records in the BioNet search area.	**Low.** There is no suitable habitat at the Jerrabomberra Wetlands.
Dodonaea procumbens	trailing hop-bush	V	-	**Low.** There is no suitable habitat in the Project Area.	**Low.** There is no suitable habitat at the Jerrabomberra Wetlands.
Eucalyptus aggregata	black gum	V	V	**Low.** There is no suitable habitat in the Project Area.	**Low.** There is no suitable habitat at the Jerrabomberra Wetlands.
Lepidium ginninderrense	Ginninderra peppercress	V	E	**Low.** There is no suitable habitat in the Project Area.	**Low.** There is no suitable habitat at the Jerrabomberra Wetlands.
Leucochrysum albicans var. tricolor	hoary sunray	E	-	**Low.** There is no suitable habitat in the Project Area.	**Low.** Potential suitable habitat present in surrounding areas due to mapped native grasslands in the Jerrabomberra Wetlands.
Neoastelia spectabilis	silver sword lily	V	-	**Low.** There is no suitable habitat in the Project Area.	**Low.** There is no suitable habitat at the Jerrabomberra Wetlands.
Pomaderris pallida	pale pomaderris	V	V	**Low.** There is no suitable habitat in the Project Area.	**Low.** There is no suitable habitat at the Jerrabomberra Wetlands.
Prasophyllum petilium	Tarengo leek orchid	E	E	**Low.** There is no suitable habitat in the Project Area.	**Low.** There is no suitable habitat at the Jerrabomberra Wetlands.

				Only known to occur at Hall Cemetery in the ACT.	
Rutidosis leptorhynchoides	button wrinklewort	E	E	**Low.** There is no suitable habitat in the Project Area. Known to occur in suburbs just south of Lake Burley Griffin and near Harman.	**Low.** Potential suitable habitat present in surrounding areas due to mapped native grasslands in the Jerrabomberra Wetlands.
Senecio macrocarpus	large-fruit fireweed	V	-	**Low.** There is no suitable habitat in the Project Area.	**Low.** There is no suitable habitat at the Jerrabomberra Wetlands.
Swainsona recta	small purple pea	E	E	**Low**. There is no suitable habitat in the Project Area.	**Low.** There is no suitable habitat at the Jerrabomberra Wetlands.
Thesium australe	Austral toadflax	V	V	**Low.** There is no suitable habitat in the Project Area.	**Low.** There is no suitable habitat at the Jerrabomberra Wetlands.
Reptiles					
Aprasia parapulchella	pink-tailed worm-lizard	V	V	**Low.** There is no suitable habitat in the Project Area.	**Low.** There is no suitable habitat at the Jerrabomberra Wetlands.
Delma impar	striped legless-lizard	V	V	**Low.** There is no suitable habitat in the Project Area.	**Moderate.** Potential habitat is present at the Jerrabomberra Wetlands.
Tympanocryptis pinguicolla	grassland earless dragon	E	E	**Low.** There is no suitable habitat in the Project Area.	**Low.** There is no suitable habitat at the Jerrabomberra Wetlands.

1.1.1 Australasian bittern

Australasian bittern (*Botaurus poiciloptilus*) is a large, stocky, heron-like bird that is listed as endangered under the EPBC Act and the NC Act.

Australasian bittern occurs predominantly in freshwater wetlands from south-east Queensland to south-east South Australia, Tasmania, and south-west Western Australia in two sub-populations: south-eastern and south-western. It is widespread in NSW occurring along the coast and within the Murray-Darling Basin, most notably in floodplain wetlands of the Murrumbidgee, Lachlan, Macquarie, and Gwydir Rivers. It requires tall, dense vegetation, particularly whilst breeding, and shallow waters for foraging. Generally, the species is sedentary in permanent wetlands, though it has been known to travel short distances during winter or periods of extensive flooding. The major threat to the species is habitat loss and degradation, particularly through changes in water flows and quality (TSSC, 2011)[1].

The Canberra Ornithologists Group (COG) Annual Bird Report (2017)[2] states that the species is rarely seen in the ACT, and has no historical records from the Jerrabomberra Wetlands.

As the Proposed Action is not dissimilar from the existing surrounding environment, impacts to infrequent visitors such as this species are considered unlikely.

No further assessment is required.

[1] Threatened Species Scientific Committee (TSSC) (2011) *Approved Commonwealth Listing Advice (Australasian bittern) Botaurus poiciloptilus*, prepared for the Department of Sustainability, Environment, Water, Population and Communities, Canberra.
[2] http://canberrabirds.org.au/wp-content/bird_data

1.1.2 Curlew sandpiper

Curlew sandpiper (*Calidris ferruginea*) is a small, slim sandpiper that is listed as critically endangered under the EPBC Act, in addition to being listed as marine and migratory.

In Australia, curlew sandpipers occur around the coasts and are also quite widespread inland, though in smaller numbers. Records occur in all states during the non-breeding period, and also during the breeding season when many non-breeding one year old birds remain in Australia rather than migrating north.

Curlew sandpipers mainly occur on intertidal mudflats in sheltered coastal areas, such as estuaries, bays, inlets and lagoons, and also around non-tidal swamps, lakes and lagoons near the coast, and ponds in saltworks and sewage farms. They are also recorded inland, though less often, including around ephemeral and permanent lakes, dams, waterholes and bore drains, usually with bare edges of mud or sand.

The Canberra Ornithologists Group (COG) Annual Bird Report (2017) states that the species is rarely seen in the ACT, and shows a single historical records from the Jerrabomberra Wetlands.

As the Proposed Action is not dissimilar from the existing surrounding environment, impacts to infrequent visitors such as this species are considered unlikely.

No further assessment is required.

1.1.3 White-throated needletail

White-throated needletail (*Hirundapus caudacutus*) is listed as vulnerable under the EPBC Act and the NC Act, in addition to being listed as a migratory and marine species under the EPBC Act. The global distribution of the species occurs across Asia and Australasia. Breeding occurs in Asia, from central and south-eastern Siberia and Mongolia, east to Russia and south to northern Japan and north-eastern China. The species is widespread in eastern and south-eastern Australia during the winter period and is recorded in all coastal regions of Queensland and NSW and into adjacent inland plains across the western slopes of the Great Divide.

Almost exclusively aerial, the species occurs over variety of habitats, showing particular preference for wooded areas, including open forest and rainforest but also occurring over open heathlands, swamps and treeless grasslands. In Australia the species occurs predominately in the east, usually over coastal and mountainous regions.

Threats to the species in Australia are limited. Collision with overhead wires and lighthouses is a threat to individuals, although not an entire population. Due to the limited nature of threats to the species or migratory capacity, there are no threat abatement or recovery actions underway or proposed (Australian Gov't, 2021)[3].

Due to the aerial nature of its lifestyle and wide distribution, impacts from the Proposed Action on the species are considered unlikely.

No further assessment is required.

[3] *Species Profile and Threats Database (SPRAT)* Department of Environment, Canberra, accessed online (July, 2021): http://www.environment.gov.au

1.1.4 Swift parrot

Swift parrot (*Lathamus discolor*) is a small green parrot with a red spiked tail and red forehead and throat. The species is listed as critically endangered under the EPBC Act and the NC Act.

Swift parrots are a migratory species that use coastal blue gums (*Eucalyptus globulus*) in southeast Tasmania for breeding in September to December; and in winter are semi-nomadic, foraging in dry woodlands mainly in Victoria and NSW. Smaller but significant numbers have been recorded regularly in south-eastern Queensland and occasionally in the ACT and south-eastern South Australia (Swift Parrot Recovery Team, 2001)[4].Within the ACT, swift parrots may occur in dry sclerophyll eucalypt forests and box gum woodland; however most records appear to be of birds passing through the region, rarely spending much time at a given site (Taws & Saunders, 2005)[5].

Nationally, key threats for the species include predation of nests by sugar gliders (not relevant for the ACT), habitat loss and alteration, collision mortality, competition, disease and illegal wildlife capture and trading (TSSC, 2016)[6]. In the ACT threats are mainly related to the loss and fragmentation of woodland habitat (ACT Gov't, 1999)[7].

Due to the woodland habitat preference of the species, it is considered likely that any visitation of the Jerrabomberra Wetlands is transitory and opportunistic in nature. As the Proposed Action is not dissimilar from the existing surrounding environment, impacts to infrequent visitors such as this species are considered unlikely.

No further assessment is required.

1.1.5 Superb parrot

Superb parrots (*Polytelis swainsonii)* are a medium sized parrot with bright green plumage and are listed as vulnerable under the EPBC Act and the NC Act.

Superb parrots inhabit forests and woodlands including box gum woodlands in the Riverina, western slopes and plains, and extending onto the southern tablelands in the Canberra region. In the ACT, box gum woodlands form the major habitat for the species, with Blakely's red gum and scribbly gum (*Eucalyptus rossii)* being the main source of nesting hollows. Critical habitat features for superb parrots include large living and dead trees for nesting sites (ACT Gov't, 2005)[8]. In the ACT, superb parrots arrive in early spring and presently nest in two non-urban woodland areas; central Molonglo and woodland in the Throsby, Mulligan's Flat – Goorooyarroo area. Foraging is known to occur throughout open space and public areas.

Superb parrot is particularly vulnerable to the effects of habitat fragmentation. Connectivity between breeding and foraging sites is particularly important as they appear reluctant to cross large areas of open ground. Historically they have also been subject to poisoning and illegal trapping, reducing their numbers throughout the region (ACT Gov't, 2004).

Superb parrot does not breed in, nor rely on the Jerrabomberra Wetlands for foraging habitat. No impact is likely.

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[4] Swift Parrot Recovery Team (2001) *Swift Parrot Recovery Plan 2001-2005*, Department of Primary Industries, Water and Environment, Hobart, accessed online (February 2015): http://www.environment.gov.au/biodiversity/threatened/publications/recovery/swift-parrot/index.html
[5] Taws, N. and Saunders, D. (2005) 'Swift parrot invasions' in *Canberra Bird Notes* 30(2): 76-78, Canberra Ornithologists Group, Canberra
[6] Threatened Species Scientific Committee (TSSC) (2016) *Approved Commonwealth Conservation Advice for Lathamus discolor Swift Parrot,* prepared for the Department of the Environment, Canberra.
[7] ACT Government (1999) *Swift Parrot (Lathamus discolor): A vulnerable species. Action Plan No. 16,* Environment ACT, Canberra.
[8] ACT Government (2005) *Threatened Species and Communities of the ACT Information Sheet: Superb Parrot (Polytelis swainsonii) A vulnerable species*, Environment ACT, Canberra

No further assessment is required.

1.1.6 Australian painted snipe

Australian painted snipe (*Rostratula australis*) is a stocky wading bird that is listed as endangered under the EPBC Act and the NC Act. They are generally sited either singularly or in pairs, through small groups can appear around the breeding season.

Australian painted snipe preferred habitat is shallow, terrestrial, freshwater wetlands; though they will use waterlogged grassland or saltmarsh, dams, rice crops, sewage farms, and bore drains. It requires some level of medium to dense grass or shrub cover, as well as areas of open mud. Nests generally lie on or near small islands and breeding occurs at all times of the year, seeming to depend upon habitat condition rather than time. Due to a decrease in wetland habitat since European settlement, it is believed that the numbers of Australian painted snipe are decreasing, though records are unreliable (TSSC, 2013)[9].

Australian painted snipe is a rare visitor to the ACT, however has been observed at the Jerrabomberra Wetlands in low numbers.

As the Proposed Action is not dissimilar from the existing surrounding environment, impacts to infrequent visitors such as this species are considered unlikely.

No further assessment is required.

1.1.7 Grey-headed flying fox

Grey-headed flying fox (*Pteropus poliocephalus*) is listed as vulnerable under the EPBC Act and the NC Act. It is Australia's largest flying fox species with a head and body length up to 29 centimetres and a wingspan up to one metre. Fur on the body is dark grey, with light grey fur on the head, and red around the neck (Australian Gov't, 2021).

Grey-headed flying fox are found along eastern Australia between the coast and the western slopes from Bundaberg, Queensland to Melbourne, Victoria, with some records from South Australia. The species is migratory, following the flowering patterns of food species (NSW Gov't 2009[10]). The ACT region lies to the west of the species' usual distribution; though in recent years a population has established a diurnal roost in Commonwealth Park, ACT.

Grey-headed flying fox have been known to travel more than 50 kilometres between roosting camps and foraging sites. As such, Jerrabomberra Wetlands is situated within the foraging range of the population at Commonwealth Park. Despite this, as the species is highly mobile through urban areas, and no habitat is being removed, the Proposed Action is unlikely to adversely affect the species' ability to forage in the region. No significant impact to the species would result.

No further assessment is required.

[9] Threatened Species Scientific Committee (TSSC) (2013) *Approved Commonwealth Listing Advice Amendment Rostratula australis*, prepared for the Department of Sustainability, Environment, Water, Population and Communities, Canberra.
[10] NSW Government (2009) *Draft National Recovery Plan for the Grey-headed Flying-fox Pteropus poliocephalus*, prepared by Eby, P. Department of Environment, Climate Change and Water, Sydney.

1.1.8 Striped legless lizard

Striped legless lizard (*Delma impar*) is listed as vulnerable under the EPBC Act and the NC Act. The species is variable in colour, though is generally a pale grey to brown, with dark brown stripes from the neck to the tail, and grows to approximately 30 centimetres in length.

Striped legless lizards were formerly distributed throughout temperate lowland grasslands in the ACT, the south-western slopes and southern tablelands of NSW, central and southern Victoria, and the south-eastern corner of South Australia (Cogger *et al.* 1993)[11]. As a result of habitat modification, fragmentation and overall reduction, the distribution of the species has declined, with many sites no longer supporting populations.

Habitat for striped legless lizard includes tussock forming perennial grasses that are predominantly native; though the species is known to utilise exotic grasslands that are close to primary native habitat. The key threats include habitat fragmentation and degradation due to encroaching development and changed land use (ACT Gov't, 2005a).

The formerly continuous distribution in the ACT has been reduced to four discrete areas: Gungahlin, the lower Majura Valley, the lower Jerrabomberra Valley, and Yarramundi Reach (Coulson, 1995)[12]. Recent studies within the Majura and Jerrabomberra Valleys have recorded the species throughout areas of natural temperate grassland, native pasture, and some exotic pasture.

Potential habitat is present at the Jerrabomberra Wetlands, and while targeted surveys for the species have not been undertaken, the Proposed Action would not impact any potential habitat for striped legless lizards within Jerrabomberra Wetlands.

No further assessment is required.

[11] Cogger, HF. Cameron, EE. Sadlier, RA. & Eggler, P. (1993). *The Action Plan for Australian Reptiles*, Australian Nature Conservation Agency, ANCA, Canberra

[12] Coulson, G. (1995) *Management directions for the Striped Legless Lizard* (*Delma impar*) *in the Australian Capital Territory*, ACT Parks & Conservation Service, Canberra

1.2 Migratory Species

Any EPBC listed migratory species with a 'moderate' or higher likelihood of occurring within or adjacent to the Project Area (see **Table 1.3**) are discussed in detail in the following section.

Table 1.3 Likelihood of Occurrence of Listed Migratory Species within the Project Area and the Adjacent Jerrabomberra Wetlands

Scientific Name	Common Name	Status		Migratory Bird Agreements	Likelihood of Occurrence in Project Area	Likelihood of Occurrence in Jerrabomberra Wetlands
Marine Birds						
Apus pacificus	Pacific swift	Mi	-	CAMBA, JAMBA ROKAMBA	**Low.** Almost exclusively aerial, may utilise airspace over the Project Area.	**Known.** This species has been recorded at the Jerrabomberra Wetlands.
Terrestrial Species						
Hirundapus caudacutus	white-throated needletail	V, Mi	V	CAMBA, JAMBA ROKAMBA	**Moderate**. May utilise airspace of the Project Area. No suitable roosting habitat present in the Project Area.	**Known.** This species has been recorded at the Jerrabomberra Wetlands.
Monarcha melanopsis	black-faced monarch	Mi	-	Bonn	**Low.** There is no suitable habitat in the Project Area.	**Known.** This species has been recorded at the Jerrabomberra Wetlands.
Motacilla flava	yellow wagtail	Mi	-	CAMBA, JAMBA, ROKAMBA	**Low.** There is no suitable habitat in the Project Area.	**Low.** There is no suitable habitat at the Jerrabomberra Wetlands. This species is a very rare vagrant in south-east NSW.
Myiagra cyanoleuca	satin flycatcher	Mi	-	Bonn	**Low.** There is no suitable habitat in the Project Area.	**Known.** This species has been recorded at the Jerrabomberra Wetlands.
Rhipidura rufifrons	rufous fantail	Mi	-	Bonn	**Low.** There is no suitable habitat in the Project Area.	**Known.** This species has been recorded at the Jerrabomberra Wetlands.
Wetland Species						
Actitis hypoleucos	common sandpiper	Mi	-	Bonn, CAMBA, JAMBA, ROKAMBA	**Low.** There is no suitable habitat in the Project Area.	**Known.** This species has been recorded at the Jerrabomberra Wetlands.
Calidris acuminata	sharp-tailed sandpiper	Mi	-	Bonn, CAMBA, JAMBA, ROKAMBA	**Low.** There is no suitable habitat in the Project Area.	**Known.** This species has been recorded at the Jerrabomberra Wetlands.
Calidris ferruginea	curlew sandpiper	CE, Mi	-	Bonn, CAMBA, JAMBA, ROKAMBA	**Low**. There is no suitable habitat in the Project Area.	**Known.** This species has been recorded at the Jerrabomberra Wetlands.
Calidris melanotos	pectoral sandpiper	Mi	-	Bonn, JAMBA, ROKAMBA	**Low.** There is no suitable habitat in the Project Area.	**Known.** This species has been recorded at the Jerrabomberra Wetlands.
Gallinago hardwickii	Latham's snipe	Mi	-	Bonn, JAMBA, ROKAMBA	**Low.** There is no suitable habitat in the Project Area.	**Known.** Latham's snipe regularly occurs at the Jerrabomberra Wetlands (including in the Billabong Loop area between the Project Area and Kelly's Swamp). The Jerrabomberra Wetlands supports an ecologically

						significant proportion of the Latham snipe's population (i.e. 18 individuals or more) during certain seasons with counts in excess of 30 individuals occasionally reported.
Limosa lapponica	bar-tailed godwit	Mi	-	Bonn, CAMBA, JAMBA, ROKAMBA	**Low.** There is no suitable habitat in the Project Area.	**Low.** No suitable habitat is present at the Jerrabomberra Wetlands.
Numenius madagascariensis	eastern curlew	CE, Mi	-	Bonn, CAMBA, JAMBA, ROKAMBA	**Low.** There is no suitable habitat in the Project Area.	**Low.** No suitable habitat is present at the Jerrabomberra Wetlands.
Pandion haliaetus	osprey	Mi	-	Bonn	**Low.** There is no suitable habitat in the Project Area.	**Low.** No suitable habitat is present at the Jerrabomberra Wetlands.

1.2.1 Pacific swift/fork-tailed swift

Status: JAMBA, CAMBA, ROKAMBA; migratory species (EPBC Act)

Fork-tailed swift (*Apus pacificus*) is listed as a migratory, marine species under the EPBC Act. The species is found in south Siberia, north Mongolia, north China, and Japan and migrates to south-east Asia and Australia. The species is a non-breeding visitor to most regions and states of Australia from inland plains and desert regions such as the Great Victoria Desert and the Nullabor Plain to foothills, coastal areas and offshore islands. The species is considered native to several countries including Australia, according to the 2009 International Union for Conservation of Nature (IUCN) Red List (Australian Gov't, 2021).

Fork-tailed swift is almost exclusively aerial, flying from 1 metre to above 300 metres in height range, is often observed over cliffs and beaches and sometimes well out to sea. The species occurs over a range of habitat types including settled, urban areas in towns and cities. Habitat for the species includes a diverse range of vegetation types and land use types including dry or open areas, riparian woodland, swamps, heathland, grasslands, sandplains, saltmarsh, rainforests, wet sclerophyll forest, or plantations of pines (Australian Gov't, 2021).

The species is insectivorous, foraging aerially in areas of updraught, especially around cliffs. Fork-tailed swift often roost aerially although have been observed to land on occasion to roost in trees.

Fork-tailed swift arrives in Australia usually around October, entering the country via Northern Territory and remaining highly mobile for the duration of their stay. The species is common in the ACT between December and March with several flocks passing through up to three and four times a year within this period. Breeding occurs outside of the Australian region between April and July (Australian Gov't, 2021). No significant threats exist for the species in Australia.

Due to the aerial nature of its lifestyle and wide distribution, impacts from the Proposed Action on the species are considered unlikely.

No further assessment is required.

1.2.2 White-throated needletail

Status: JAMBA, CAMBA, ROKAMBA; migratory species (EPBC Act)

White-throated needletail (*Hirundapus caudacutus*) is listed as vulnerable under the EPBC Act and the NC Act, in addition to being listed as a migratory and marine species under the EPBC Act. The global distribution

of the species occurs across Asia and Australasia. Breeding occurs in Asia, from central and south-eastern Siberia and Mongolia, east to Russia and south to northern Japan and north-eastern China. The species is widespread in eastern and south-eastern Australia during the winter period and is recorded in all coastal regions of Queensland and NSW and into adjacent inland plains across the western slopes of the Great Divide.

Almost exclusively aerial, the species occurs over variety of habitats, showing particular preference for wooded areas, including open forest and rainforest but also occurring over open heathlands, swamps and treeless grasslands. In Australia the species occurs predominately in the east, usually over coastal and mountainous regions.

Threats to the species in Australia are limited. Collision with overhead wires and lighthouses is a threat to individuals, although not an entire population. Due to the limited nature of threats to the species or migratory capacity, there are no threat abatement or recovery actions underway or proposed (Australian Gov't, 2021).

Due to the aerial nature of its lifestyle and wide distribution, impacts from the Proposed Action on the species are considered unlikely.

No further assessment is required.

1.2.3 Black-faced monarch

Status: Bonn convention; migratory species (EPBC Act)

Black-faced Monarch (*Monarcha melanopsis*) is one of the monarch flycatchers, a forest and woodland-dwelling group of small insect-eating birds, and is strictly arboreal (found in trees). It is widespread in eastern Australia, and to the eastern slopes of the Great Divide.

Its preferred habitat is rainforest, and while it has been observed within marginal habitat including dry woodlands of the ACT, it is considered to be a non-breeding vagrant.

Due to the infrequent and opportunistic use of the Jerrabomberra Wetlands, it is considered unlikely to represent important habitat for the species, or represent an ecologically significant proportion of a population.

No further assessment is required.

1.2.4 Satin flycatcher

Status: Bonn convention; migratory species (EPBC Act)

Satin flycatcher (*Myiagra cyanoleuca*) is listed as a migratory marine species under the EPBC Act. The species is widespread in eastern Australia and mainly inhabits heavily vegetated gullies in eucalypt forests and taller woodlands, and during migration occur in coastal forests, woodlands, mangroves and open forest with open understorey and grass ground cover, often near wetlands or watercourses (Australian Gov't, 2021).

Satin flycatcher is a common breeding summer migrant to the ACT, departing in late autumn. The most frequented habitat of the species is the tall wet forests of the Brindabella Range. Whilst the species has been recorded previously in the Jerrabomberra Wetlands and along the Molonglo River this is an uncommon occurrence and appears to be separate from the main habitat type. These observations are considered to represent the species just passing through the landscape

Due to the infrequent and opportunistic use of the Jerrabomberra Wetlands, it is considered unlikely to represent important habitat for the species, or unlikely to represent an ecologically significant proportion of a population.

No further assessment is required.

1.2.5 Rufous fantail

Status: Bonn Convention; migratory species (EPBC Act)

Rufous fantail (*Rhipidura rufifrons*) is listed as a migratory marine species under the EPBC Act. The species occurs in coastal and near coastal districts of northern and eastern Australia with breeding populations distributed from the South Australia-Victoria border to south and central Victoria and along the eastern coast of Australia up to the Cairns-Atherton region in Queensland. The species overwinters to the north from Cape York Peninsula to Torres Strait and Papua New Guinea (Australian Gov't, 2021).

Habitat preferred by the species includes rainforests, wet forests, swamp woodlands and mangroves. The species is considered an uncommon breeding summer migrant to the ACT. The ACT stronghold of the species is the tall wet forests of the Brindabella Range.

It has previously been recorded at the Jerrabomberra Wetlands and along the Jerrabomberra River; however this has been at low densities and are considered to be observations of the species just passing through the landscape.

Due to the infrequent and opportunistic use of the Jerrabomberra Wetlands, it is considered unlikely to represent important habitat for the species, or unlikely to represent an ecologically significant proportion of a population.

No further assessment is required.

1.2.6 Other migratory sandpipers

- Common sandpiper (*Actitis hypoleucos*)
  Status: Bonn convention; CAMBA, JAMBA, ROKAMBA; migratory species (EPBC Act).

- Sharp-tailed sandpiper (*Calidris acuminata*)
  Status: Bonn convention; CAMBA, JAMBA, ROKAMBA; migratory species (EPBC Act).

- Pectoral sandpiper (*Calidris melanotos*)
  Status: Bonn convention; JAMBA, ROKAMBA; migratory species (EPBC Act).

These three species have a wide global distribution and frequent all areas of Australia during their migrations. There are a number of important sites listed for the conservation of these species, however the Jerrabomberra Wetlands is not included.

They are all considered uncommon visitors to the ACT.

Due to the wide distribution and large population size of these species, the Jerrabomberra Wetlands is considered unlikely to represent important habitat for the species, or unlikely to represent an ecologically significant proportion of a population.

No further assessment is required.

1.2.7 Latham's snipe

Status: Bonn convention; JAMBA, ROKAMBA; migratory species (EPBC Act)

Latham's snipe (*Gallinago hardwickii*) is listed as a migratory species under the EPBC Act. The species is a seasonal migrant, leaving their breeding grounds in Japan to overwinter in Australia. The size of the Latham's Snipe population that visits Australia is estimated at 30 000 birds. The species arrives in the ACT in mid-August and departs in late-February/ March. In the Canberra region the preferred habitat is shallow, freshwater marshes and bogs.

Latham's snipe are highly mobile and move readily between sites as conditions change, local populations can exhibit rapid and significant fluctuations in size. While easily startled, the species also is known to occupy wetlands that are close to human activity e.g. near industrial complexes, roads or railways, airfields, within school grounds (Australian Gov't, 2021).

The main threat to the species in Australia is the loss of wetland habitats from drainage and poor land management.

The Latham's Snipe Project, a collaboration between the Woodlands and Wetlands Trust (Jerrabomberra Wetlands Canberra), Federation University, South Beach Wetlands and Landcare Group (Port Fairy), the Wild Bird Society of Japan, Canberra Ornithologists Group and the ACT Government, uses a number of methods to track the species across Eastern Australia (and Japan). Monitoring at the Jerrabomberra Wetlands has occurred since 2015 (see **Table 1.4**).

Table 1.4 Total Count of Latham's Snipe at Jerrabomberra Wetlands, recorded as part of the National Snipe Surveys[13]

Date	Jerrabomberra Wetlands
Jan 2016	27
Sept 2016	22
Nov 2016	16
Jan 2017	9
Sept 2017	7
Nov 2017	19
Jan 2018	16
Sept 2018	19
Nov 2018	9
Jan 2019	26
Sept 2019	29
Nov 2019	22
Jan 2020	23
Sept 2020	14
Nov 2020	9
Jan 2021	47

The Latham's Snipe Project considers that Jerrabomberra Wetlands provides critical habitat for Latham's Snipe with the highest consistent count numbers relative to other sites in the ACT region.

[13] Hansen, B and Gould, L (2021) Jerrabomberra Wetlands Latham's Snipe Monitoring Project Summary 2020

Figure 1.1 Latham's snipe records in the ACT

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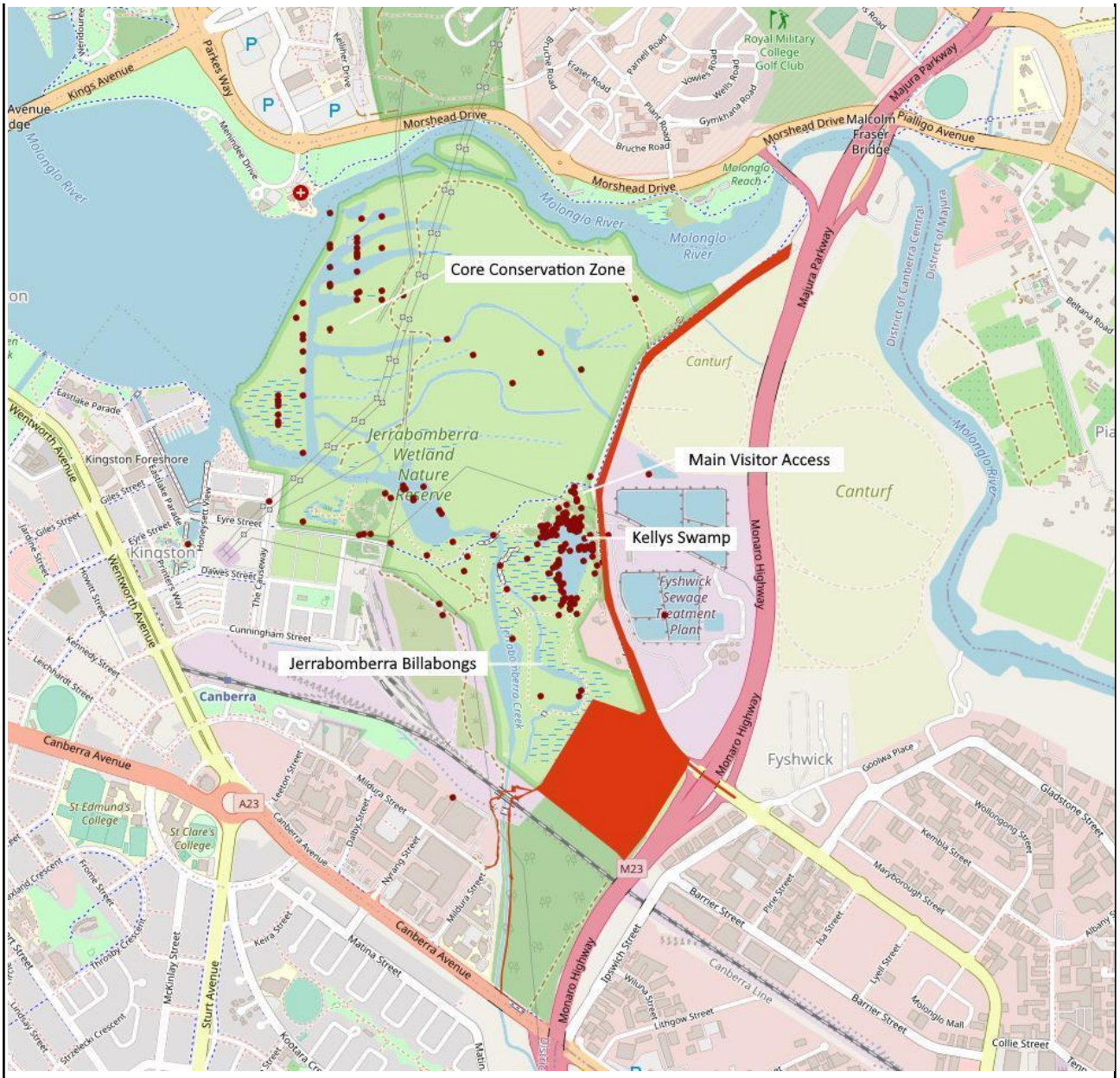

Figure 1.2 Latham's snipe records in proximity to the Project Area (shown in Red)

From **Figure 1.2** above, it is apparent that a large proportion of observations of the species are from within the Kellys Swamp area, however this can be attributed to the easy access to the area and the presence of bird hides. It is important to note that the core conservation zone for the wetlands (to the north-west of the reserve) contains key habitat for the species, and is not located in proximity to the Project Area.

An assessment of significance will be undertaken for the species.

2.0 Assessments of Significance

The following section provides an assessment of significance for threatened and migratory species discussed above as requiring further assessment, based on the likelihood of occurrence results. This assessment is undertaken in accordance with the EPBC Act *Significant Impact Guidelines 1.1* (DoE, 2013).

2.1 Migratory Species

The following assessment of significance has been prepared for the following migratory species, known to occur within the Jerrabomberra Wetlands:

- Latham's snipe.

2.1.1 Key considerations for Migratory Species

To undertake a significance assessment of impacts to migratory bird species, the following key definitions must be considered.

An area of important habitat is defined (DoE, 2013) as habitat that is:

- Utilised occasionally or periodically within a region that supports an ecologically significant proportion of the population of that species and/or
- Of critical important to the species at particularly life-cycle stages and/or
- At the limit of a species range and is utilised by that species and/or
- Within an area where the species is declining.

Specifically for Latham's snipe, the Industry Guidelines for Avoiding, Assessing and Mitigating Impacts On EPBC Act Listed Migratory Shorebird Species (DoEE, 2017) states that 'important habitat for Latham's snipe is described as areas that have previously been identified as internationally important for the species, or areas that support at least 18 individuals of the species.'

An ecologically significant proportion of a population is not clearly defined as it varies for each species. However DoE (2013) states that the following factors should be considered as applicable when defining it for a species:

- Population status.
- Genetic distinctiveness.
- Species' behavioural patterns (e.g. site fidelity or dispersal rates).

It is understood that Latham's snipe are site faithful, and tagged birds return to the Jerrabomberra Wetlands each year after migration. **Table 2.1** outlines the significant impact criteria assessment for Latham's snipe.

Table 2.1 Significant Impact Criteria for Migratory Bird Species

Significant Impact Criteria	Response

Substantially modify (including by fragmenting, altering fire regimes, altering nutrient cycles, or altering hydrological cycles), destroy or isolate an area of important habitat for a migratory species	No. The Jerrabomberra Wetlands is considered to be important habitat for the species, based on the definition in Australian Gov't 2017, however, the Proposed Action is considered unlikely to substantially modify, destroy or isolate the habitat within. The Proposed Action has the potential to result in some indirect impacts to the adjacent wetlands, including: - Increased light spill from new residential and commercial developments - Increased noise - Increased visitation into the wetlands - Changed water quality, through improvements to the current overland flows and on-site water treatment prior to entering the wetland. However, there are significant controls over development on the site which will work to mitigate noise, uncontrolled access, and water quality changes. These controls are specified under the Territory Plan for any development in the area adjacent to the Jerrabomberra Wetlands, and require the endorsement of the Conservator of Flora and Fauna. This provides assurance that design will not impact upon the natural values of the wetlands, and the habitat of Latham's snipe. **Light Spill** The Dairy Road Light Spill Mitigation Strategy for WSP|Parsons Brinkerhoff (2017) states that the Jerrabomberra Wetlands are already subject to sky glow, being situated in central Canberra, and the existing development at Dairy Road includes bright lighting with unconfined light spill. The Strategy states that the proposed development actually has the opportunity to decrease the light spill to the Wetlands and minimise the cumulative impacts of skyglow with appropriate lighting design and mitigation. Light spill will be managed through best practice lighting design (i.e. no direct lighting into the wetlands, diffuse light, and designing access roads to minimise headlights into the reserve). The opportunity to establish buffer planting along the reserve boundary will also be investigated to help ameliorate light spill further. Prior to development, a light spill assessment must be prepared to the satisfaction of the Conservator of Flora and Fauna, which demonstrates there will be no adverse impacts from lighting on the wetlands (Fyshwick Precinct Code, Rule 23 and 27). **Noise** Dairy Road development controls require any residential building to have noise mitigation to protect residents from noise from the adjacent railway line. These controls will also dampen noise from within the buildings into the wetlands. In terms of noise from other businesses and venues in the Precinct, these will not be substantially different to those already in operation. The largest congregations of snipe in the ACT occur in urban wetlands (Hansen and Gould, 2021), including areas adjacent to busy roads and urban development. It is not considered likely that noise will significantly impact the species within the wetland.

	Visitation Vehicle traffic on Dairy Road, and visitation into the Wetlands is likely to increase as a result of urban intensification, however the Wetlands are well established as a public reserve, with access paths and recreational facilities and relatively high visitation. The Proposed Action will construct additional active travel routes outside the boundaries of the Wetlands to discourage residents from commuting through them. Designated access points will also be established in consultation with the Woodlands and Wetlands Trust, Conservator of Flora and Fauna, and Parks and Conservation to minimise impacts to the wetlands and ensure consistency with the Plan of Management. **Water Quality** Water quality from the site will be managed through Water Sensitive Urban Design principles, and design requirements will ensure that post development flows do not exceed pre-development flows. Initial concept designs propose an artificial wetland or pond at the western edge of the site to treat stormwater prior to release into the Wetlands. Currently, stormwater from Fyshwick enters the Wetlands untreated, so this will ultimately improve water quality. Specific development controls in the Fyshwick Precinct Code require a hydrological assessment (Rule 23 and 28) and WSUD assessment (Rule 23 and 29) be completed that demonstrates no adverse impacts to the Jerrabomberra Wetlands, to be endorsed by the Conservator of Flora and Fauna. Based on these considerations, and the opportunities for mitigation of further impacts through design, it is considered unlikely that the Proposed Action will substantially modify, destroy or isolate habitat for Latham's snipe, or any other migratory species inhabiting the Jerrabomberra Wetlands.
Result in an invasive species that is harmful to the migratory species becoming established in an area of important habitat for the migratory species	No. The Proposed Action will not involve any construction or earthworks within the reserve boundary. Active travel routes, services, and landscaping will be completed within the reserve buffer. Weed management will be undertaken as part of this, during and following construction to ensure no invasive species become established as a result of the action. The Fyshwick Precinct Code (Rule 23 and 30) also specifies that a landscape plan for the site must be prepared demonstrating that the species used are appropriately chosen and managed to remove any risk of introduction of incompatible species to the Jerrabomberra Wetlands. This plan is to be endorsed by the Conservator of Flora and Fauna.

Seriously disrupt the lifecycle (breeding, feeding, migration or resting behaviour) of an ecologically significant proportion of the population of a migratory species	No. In Australia, Latham's snipe occurs in a single, dispersed, non-breeding population. Current estimates are approximately 30,000 individuals. While Jerrabomberra Wetlands is classified as important habitat for the species (regularly supports 0.05% of total population size), this is not the same criteria as an 'ecologically significant proportion of the population'. The species' SPRAT profile identifies 6 important sites with 'major populations' in Victoria, South Australia and Tasmania, and The Latham's Snipe Project (SWIFFT, 2021) discusses sites in New South Wales and Victoria which regularly have between 50 and 300 snipe. In this context, it is considered that while Jerrabomberra Wetlands provides a nationally important habitat for the species, it potentially does not represent an ecologically significant proportion of the population. Regardless, the Proposed Action is considered unlikely to seriously disrupt the lifecycle of the species. It is a highly mobile species, which travels from Japan where it breeds to disperse across Australia. While the species is cryptic, and considered to be sensitive to disturbance, it frequents wetlands in established urban areas, including industrial areas. While light spill can impact on the life cycles of migratory birds, including affecting navigation, breeding success, predation and foraging, based on the preliminary light spill assessment it is considered that the Jerrabomberra Wetlands will not experience significantly greater light spill following construction of the Proposed Action. It must be recognised that Latham's snipe have continued to visit the wetlands following the urban intensification of Kingston (1 km west/southwest of the wetlands), and the recent intensification of uses at Dairy Road. In addition, while the majority of records at the Jerrabomberra Wetlands are from within the Kelly's Swamp, which is close to the Project Area, this is likely due to the presence of bird hides and visitor facilities in this area. The core conservation zone of the wetlands is fairly remote from the Project Area, and unlikely to experience any direct or indirect impacts from the Proposed Action. It is considered unlikely that the Proposed Action will seriously disrupt the lifecycle of this migratory species.

3.0 Conclusion

Overall Umwelt considers that the Proposed Action is **unlikely to have a significant impact on any MNES** under the EPBC Act.

This is based on a significant impact assessment under the EPBC Act *Significant Impact Guidelines 1.1* (DoE, 2013). In regard to the migratory Latham's snipe (and other migratory bird species), Umwelt considers that **no significant impact will occur** with the following controls in place:

- Noise mitigation on residential buildings and during construction.
- Construction of active travel routes to discourage commuting through the wetlands.
- Controlling pedestrian access along the proposed buffer into the wetlands.
- Undertaking best practice lighting design (no direct lighting into the wetlands, diffuse light, and designing access roads to minimise headlights into the reserve).
- Investigating buffer planting to further ameliorate noise and light.
- Inclusion of Water Sensitive Urban Design (WSUD) and a water quality pond on site.
- Weed management and appropriate species design in the buffer area.