

TECHNICAL MEMORANDUM

Likelihood of Occurrence Assessment

Lot 15 Nicholson Road, Forrestdale

PROJECT NUMBER	EP20-126(08)	DOC. NUMBER	EP20-126(08)—010 SJB
PROJECT NAME	EPBC Act Referral	CLIENT	Australian Islamic College
AUTHOR	SJB	REVIEWER	JDH
VERSION	1	DATE	21/12/2021

1. INTRODUCTION

Australian Islamic College (Perth) Inc. (the proponent) proposes to establish a school within Lot 15 Nicholson Road, Forrestdale and is referring the proposed action to the Federal Department of Agriculture, Water and the Environment (DAWE) under the Environment Protection and Biodiversity Conservation Act 1999 (EPBC Act).

A likelihood of occurrence assessment for Matters of National Environmental Significance (MNES) relevant to the proposed action has been undertaken to inform the EPBC Act referral and provides a summary of the MNES relevant to the site.

2. METHODS

A search was conducted for MNES that may occur within a 5 km radius of the site using the Protected Matters Search Tool (PMST) on 18 November 2021 (DAWE 2021). The report has been included as **Attachment A**.

Historically, terrestrial flora and fauna studies and investigations have occurred across the application area and the broader site (Lot 15 Nicholson Road). Specifically, the applicant has commissioned the following:

- A detailed flora and vegetation assessment was undertaken in accordance with the Environmental Protection Authority's (EPA's) *Technical Guidance – Flora and Vegetation Surveys for Environmental Impact Assessment* (EPA 2016) across the application area and broader site on 16 November 2020 and 11 March 2021 (Emerge Associates 2021b).
- A 'basic' fauna and targeted black cockatoo assessment was also undertaken in accordance with the EPA's *Technical Guidance – Terrestrial vertebrate fauna Surveys* (EPA 2020) and *Environment Protection and Biodiversity Conservation Act* black cockatoo referral guidelines (DSEWPaC 2012) across the application area on 11 May 2021 (Emerge Associates 2021a).

Information on the habitat preferences of threatened species and communities identified using the PMST and the historical surveys has been reviewed. This was compared to existing environmental information available for the site, such as geomorphology, soils, regional vegetation and historic land use, to identify species and communities for which habitat may occur in the site.

An assessment of the likelihood of occurrence of threatened species and communities within the site was undertaken and each species was assigned to one of the following categories:

- Recorded: the species or community has been previously recorded in the site or was recorded during a field survey.
- Likely: suitable habitat for the species or community occurs in the site.
- Possible: suitable habitat for the species or vegetation representative of the community may occur in the site but is sub-optimal and no existing records occur close to the site.
- Unlikely: no suitable habitat for the species or no vegetation representing the community is present within the site.

3. RESULTS

The PMST identified MNES that could occur within a 5 km radius of Lot15 Nicholson Road, Forrestdale. The report identified the following:

- No World Heritage Properties
- No National Heritage Places
- Two Wetlands of International Importance
- The Great Barrier Reef Marine Park is not nearby the site
- No Commonwealth Marine Areas
- Three Threatened Ecological Communities (TEC)
- 23 Threatened Species
- Eight Migratory Species.

The habitat preference and likelihood of occurrence of each wetland, community and species has been provided in **Table 2**, **Table 3**, **Table 7** and **Table 7**, with further information provided in **Attachment A**.

Table 1: Nationally Important Wetlands

Name	Status	Type of Presence	Likelihood to occur on the site	Reason
Gibbs Road Swamp System	Conservation Category Wetland, includes UFI 7233 and UFI 7090.	Wetland likely to occur within area	N/A – Does not occur	An extensive yet fragmented wetland system, Gibbs Road Swamp System is located 100 m directly north and west of the site. Therefore, this 'important' wetland will not be impacted by the proposed action.
Forrestdale Lake	Wetland of International Importance under the Ramsar Convention	Wetland likely to occur within area	N/A – Does not occur	Forrestdale Lake is located 650 m north-east of the application area and therefore, will not be impacted by the proposed action.

Table 2: Threatened Ecological Communities

Name	Status	Type of Presence	Likelihood to occur on the site	Reason
Banksia Woodlands of the Swan Coastal Plain ecological community	Endangered	Community likely to occur within area	Recorded	The site supports 0.6 ha of this TEC within the broader site and not within the development footprint. Refer: EP20-126(05)—002, Section 4.3.5.
Clay Pans of the Swan Coastal Plain	Critically Endangered	Community likely to occur within area	N/A – Does not occur	No vegetation that meets the description of the TEC occurs on site. Refer: EP20-126(05)—002, Appendix C.
Tuart (<i>Eucalyptus gomphocephala</i>) Woodlands and Forests of the Swan Coastal Plain ecological community	Critically Endangered	Community likely to occur within area	N/A – Does not occur	No vegetation that meets the description of the TEC occurs on site. Refer: EP20-126(05)—002, Appendix C.

Table 3: Threatened / Migratory Fauna

Scientific Name	Common Name	Type of Presence	Habitat	Likelihood to occur on the site	Reason
<i>Actitis hypoleucos</i>	Common Sandpiper [59309]	Species or species habitat likely to occur within area	Edge of sheltered waters salt or fresh, e.g. estuaries, mangrove creeks, rocky coasts, near-coastal salt lakes (including saltwork ponds), river pools, lagoons, claypans, drying swamps, flood waters, dams and sewage ponds. Preferring situations where low perches are available.	Unlikely	The site is not situated along sheltered waters. No suitable habitat is present and therefore, the Common Sandpiper is unlikely to occur within the site.
<i>Apus pacificus</i>	Fork-tailed Swift [678]	Species or species habitat likely to occur within area	The Fork-tailed Swift is almost exclusively aerial and is not known to breed in Australia. They are seen over inland plains and sometimes above open areas, foothills or in coastal areas. They often occur over cliffs and beaches and also over islands and sometimes well out to sea. They also occur over settled areas, including towns, urban areas and cities. <i>Apus pacificus</i> subsp. <i>pacificus</i> is the only subspecies to migrate to Australia.	Possible	May opportunistically forage in the air above the site or fly over on commute, however, due to the absence of water and suitable vegetation, the species is unlikely to utilise the site. Refer: EP20-126(06)—004, Appendix D.
<i>Ardea ibis</i>	Cattle Egret [59542]	Species or species habitat may occur within area	The Cattle Egret often forages away from water on low lying grasslands, improved pastures and croplands. It is commonly found in cattle fields and other farm areas that contain livestock. It has become more frequent in drier regions; consuming the ticks off livestock in the absence of other food sources.	Unlikely	The site is not within a low-lying grassland, improved pasture or cropland. No suitable habitat is present and therefore, the Cattle Egret is unlikely to occur within the site.
<i>Bettongia penicillata ogilbyi</i>	Woylie, Brush-tailed Bettong [66844]	Species or species habitat may occur within area	The Woylie habitat types range from forest to grassland, coastal and inland. During the day the Woylie shelters under patches of dense undergrowth, logs and rock-cavities and occasionally in burrows.	Unlikely	The species is locally extinct and therefore will not utilise the site. Refer: EP20-126(06)—004, Appendix D.
<i>Botaurus poiciloptilus</i>	Australasian bittern [1001]	Species or species habitat known to occur within area	In or over water, in tall reedbeds, sedges, rushes, cumbungi, lignum. Also occurs in ricefields, drains in tussocky paddocks and occasionally in saltmarshes and brackish wetlands.	Unlikely	The site is not nearby a coastal or sub-coastal region. No suitable habitat is present and therefore, the Australasian bittern is unlikely to occur within the site. Refer: EP20-126(06)—004, Appendix D.
<i>Calidris acuminata</i>	Sharp-tailed Sandpiper [874]	Roosting known to occur within area	Occurs in tidal mudflats, saltmarshes and mangroves, as well as shallow fresh, brackish or saline inland wetlands. It is also known from floodwaters, irrigated pastures and crops, sewage ponds, saltfields.	Unlikely	The site does not contain grassy edges of shallow inland wetlands. No suitable habitat is present and therefore, the Sharp-tailed Sandpiper is unlikely to occur within the site. Refer: EP20-126(06)—004, Appendix D.
<i>Calidris ferruginea</i>	Curlew Sandpiper [856]	Species or species habitat known to occur within area	Mainly shallows of estuaries and near-coastal saltlakes (including saltwork ponds) and drying near-coastal freshwater lakes and swamps. Also beaches and near-coastal sewage ponds.	Unlikely	The site does not contain intertidal waterways. No suitable habitat is present and therefore, the Curlew Sandpiper is unlikely to occur within the site. Refer: EP20-126(06)—004, Appendix D.
<i>Calidris melanotos</i>	Pectoral Sandpiper [858]	Species or species habitat known to occur within area	Mainly fresh waters (swamps, lagoons, river pools, irrigation channels and sewage ponds); also samphire flats around estuaries and saltlakes.	Unlikely	The site is not situated within a wet, grassy tundra. No suitable habitat is present and therefore, the Pectoral Sandpiper is unlikely to occur within the site. Refer: EP20-126(06)—004, Appendix D.
<i>Calidris ruficollis</i>	Red-necked Stint [860]	Roosting known to occur within area	Tidal mudflats, salt marshes, sandy or shelly beaches, saline and freshwater wetlands (coastal and inland), saltfields, sewage ponds.	Unlikely	The site is not nearby a coastal or inland waterway. No suitable habitat is present and therefore, the Red-necked Stint is unlikely to occur within the site. Refer: EP20-126(06)—004, Appendix D.
<i>Calidris subminuta</i>	Long-toed Stint [861]	Roosting known to occur within area	Mainly freshwater swamps (especially when drying and where vegetation is short), river pools, lagoons and claypans; also brackish pools, sewage ponds and samphire flats around estuaries and saltlakes.	Unlikely	The site does not contain a flooded meadow or freshwater swamp. No suitable habitat is present and therefore, the Long-toed Stint is unlikely to occur within the site. Refer: EP20-126(06)—004, Appendix D.
<i>Charadrius ruficapillus</i>	Red-capped Plover [881]	Roosting known to occur within area	The red-capped plover is found in wetlands, especially in arid areas, and prefers saline and brackish waters.	Unlikely	The site is not within the arid region of Western Australia, nor are wetlands present within the site. No suitable habitat and therefore, the Red-capped Plover is unlikely to occur within the site.
<i>Charadrius dubius</i>	Little Ringed Plover [896]	Roosting known to occur within area	Open, muddy or sandy shores of lakes, swamps, tidal areas, sewage ponds or farm dams. Rare but regular summer migrant to Australia	Unlikely	A fresh/brackish wetland habitat is not present within the site. No suitable habitat is present and therefore, the Little Ringed Plover is unlikely to occur within the site. Refer: EP20-126(06)—004, Appendix D.

Table 4: Threatened / Migratory Fauna (continued)

Scientific Name	Common Name	Type of Presence	Habitat	Likelihood to occur on the site	Reason
<i>Calyptrorhynchus banksii naso</i>	Forest Red-tailed Black-Cockatoo, Karrak [67034]	Species or species habitat known to occur within area	Forest Red-tailed Black Cockatoos frequent the humid to sub-humid south-west of Western Australia from Gingin in the north, to Albany in the south and west to Cape Leeuwin and Bunbury. It nests in tree hollows with a depth of 1-5m, that are predominately Marri (<i>Corymbia calophylla</i>), Jarrah (<i>Eucalyptus marginata</i>) and Karri (<i>E. diversicolor</i>) and it feeds primarily on the seeds of Marri.	Possible	The site occurs within the modelled distribution of the Forest red-tailed Black Cockatoo, as well as the modelled breeding range. Whilst no evidence of the species was recorded during the March 2021 field survey, the presence of suitable habitat within the site indicates that they may utilise the site. Therefore, potential impacts to this species should be considered further. Refer: EP20-126(06)—004, page 36.
<i>Calyptrorhynchus baudinii</i>	Baudin's Black Cockatoo, Long-billed Black Cockatoo [769]	Roosting known to occur within area	Baudin's Black-Cockatoo mainly occurs in eucalypt forests, especially Jarrah (<i>E. marginata</i>), Marri (<i>Corymbia calophylla</i>), also Karri (<i>E. diversicolor</i>) forest, often feeding in the understorey on proteaceous trees and shrubs, especially banksias.	Possible	The site occurs within the modelled distribution of the Baudin's Black Cockatoo. Whilst no evidence of the species was recorded during the March 2021 field survey, the presence of suitable habitat within the site indicates that they may utilise the site. Therefore, potential impacts to this species should be considered further. Refer: EP20-126(06)—004, page 36.
<i>Calyptrorhynchus latirostris</i>	Carnaby's Black Cockatoo, Short-billed Black-Cockatoo [59523]	Species or species habitat known to occur within area	Carnaby's Cockatoo is found in the south-west of Australia from Kalbarri through to Ravensthorpe. It prefers feeding on the seeds of Banksia, Dryandra, Hakea, Eucalyptus, Grevillea, Pinus and <i>Allocasuarina</i> spp. It is nomadic often moving toward the coast after breeding. It breeds in tree hollows that are 2.5 -12 m above the ground and have an entrance 23-30 cm with a depth of 1-2.5 m. Nesting mostly occurs in smooth-barked trees (e.g. Salmon Gum, Wandoo, Red Morrell).	Likely	The site occurs within the modelled distribution of the Carnaby's Black Cockatoo. Whilst no evidence of the species was recorded during the March 2021 field survey, the presence of suitable habitat within the site indicates that they may utilise the site. Therefore, potential impacts to this species should be considered further. Refer: EP20-126(06)—004, page 36.
<i>Dasyurus geoffroii</i>	Chuditch, Western Quoll [330]	Species or species habitat known to occur within area	The Chuditch have been known to occupy a wide range of habitats including woodlands, dry sclerophyll forests, riparian vegetation, beaches and deserts. They are opportunistic feeders, and forage on the ground at night, feeding on invertebrates, small mammals, birds and reptiles.	Unlikely	Due to historical disturbance and fragmented nature of the site, the Chuditch is unlikely to occur within the site. Refer: EP20-126(06)—004, Appendix D.
<i>Gallinago megala</i>	Swinhoe's Snipe [864]	Roosting likely to occur within area	Wet, grassy ground; edges of reedy swamps.	Unlikely	The site does not contain a swamp. No suitable habitat is present and therefore, the Swinhoe Snipe is unlikely to occur within the site. Refer: EP20-126(06)—004, Appendix D.
<i>Gallinago stenura</i>	Pin-tailed Snipe [841]	Roosting likely to occur within area	Boggy edges of vegetation wetlands; sewage and other ponds; stubbles, grasslands with shrubs, pastures.	Unlikely	The site does not contain a vegetated wetland, nor a waterway. No suitable habitat is present and therefore, the Pin-tailed Snipe is unlikely to occur within the site. Refer: EP20-126(06)—004, Appendix D.
<i>Haliaeetus leucogaster</i>	White-bellied Sea-Eagle [943]	Species or species habitat known to occur within area	Found in coastal habitats (especially those close to the seashore) and around terrestrial wetlands in tropical and temperate regions of mainland Australia and its offshore islands.	Unlikely	The site is not within a coastal habitat and therefore, the White-Bellied Sea-Eagle is unlikely to occur within the site.
<i>Himantopus himantopus</i>	Pied Stilt, Black-winged Stilt [870]	Roosting known to occur within area	The black-winged stilt is a social species and is usually found in small groups. Black-winged stilts prefer freshwater and saltwater marshes, mudflats, and the shallow edges of lakes and rivers.	Unlikely	The site does not contain a marsh. No suitable habitat is present and therefore, the Pied Stilt is unlikely to occur within the site.
<i>Leioproctus douglasiellus</i>	A short-tongued bee [66756]	Species or species habitat known to occur within area	Life history and habits are poorly documented/unknown. It has been recorded only on the flowers of <i>Goodenia filiformis</i> and <i>Anthotium junctiforme</i> .	Unlikely	Recent record near the site. However, key foraging species are not present, nor are the associated claypan ecosystems for which it lives upon. Refer: EP20-126(06)—004, Appendix D.
<i>Leipoa ocellata</i>	Malleefowl [934]	Species or species habitat likely to occur within area	Malleefowl have been found in mallee regions of southern Australia from approximately the 26th parallel of latitude southwards in mallee bushland. Found within scrubs and thickets of Eucalyptus spp., <i>Melaleuca lanceolata</i> and <i>Acacia linophylla</i> ; also other dense litter-forming shrublands. Attracted to fallen wheat in stubbles and along roads.	Unlikely	The species is locally extinct and therefore will not utilise the site. Refer: EP20-126(06)—004, Appendix D.
<i>Limosa limosa</i>	Black-tailed Godwit [845]	Roosting known to occur within area	The species is commonly found in sheltered bays, estuaries and lagoons with large intertidal mudflats or sandflats, or spits and banks of mud, sand or shell-grit; occasionally recorded on rocky coasts or coral islets.	Unlikely	The site does not contain a waterway. No suitable habitat is present and therefore, the Black-tailed Godwit is unlikely to occur within the site. Refer: EP20-126(06)—004, Appendix D.

Table 5: Threatened / Migratory Fauna (continued)

Scientific Name	Common Name	Type of Presence	Habitat	Likelihood to occur on the site	Reason
<i>Merops ornatus</i>	Rainbow bee-eater [670]	Species or species habitat may occur within area	The rainbow bee-eater can be found over open forests, woodlands, grasslands and wetlands.	Possible	Suitable potential breeding habitat is present within the site.
<i>Motacilla cinerea</i>	Grey Wagtail [642]	Species or species habitat may occur within area	The Grey Wagtail is mostly recorded in coastal areas in Western Australia however, the species is widespread. There is non-breeding habitat only in Australia and the species has a strong association with water in disused quarries, sandy and rocky streams in escarpments and rainforests, sewage ponds, ploughed fields and airfields.	Unlikely	The site does not contain running waterway. No suitable habitat is present and therefore, the Grey Wagtail is unlikely to occur within the site. Refer: EP20-126(06)—004, Appendix D.
<i>Numenius minutus</i>	Little Curlew, Little Whimbrei [848]	Roosting likely to occur within area	Dry grasslands, floodplains, margins of drying swamps; tidal mudflats, airfields, playing fields, crops, commercial saltfields, sewage ponds.	Unlikely	The site does not contain dry grasslands, floodplains or swamps. No suitable habitat is present and therefore, the Little Curlew is unlikely to occur within the site. Refer: EP20-126(06)—004, Appendix D.
<i>Neopasiphae simplicior</i>	A native bee [66821]	Species or species habitat likely to occur within area	This species of native bee has been collected on flowers of <i>Goodenia filiformis</i> , <i>Lobelia tenuior</i> , <i>Angianthus preissianus</i> and <i>Velleia</i> sp.	Possible	Recent records within the broader area. <i>Lobelia tenuior</i> recorded within the site. Refer: EP20-126(06)—004, Appendix D.
<i>Numenius madagascariensis</i>	Eastern Curlew, Far Eastern Curlew [847]	Species or species habitat may occur within area	The Eastern Curlew is most commonly associated with sheltered coasts, especially estuaries, bays, harbours, inlets and coastal lagoons, with large intertidal mudflats or sandflats, often with beds of seagrass. Occasionally, the species occurs on ocean beaches (often near estuaries), and coral reefs, rock platforms, or rocky islets.	Unlikely	The site is not nearby a coastal region. No suitable habitat is present and therefore, the Eastern Curlew is unlikely to occur within the site. Refer: EP20-126(06)—004, Appendix D.
<i>Pandion haliaetus</i> (also listed as <i>Pandion cristatus</i>)	Osprey [952]	Species or species habitat known to occur within area	Ospreys occur in littoral and coastal habitats and terrestrial wetlands of tropical and temperate Australia and offshore islands. They feed on fish, especially mullet where available, and rarely take molluscs, crustaceans, insects, reptiles, birds and mammals.	Unlikely	The site is not nearby a coastal region. No suitable habitat is present and therefore, the Osprey is unlikely to occur within the site. Refer: EP20-126(06)—004, Appendix D.
<i>Philomachus pugnax</i>	Ruff (Reeve) [850]	Roosting known to occur within area	Fresh, brackish and saline wetlands; tidal mudflats, saltfields, sewage ponds.	Unlikely	The site does not contain a suitable wetland. No suitable habitat is present and therefore, the Ruff (Reeve) is unlikely to occur within the site. Refer: EP20-126(06)—004, Appendix D.
<i>Pseudocheirus occidentalis</i>	Western Ringtail Possum, Ngwayir, Womp, Woder, Mgoor, Ngoolangit [25911]	Species or species habitat may occur within area	The Western Ringtail Possum is a medium sized nocturnal marsupial. This species occurs in and near coastal Peppermint Tree (<i>Agonis flexuosa</i>) forest and Tuart (<i>Eucalyptus gomphocephala</i>) dominated forest with a Peppermint Tree understorey. They may also occur in Eucalyptus marginate forests.	Unlikely	Outside species known range and therefore, the Western Ringtail Possum is unlikely to occur within the site. Refer: EP20-126(06)—004, Appendix D.
<i>Recurvirostra novaehollandiae</i>	Red-necked Avocet [871]	Roosting known to occur within area	Found in large shallow freshwater or saltwater wetlands and estuarine mudflats.	Unlikely	The site does not contain a waterway. No suitable habitat is present and therefore, the Red-necked Avocet is unlikely to occur within the site.
<i>Rostratula australis</i>	Australian Painted Snipe [77037]	Species or species habitat likely to occur within area	The Australian Painted Snipe has been recorded at wetlands in all states of Australia but is most common in eastern Australia. It generally inhabits shallow terrestrial freshwater (occasionally brackish) wetlands, including temporary and permanent lakes, swamps and claypans. It also uses inundated or waterlogged grassland or saltmarsh, dams, rice crops, sewage farms and bore drains. Typical sites include a cover of vegetation, including grasses.	Unlikely	The site is not within a wetland. No suitable habitat is present and therefore, the Australian Painted Snipe is unlikely to occur within the site. Refer: EP20-126(06)—004, Appendix D.
<i>Rostratula benghalensis</i> (sensu lato)	Painted Snipe [889]	Species or species habitat likely to occur within area	Well vegetated shallows and margins of wetlands, dams, sewage ponds, wet pastures, marshy areas, irrigation systems, lignum, tea tree scrub, open timber and require dense low cover.	Unlikely	The site is not within a wetland. No suitable habitat is present and therefore, the Painted Snipe is unlikely to occur within the site.
<i>Setonix brachyurus</i>	Quokka [229]	Species or species habitat may occur within area	Quokkas were originally very common on the Swan Coastal Plain, however, their distribution is now limited to Rottnest Island and a few isolated areas in the south-west of WA. On the mainland, they prefer densely vegetated areas around wetlands and streams, whereas on Rottnest Island they inhabit low scrubby coastal vegetation where water is not readily available year-round.	Unlikely	The species is locally extinct and therefore will not utilise the site. Refer: EP20-126(06)—004, Appendix D.
<i>Sternula nereis nereis</i>	Australian Fairy Tern [82950]	Species or species habitat known to occur	Sheltered blue-water seas close to land, estuaries (when free of silt) and near-coastal lakes.	Unlikely	The site is not situated nearby the sea or estuary. No suitable habitat is present and therefore, the Australian Fairy Tern is unlikely to occur within the site. Refer: EP20-126(06)—004, Appendix D.

Table 6: Threatened / Migratory Fauna (continued)

Scientific Name	Common Name	Type of Presence	Habitat	Likelihood to occur on the site	Reason
<i>Thinornis rubricollis</i>	Hooded Plover [59510]	Species or species habitat may occur within area	Found on broad, sandy surf beaches, showing preference for beaches backed by sand dunes, with large amounts of seaweed. In Western Australia they also occur around salt and freshwater lakes that range from close to the coast, to inland areas.	Unlikely	The site is not within a sandy beach. No suitable habitat is present and therefore, the Hooded Plover is unlikely to occur within the site. Refer: EP20-126(06)—004, Appendix D.
<i>Tringa glareola</i>	Wood Sandpiper [829]	Roosting known to occur within area	Mainly shallow fresh waters (lagoons, swamps, claypans, rover pools, dams, bore overflows and sewage ponds); occasionally brackish swamps, rarely saltlakes and estuaries.	Unlikely	The site does not contain shall freshwater. No suitable habitat is present and therefore, the Wood Sandpiper is unlikely to occur within the site. Refer: EP20-126(06)—004, Appendix D.
<i>Tringa nebularia</i>	Common Greenshank, Greenshank [832]	Species or species habitat known to occur within area	Mudflats, estuaries, saltmarshes, margins of lakes, wetlands, claypans (fresh and saline), commercial saltfields, sewage ponds.	Unlikely	The site does not contain a waterway. No suitable habitat is present and therefore, the Common Greenshank is unlikely to occur within the site. Refer: EP20-126(06)—004, Appendix D.
<i>Tringa stagnatilis</i>	March Sandpiper, Little Greenshank [833]	Roosting known to occur within area	Mainly shallow fresh or brackish waters swamps, lakes, river pools, soaks, sewage ponds and bore overflows. Occasionally estuaries and salt ponds, and rarely coasts.	Unlikely	The site does not contain a waterway. No suitable habitat is present and therefore, the March Sandpiper is unlikely to occur within the site.
<i>Westralunio carteri</i>	Carter's Freshwater Mussel, Freshwater Mussel [86266]	Species or species habitat known to occur within area	Carter's Freshwater Mussel is South-West Western Australia's only freshwater mussel. Carter's Freshwater Mussel occurs in freshwater streams, rivers, reservoirs and lakes and is intolerant to dehydration for more than three days and salinity. The species occur sin greatest abundance in slower flowing streams with stable sediments that are soft enough for burrowing amongst woody debris and exposed tree roots. Salinity tolerance is quite low.	Unlikely	There are no freshwater rivers, streams or water supply reservoirs within the site. No suitable habitat is present and therefore, Carter's Freshwater Mussel is unlikely to occur within the site. Refer: EP20-126(06)—004, Appendix D.

Table 7: Threatened plants

Scientific Name	Common Name	Status	Type of Presence	Habitat	Likelihood to occur on the site	Reason
<i>Andersonia gracilis</i>	Slender Andersonia [14470]	Endangered	Species or species habitat may occur within area	Seasonally damp, black sandy clay flats near or on the margins of swamps, often on duplex soils supporting low open heath vegetation.	Unlikely	Thorough targeted searches were completed in areas of potentially suitable habitat. The species is considered unlikely to occur within the site due to the lack of suitable habitat and/or because they were not recorded during the field survey. Botanists and ecologists from Emerge Associates conducted a flora and vegetation field survey on 16 November 2020, 11 March 2021 and 13 October 2021. <i>Andersonia gracilis</i> flowers September – November and therefore, the timing of the field survey is considered suitable and does not limit the survey outcomes.
<i>Austrostipa jacobiana</i>	[87809]	Critically Endangered	Species or species habitat may occur within area	Grey sandy clay.	Unlikely	Thorough targeted searches were completed in areas of potentially suitable habitat. The species is considered unlikely to occur within the site due to the lack of suitable habitat and/or because they were not recorded during the field survey. Botanists and ecologists from Emerge Associates conducted a flora and vegetation field survey on 16 November 2020, 11 March 2021 and 13 October 2021. <i>Austrostipa jacobiana</i> flowers November – January and therefore, the timing of the field survey is considered suitable and does not limit the survey outcomes. Refer: EP20-126(05)—002, Appendix B.
<i>Caladenia huegelii</i>	King Spider Orchid, Grand Spider-Orchid, Rusty Spider-Orchid [7309]	Endangered	Species or species habitat known to occur within area	Well-drained, deep sandy soils in lush undergrowth in a variety of moisture levels.	Unlikely	Thorough targeted searches were completed in areas of potentially suitable habitat. The species is considered unlikely to occur within the site due to the lack of suitable habitat and/or because they were not recorded during the field survey. Botanists and ecologists from Emerge Associates conducted a flora and vegetation field survey on 16 November 2020, 11 March 2021 and 13 October 2021. <i>Caladenia huegelii</i> flowers September – early November and therefore, the timing of the field survey is considered suitable and does not limit the survey outcomes. Refer: EP20-126(05)—002, Appendix B.
<i>Diuris drummondii</i>	Tall Donkey Orchid [4365]	Vulnerable	Species or species habitat likely to occur within area	Sand to sandy clay soils in areas subject to winter inundation.	Unlikely	Thorough targeted searches were completed in areas of potentially suitable habitat. The species is considered unlikely to occur within the site due to the lack of suitable habitat and/or because they were not recorded during the field survey. Botanists and ecologists from Emerge Associates conducted a flora and vegetation field survey on 16 November 2020, 11 March 2021 and 13 October 2021. <i>Diuris drummondii</i> flowers November – January and therefore, the timing of the field survey is considered suitable and does not limit the survey outcomes.
<i>Diuris micrantha</i>	Dwarf Bee-orchid [55082]	Vulnerable	Species or species habitat likely to occur within area	Dark, grey to blackish, sandy clay-loam substrates in winter wet depressions or swamps. The bases of the flowering plants are often covered with shallow water.	Unlikely	Thorough targeted searches were completed in areas of potentially suitable habitat. The species is considered unlikely to occur within the site due to the lack of suitable habitat and/or because they were not recorded during the field survey. Botanists and ecologists from Emerge Associates conducted a flora and vegetation field survey on 16 November 2020, 11 March 2021 and 13 October 2021. <i>Diuris micrantha</i> flowers August – September and early October and therefore, the timing of the field survey is considered suitable and does not limit the survey outcomes.
<i>Diuris purdiei</i>	Purdie's Donkey-orchid [12950]	Endangered	Species or species habitat known to occur within area	Sand to sandy clay soils in areas subject to winter inundation.	Unlikely	Thorough targeted searches were completed in areas of potentially suitable habitat. The species is considered unlikely to occur within the site due to the lack of suitable habitat and/or because they were not recorded during the field survey. Botanists and ecologists from Emerge Associates conducted a flora and vegetation field survey on 16 November 2020, 11 March 2021 and 13 October 2021. <i>Diuris purdiei</i> flowers late September to mid-October, but only after a summer of early autumn fire. Therefore, the timing of the field survey is considered suitable and does not limit the survey outcomes. Refer: EP20-126(05)—002, Appendix B.
<i>Drakaea elastica</i>	Glossy-leafed Hammer Orchid, Glossy-leaved Hammer Orchid, Warty Hammer Orchid [16753]	Endangered	Species or species habitat known to occur within area	Bare patches of sand within otherwise dense vegetation in-low lying areas alongside winter-wet swamps. Typically, in banksia woodland or thickets of <i>Kunzea glabrescens</i> .	Unlikely	Thorough targeted searches were completed in areas of potentially suitable habitat. The species is considered unlikely to occur within the site due to the lack of suitable habitat and/or because they were not recorded during the field survey. Botanists and ecologists from Emerge Associates conducted a flora and vegetation field survey on 16 November 2020, 11 March 2021 and 13 October 2021. <i>Drakaea elastica</i> flowers late September – late October/November and therefore, the timing of the field survey is considered suitable and does not limit the survey outcomes. Refer: EP20-126(05)—002, Appendix B.
<i>Drakaea micrantha</i>	Dwarf Hammer Orchid [56755]	Vulnerable	Species or species habitat known to occur within area	Open sandy patches often adjacent to winter-wet swamps.	Unlikely	Thorough targeted searches were completed in areas of potentially suitable habitat. The species is considered unlikely to occur within the site due to the lack of suitable habitat and/or because they were not recorded during the field survey. Botanists and ecologists from Emerge Associates conducted a flora and vegetation field survey on 16 November 2020, 11 March 2021 and 13 October 2021. <i>Drakaea micrantha</i> flowers September – early October and herefore, the timing of the field survey is considered suitable and does not limit the survey outcomes. Refer: EP20-126(05)—002, Appendix B.

Table 8: Threatened plants (continued)

Scientific Name	Common Name	Status	Type of Presence	Habitat	Likelihood to occur on the site	Reason
<i>Eucalyptus x balanites</i>	Cadda Road Mallee, Cadda Mallee [87816]	Endangered	Species or species habitat likely to occur within area	Light coloured sandy soils over laterite. Habitat consists of gently sloping heathlands; open mallee woodland over shrubland (Population 2) or heathland with emergent mallees (Population 1).	Unlikely	Thorough targeted searches were completed in areas of potentially suitable habitat. The species is considered unlikely to occur within the site due to the lack of suitable habitat and/or because they were not recorded during the field survey. Botanists and ecologists from Emerge Associates conducted a flora and vegetation field survey on 16 November 2020, 11 March 2021 and 13 October 2021. <i>Eucalyptus x balanites</i> flowers October – February and therefore, the timing of the field survey is considered suitable and does not limit the survey outcomes. Refer: EP20-126(05)—002, Appendix B.
<i>Grevillea curviloba</i> subsp. <i>incurva</i>	Narrow curved-leaf Grevillea [64909]	Endangered	Species or species habitat may occur within area	Sand, sand loam. Winter-wet heath.	Unlikely	Thorough targeted searches were completed in areas of potentially suitable habitat. The species is considered unlikely to occur within the site due to the lack of suitable habitat and/or because they were not recorded during the field survey. Botanists and ecologists from Emerge Associates conducted a flora and vegetation field survey on 16 November 2020, 11 March 2021 and 13 October 2021. <i>Grevillea curviloba</i> subsp. <i>incurva</i> flowers August – September and therefore, the timing of the field survey was outside the flowering period. However, no plants that meet the description of the species were observed during the field survey. Refer: EP20-126(05)—002, Appendix B.
<i>Lepidosperma rostratum</i>	Beaked Lepidosperma [14152]	Endangered	Species or species habitat known to occur within area	Peaty sand and clay amongst low heath, in winter-wet swamps.	Unlikely	Thorough targeted searches were completed in areas of potentially suitable habitat. The species is considered unlikely to occur within the site due to the lack of suitable habitat and/or because they were not recorded during the field survey. Botanists and ecologists from Emerge Associates conducted a flora and vegetation field survey on 16 November 2020, 11 March 2021 and 13 October 2021. <i>Lepidosperma rostratum</i> flowers May – June and therefore, the timing of the field survey was outside the flowering period. However, no plants that meet the description of the species were observed during the field survey. Refer: EP20-126(05)—002, Appendix B.
<i>Synaphea</i> sp. Fairbridge Farm (D. Papenfus 696)	Selena's Synaphea [82881]	Critically Endangered	Species or species habitat likely to occur within area	Low woodland on grey, clayey sand with lateritic pebbles (Pinjarra Plain) near winter wet flats.	Unlikely	Thorough targeted searches were completed in areas of potentially suitable habitat. The species is considered unlikely to occur within the site due to the lack of suitable habitat and/or because they were not recorded during the field survey. Botanists and ecologists from Emerge Associates conducted a flora and vegetation field survey on 16 November 2020, 11 March 2021 and 13 October 2021. <i>Synaphea</i> sp. Fairbridge Farm flowers September – November and therefore, the timing of the field survey is considered suitable and does not limit the survey outcomes. Refer: EP20-126(05)—002, Appendix B.
<i>Synaphea</i> sp. Pinjarra Plain (A.S. George 17182)	[86878]	Endangered	Species or species habitat may occur within area	White grey clayey sand on edges of seasonally inundated low lying areas.	Unlikely	Thorough targeted searches were completed in areas of potentially suitable habitat. The species is considered unlikely to occur within the site due to the lack of suitable habitat and/or because they were not recorded during the field survey. Botanists and ecologists from Emerge Associates conducted a flora and vegetation field survey on 16 November 2020, 11 March 2021 and 13 October 2021. <i>Synaphea</i> sp. Pinjarra Plain Farm flowers September – October and therefore, the timing of the field survey is considered suitable and does not limit the survey outcomes. Refer: EP20-126(05)—002, Appendix B.
<i>Synaphea</i> sp. Serpentine (G.R. Brand 103)	[86879]	Critically Endangered	Species or species habitat may occur within area	Seasonally damp areas, loam-sand.	Unlikely	Thorough targeted searches were completed in areas of potentially suitable habitat. The species is considered unlikely to occur within the site due to the lack of suitable habitat and/or because they were not recorded during the field survey. Botanists and ecologists from Emerge Associates conducted a flora and vegetation field survey on 16 November 2020, 11 March 2021 and 13 October 2021. <i>Synaphea</i> sp. Serpentine flowers September – October and therefore, the timing of the field survey is considered suitable and does not limit the survey outcomes. Refer: EP20-126(05)—002, Appendix B.
<i>Thelymitra stellata</i>	Star Sun-orchid [7060]	Endangered	Species or species habitat may occur within area	Sandy loam, clay or gravel over laterite or gravel.	Unlikely	Thorough targeted searches were completed in areas of potentially suitable habitat. The species is considered unlikely to occur within the site due to the lack of suitable habitat and/or because they were not recorded during the field survey. Botanists and ecologists from Emerge Associates conducted a flora and vegetation field survey on 16 November 2020, 11 March 2021 and 13 October 2021. <i>Thelymitra stellata</i> flowers September – November and therefore, the timing of the field survey is considered suitable and does not limit the survey outcomes. Refer: EP20-126(05)—002, Appendix B.

4. CONCLUSIONS

A search was conducted using PMST on 18 November 2021 (DAWE 2021), which identified two wetlands of national importance, three threatened ecological communities, 41 threatened/migratory fauna species and 15 threatened flora species within a 5 km radius of Lot 15 Nicholson Road, Forrestdale. Information provided within this report, along with the historical comprehensive flora and fauna surveys, were used to assess the likelihood of occurrence of each identified threatened species.

4.1. Wetlands of International Importance

Forrestdale Lake and the Gibbs Road Swamp System occupy 199 ha and 70 ha, respectively, of the surrounding land. Both wetlands are situated greater than 100 m from the site and are therefore outside the development footprint.

4.2. Threatened Ecological Communities

The site supports 0.6 ha of the Banksia Woodlands of the Swan Coastal Plain ecological community. However, this TEC occurs within the south-eastern portion of the broader Lot 15 and is therefore outside the development footprint.

4.3. Threatened Fauna

Of the 41 species of threatened fauna, four birds and one invertebrate may possibly occur within the site:

- The Fork-tailed Swift (*Apus pacificus*)
- The Forest red-tailed Black Cockatoo (*Calyptorhynchus banksii naso*)
- The Baudin's Black Cockatoo (*Calyptorhynchus baudinii*)
- The Rainbow Bee Eater (*Merops ornatus*)
- The native bee (*Neopasiphae simplicior*).

In addition, one bird species is likely to occur within the site:

- The Carnaby's Black Cockatoo (*Calyptorhynchus latirostris*).

Given the large home range of the Fork-tailed Swift and the Rainbow Bee Eater and the relatively small area of the site, potential impacts are very unlikely. The native bee may possibly occur, however, due to the limited quality of 'good' vegetation and the low density of targeted vegetation, potential impacts are very unlikely.

In consideration of the information provided, the PMST species that have therefore been considered within the EPBC referral include three species of threatened fauna:

- The Forest Red-tailed Black Cockatoo (*Calyptorhynchus banksii naso*).
- The Baudin's Black Cockatoo (*Calyptorhynchus baudinii*).
- The Carnaby's Black Cockatoo (*Calyptorhynchus latirostris*).

The proposed action is likely to impact upon the Black Cockatoo species and therefore, further consideration is required as to the determine the significance of these potential impacts.

5. REFERENCES

5.1. General references

Department of Sustainability Environment Water Populations and Communities (DSEWPaC) 2012, *EPBC Act referral guidelines for three threatened black cockatoo species*, Commonwealth of Australia, Canberra.

Emerge Associates 2021a, *Basic Fauna and Targeted Black Cockatoo Assessment - Lot 15 Nicholson Road, Forrestdale*, EP20-126(06)--004 SKP, Version A.

Emerge Associates 2021b, *Detailed Flora and Vegetation Assessment - Lot 15 Nicholson Road, Forrestdale*, EP20-126(05)--002 SKP, Version 1.

Environmental Protection Authority (EPA) 2016, *Technical Guidance - Flora and Vegetation Surveys for Environmental Impact Assessment* Perth.

Environmental Protection Authority (EPA) 2020, *Technical Guidance - Terrestrial vertebrate fauna surveys for environmental impact assessment*, Joondalup, Western Australia.

5.2. Online references

Department of Agriculture, Water and the Environment (DAWE) 2021, Protected Matters Search Tool, viewed 18 November 2021, <https://www.environment.gov.au/epbc/protected-matters-search-tool> (EPBC Act Protected Matters Report, PMST_N5GBZG, 18/11/21 19:17:35).

Attachment A: PMST Report





EPBC Act Protected Matters Report

This report provides general guidance on matters of national environmental significance and other matters protected by the EPBC Act in the area you have selected.

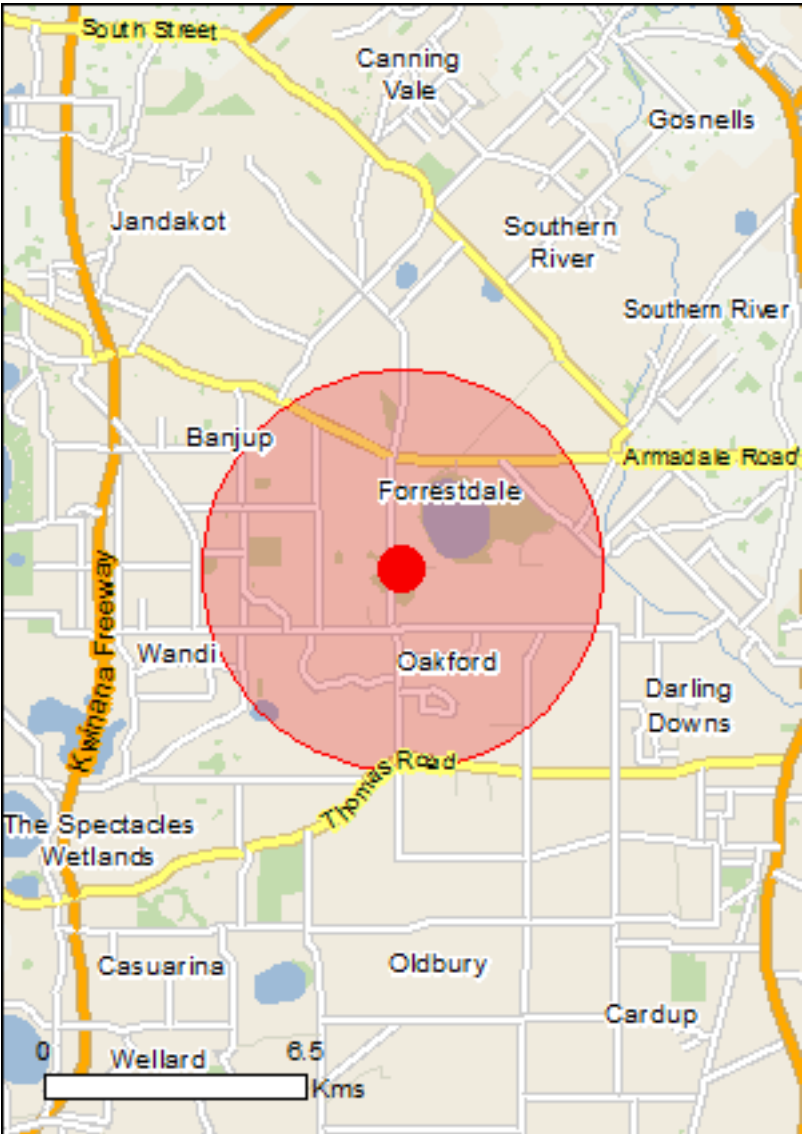
Information on the coverage of this report and qualifications on data supporting this report are contained in the caveat at the end of the report.

Information is available about [Environment Assessments](#) and the EPBC Act including significance guidelines, forms and application process details.

Report created: 18/11/21 19:17:35

- [Summary](#)
- [Details](#)

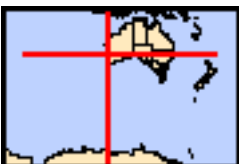
[Matters of NES](#)[Other Matters Protected by the EPBC Act](#)[Extra Information](#)
- [Caveat](#)
- [Acknowledgements](#)



This map may contain data which are ©Commonwealth of Australia (Geoscience Australia), ©PSMA 2015

[Coordinates](#)

Buffer: 5.0Km



Summary

Matters of National Environmental Significance

This part of the report summarises the matters of national environmental significance that may occur in, or may relate to, the area you nominated. Further information is available in the detail part of the report, which can be accessed by scrolling or following the links below. If you are proposing to undertake an activity that may have a significant impact on one or more matters of national environmental significance then you should consider the [Administrative Guidelines on Significance](#).

World Heritage Properties:	None
National Heritage Places:	None
Wetlands of International Importance:	2
Great Barrier Reef Marine Park:	None
Commonwealth Marine Area:	None
Listed Threatened Ecological Communities:	3
Listed Threatened Species:	31
Listed Migratory Species:	19

Other Matters Protected by the EPBC Act

This part of the report summarises other matters protected under the Act that may relate to the area you nominated. Approval may be required for a proposed activity that significantly affects the environment on Commonwealth land, when the action is outside the Commonwealth land, or the environment anywhere when the action is taken on Commonwealth land. Approval may also be required for the Commonwealth or Commonwealth agencies proposing to take an action that is likely to have a significant impact on the environment anywhere.

The EPBC Act protects the environment on Commonwealth land, the environment from the actions taken on Commonwealth land, and the environment from actions taken by Commonwealth agencies. As heritage values of a place are part of the 'environment', these aspects of the EPBC Act protect the Commonwealth Heritage values of a Commonwealth Heritage place. Information on the new heritage laws can be found at <http://www.environment.gov.au/heritage>

A [permit](#) may be required for activities in or on a Commonwealth area that may affect a member of a listed threatened species or ecological community, a member of a listed migratory species, whales and other cetaceans, or a member of a listed marine species.

Commonwealth Land:	1
Commonwealth Heritage Places:	None
Listed Marine Species:	27
Whales and Other Cetaceans:	None
Critical Habitats:	None
Commonwealth Reserves Terrestrial:	None
Australian Marine Parks:	None

Extra Information

This part of the report provides information that may also be relevant to the area you have nominated.

State and Territory Reserves:	3
Regional Forest Agreements:	None
Invasive Species:	42
Nationally Important Wetlands:	2
Key Ecological Features (Marine)	None

Details

Matters of National Environmental Significance

Wetlands of International Importance (Ramsar)		[Resource Information]
Name	Proximity	
Forrestdale and thomsons lakes	Within Ramsar site	
Peel-yalgorup system	40 - 50km upstream	

Listed Threatened Ecological Communities			[Resource Information]
For threatened ecological communities where the distribution is well known, maps are derived from recovery plans, State vegetation maps, remote sensing imagery and other sources. Where threatened ecological community distributions are less well known, existing vegetation maps and point location data are used to produce indicative distribution maps.			
Name	Status	Type of Presence	
Banksia Woodlands of the Swan Coastal Plain ecological community	Endangered	Community likely to occur within area	
Clay Pans of the Swan Coastal Plain	Critically Endangered	Community likely to occur within area	
Tuart (Eucalyptus gomphocephala) Woodlands and Forests of the Swan Coastal Plain ecological community	Critically Endangered	Community likely to occur within area	

Listed Threatened Species		[Resource Information]
Name	Status	Type of Presence
Birds		
Botaurus poiciloptilus Australasian Bittern [1001]	Endangered	Species or species habitat known to occur within area
Calidris ferruginea Curlew Sandpiper [856]	Critically Endangered	Species or species habitat known to occur within area
Calyptorhynchus banksii naso Forest Red-tailed Black-Cockatoo, Karrak [67034]	Vulnerable	Species or species habitat known to occur within area
Calyptorhynchus baudinii Baudin's Cockatoo, Long-billed Black-Cockatoo [769]	Endangered	Roosting known to occur within area
Calyptorhynchus latirostris Carnaby's Cockatoo, Short-billed Black-Cockatoo [59523]	Endangered	Species or species habitat known to occur within area
Leipoa ocellata Malleefowl [934]	Vulnerable	Species or species habitat likely to occur within area
Numenius madagascariensis Eastern Curlew, Far Eastern Curlew [847]	Critically Endangered	Species or species habitat may occur within area
Rostratula australis Australian Painted Snipe [77037]	Endangered	Species or species habitat likely to occur within area
Sternula nereis nereis Australian Fairy Tern [82950]	Vulnerable	Species or species habitat known to occur

Name	Status	Type of Presence within area
Insects		
Leioproctus douglasiellus a short-tongued bee [66756]	Critically Endangered	Species or species habitat known to occur within area
Neopasiphae simplicior A native bee [66821]	Critically Endangered	Species or species habitat likely to occur within area
Mammals		
Bettongia penicillata ogilbyi Woylie [66844]	Endangered	Species or species habitat may occur within area
Dasyurus geoffroii Chuditch, Western Quoll [330]	Vulnerable	Species or species habitat known to occur within area
Pseudocheirus occidentalis Western Ringtail Possum, Ngwayir, Womp, Woder, Ngoor, Ngoolangit [25911]	Critically Endangered	Species or species habitat may occur within area
Setonix brachyurus Quokka [229]	Vulnerable	Species or species habitat may occur within area
Other		
Westralunio carteri Carter's Freshwater Mussel, Freshwater Mussel [86266]	Vulnerable	Species or species habitat known to occur within area
Plants		
Andersonia gracilis Slender Andersonia [14470]	Endangered	Species or species habitat may occur within area
Austrostipa jacobsoniana [87809]	Critically Endangered	Species or species habitat may occur within area
Caladenia huegelii King Spider-orchid, Grand Spider-orchid, Rusty Spider-orchid [7309]	Endangered	Species or species habitat known to occur within area
Diuris drummondii Tall Donkey Orchid [4365]	Vulnerable	Species or species habitat likely to occur within area
Diuris micrantha Dwarf Bee-orchid [55082]	Vulnerable	Species or species habitat likely to occur within area
Diuris purdiei Purdie's Donkey-orchid [12950]	Endangered	Species or species habitat known to occur within area
Drakaea elastica Glossy-leaved Hammer Orchid, Glossy-leaved Hammer Orchid, Warty Hammer Orchid [16753]	Endangered	Species or species habitat known to occur within area
Drakaea micrantha Dwarf Hammer-orchid [56755]	Vulnerable	Species or species habitat known to occur within area
Eucalyptus x balanites Cadda Road Mallee, Cadda Mallee [87816]	Endangered	Species or species habitat likely to occur within area
Grevillea curviloba subsp. incurva Narrow curved-leaf Grevillea [64909]	Endangered	Species or species habitat may occur within area

Name	Status	Type of Presence
Lepidosperma rostratum Beaked Lepidosperma [14152]	Endangered	Species or species habitat known to occur within area
Synaphea sp. Fairbridge Farm (D. Papenfus 696) Selena's Synaphea [82881]	Critically Endangered	Species or species habitat likely to occur within area
Synaphea sp. Pinjarra Plain (A.S. George 17182) [86878]	Endangered	Species or species habitat may occur within area
Synaphea sp. Serpentine (G.R. Brand 103) [86879]	Critically Endangered	Species or species habitat may occur within area
Thelymitra stellata Star Sun-orchid [7060]	Endangered	Species or species habitat may occur within area

Listed Migratory Species

[[Resource Information](#)]

* Species is listed under a different scientific name on the EPBC Act - Threatened Species list.

Name	Threatened	Type of Presence
Migratory Marine Birds		

Apus pacificus Fork-tailed Swift [678]		Species or species habitat likely to occur within area
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Migratory Terrestrial Species

Motacilla cinerea Grey Wagtail [642]		Species or species habitat may occur within area
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Migratory Wetlands Species

Actitis hypoleucos Common Sandpiper [59309]		Species or species habitat likely to occur within area
Calidris acuminata Sharp-tailed Sandpiper [874]		Roosting known to occur within area
Calidris ferruginea Curlew Sandpiper [856]	Critically Endangered	Species or species habitat known to occur within area
Calidris melanotos Pectoral Sandpiper [858]		Species or species habitat known to occur within area
Calidris ruficollis Red-necked Stint [860]		Roosting known to occur within area
Calidris subminuta Long-toed Stint [861]		Roosting known to occur within area
Charadrius dubius Little Ringed Plover [896]		Roosting known to occur within area
Gallinago megala Swinhoe's Snipe [864]		Roosting likely to occur within area
Gallinago stenura Pin-tailed Snipe [841]		Roosting likely to occur within area
Limosa limosa Black-tailed Godwit [845]		Roosting known to occur within area
Numenius madagascariensis Eastern Curlew, Far Eastern Curlew [847]	Critically Endangered	Species or species habitat may occur within area

Name	Threatened	Type of Presence
Numenius minutus Little Curlew, Little Whimbrel [848]		Roosting likely to occur within area
Pandion haliaetus Osprey [952]		Species or species habitat known to occur within area
Philomachus pugnax Ruff (Reeve) [850]		Roosting known to occur within area
Tringa glareola Wood Sandpiper [829]		Roosting known to occur within area
Tringa nebularia Common Greenshank, Greenshank [832]		Species or species habitat known to occur within area
Tringa stagnatilis Marsh Sandpiper, Little Greenshank [833]		Roosting known to occur within area

Other Matters Protected by the EPBC Act

Commonwealth Land	[Resource Information]
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The Commonwealth area listed below may indicate the presence of Commonwealth land in this vicinity. Due to the unreliability of the data source, all proposals should be checked as to whether it impacts on a Commonwealth area, before making a definitive decision. Contact the State or Territory government land department for further information.

Name
Commonwealth Land -

Listed Marine Species	[Resource Information]
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* Species is listed under a different scientific name on the EPBC Act - Threatened Species list.

Name	Threatened	Type of Presence
Birds		
Actitis hypoleucos Common Sandpiper [59309]		Species or species habitat likely to occur within area
Apus pacificus Fork-tailed Swift [678]		Species or species habitat likely to occur within area
Ardea ibis Cattle Egret [59542]		Species or species habitat may occur within area
Calidris acuminata Sharp-tailed Sandpiper [874]		Roosting known to occur within area
Calidris ferruginea Curlew Sandpiper [856]	Critically Endangered	Species or species habitat known to occur within area
Calidris melanotos Pectoral Sandpiper [858]		Species or species habitat known to occur within area
Calidris ruficollis Red-necked Stint [860]		Roosting known to occur within area
Calidris subminuta Long-toed Stint [861]		Roosting known to occur within area
Charadrius dubius Little Ringed Plover [896]		Roosting known to occur within area
Charadrius ruficapillus Red-capped Plover [881]		Roosting known to occur

Name	Threatened	Type of Presence
Gallinago megala Swinhoe's Snipe [864]		within area
Gallinago stenura Pin-tailed Snipe [841]		Roosting likely to occur within area
Haliaeetus leucogaster White-bellied Sea-Eagle [943]		Roosting likely to occur within area
Himantopus himantopus Pied Stilt, Black-winged Stilt [870]		Species or species habitat known to occur within area
Limosa limosa Black-tailed Godwit [845]		Roosting known to occur within area
Merops ornatus Rainbow Bee-eater [670]	Critically Endangered	Roosting known to occur within area
Motacilla cinerea Grey Wagtail [642]		Species or species habitat may occur within area
Numenius madagascariensis Eastern Curlew, Far Eastern Curlew [847]		Species or species habitat may occur within area
Numenius minutus Little Curlew, Little Whimbrel [848]		Roosting likely to occur within area
Pandion haliaetus Osprey [952]		Species or species habitat known to occur within area
Philomachus pugnax Ruff (Reeve) [850]	Endangered*	Roosting known to occur within area
Recurvirostra novaehollandiae Red-necked Avocet [871]		Roosting known to occur within area
Rostratula benghalensis (sensu lato) Painted Snipe [889]		Roosting known to occur within area
Thinornis rubricollis Hooded Plover [59510]		Species or species habitat likely to occur within area
Tringa glareola Wood Sandpiper [829]		Species or species habitat may occur within area
Tringa nebularia Common Greenshank, Greenshank [832]		Roosting known to occur within area
Tringa stagnatilis Marsh Sandpiper, Little Greenshank [833]		Species or species habitat known to occur within area

Extra Information

State and Territory Reserves		[Resource Information]
Name		State
Forrestdale Lake		WA
Gibbs Road		WA
Piara		WA

Invasive Species [Resource Information]

Weeds reported here are the 20 species of national significance (WoNS), along with other introduced plants that are considered by the States and Territories to pose a particularly significant threat to biodiversity. The following feral animals are reported: Goat, Red Fox, Cat, Rabbit, Pig, Water Buffalo and Cane Toad. Maps from Landscape Health Project, National Land and Water Resouces Audit, 2001.

Name	Status	Type of Presence
Birds		
Acridotheres tristis Common Myna, Indian Myna [387]		Species or species habitat likely to occur within area
Anas platyrhynchos Mallard [974]		Species or species habitat likely to occur within area
Carduelis carduelis European Goldfinch [403]		Species or species habitat likely to occur within area
Columba livia Rock Pigeon, Rock Dove, Domestic Pigeon [803]		Species or species habitat likely to occur within area
Passer domesticus House Sparrow [405]		Species or species habitat likely to occur within area
Passer montanus Eurasian Tree Sparrow [406]		Species or species habitat likely to occur within area
Streptopelia chinensis Spotted Turtle-Dove [780]		Species or species habitat likely to occur within area
Streptopelia senegalensis Laughing Turtle-dove, Laughing Dove [781]		Species or species habitat likely to occur within area
Sturnus vulgaris Common Starling [389]		Species or species habitat likely to occur within area
Turdus merula Common Blackbird, Eurasian Blackbird [596]		Species or species habitat likely to occur within area
Mammals		
Bos taurus Domestic Cattle [16]		Species or species habitat likely to occur within area
Canis lupus familiaris Domestic Dog [82654]		Species or species habitat likely to occur within area
Felis catus Cat, House Cat, Domestic Cat [19]		Species or species habitat likely to occur within area

Name	Status	Type of Presence
Funambulus pennantii Northern Palm Squirrel, Five-striped Palm Squirrel [129]		Species or species habitat likely to occur within area
Mus musculus House Mouse [120]		Species or species habitat likely to occur within area
Oryctolagus cuniculus Rabbit, European Rabbit [128]		Species or species habitat likely to occur within area
Rattus norvegicus Brown Rat, Norway Rat [83]		Species or species habitat likely to occur within area
Rattus rattus Black Rat, Ship Rat [84]		Species or species habitat likely to occur within area
Vulpes vulpes Red Fox, Fox [18]		Species or species habitat likely to occur within area
Plants		
Anredera cordifolia Madeira Vine, Jalap, Lamb's-tail, Mignonette Vine, Anredera, Gulf Madeiravine, Heartleaf Madeiravine, Potato Vine [2643]		Species or species habitat likely to occur within area
Asparagus aethiopicus Asparagus Fern, Ground Asparagus, Basket Fern, Sprengi's Fern, Bushy Asparagus, Emerald Asparagus [62425]		Species or species habitat likely to occur within area
Asparagus asparagoides Bridal Creeper, Bridal Veil Creeper, Smilax, Florist's Smilax, Smilax Asparagus [22473]		Species or species habitat likely to occur within area
Asparagus plumosus Climbing Asparagus-fern [48993]		Species or species habitat likely to occur within area
Brachiaria mutica Para Grass [5879]		Species or species habitat may occur within area
Cenchrus ciliaris Buffel-grass, Black Buffel-grass [20213]		Species or species habitat may occur within area
Chrysanthemoides monilifera Bitou Bush, Boneseed [18983]		Species or species habitat may occur within area
Chrysanthemoides monilifera subsp. monilifera Boneseed [16905]		Species or species habitat likely to occur within area
Genista linifolia Flax-leaved Broom, Mediterranean Broom, Flax Broom [2800]		Species or species habitat likely to occur within area
Genista monspessulana Montpellier Broom, Cape Broom, Canary Broom, Common Broom, French Broom, Soft Broom [20126]		Species or species habitat likely to occur within area
Genista sp. X Genista monspessulana Broom [67538]		Species or species habitat may occur within area
Lantana camara Lantana, Common Lantana, Kamara Lantana, Large-leaf Lantana, Pink Flowered Lantana, Red Flowered Lantana, Red-Flowered Sage, White		Species or species habitat likely to occur within area

Name	Status	Type of Presence
Sage, Wild Sage [10892] Lycium ferocissimum African Boxthorn, Boxthorn [19235]		Species or species habitat likely to occur within area
Olea europaea Olive, Common Olive [9160]		Species or species habitat may occur within area
Opuntia spp. Prickly Pears [82753]		Species or species habitat likely to occur within area
Pinus radiata Radiata Pine Monterey Pine, Insignis Pine, Wilding Pine [20780]		Species or species habitat may occur within area
Rubus fruticosus aggregate Blackberry, European Blackberry [68406]		Species or species habitat likely to occur within area
Sagittaria platyphylla Delta Arrowhead, Arrowhead, Slender Arrowhead [68483]		Species or species habitat likely to occur within area
Salix spp. except S.babylonica, S.x calodendron & S.x reichardtii Willows except Weeping Willow, Pussy Willow and Sterile Pussy Willow [68497]		Species or species habitat likely to occur within area
Salvinia molesta Salvinia, Giant Salvinia, Aquarium Watermoss, Kariba Weed [13665]		Species or species habitat likely to occur within area
Solanum elaeagnifolium Silver Nightshade, Silver-leaved Nightshade, White Horse Nettle, Silver-leaf Nightshade, Tomato Weed, White Nightshade, Bull-nettle, Prairie-berry, Satansbos, Silver-leaf Bitter-apple, Silverleaf-nettle, Trompillo [12323] Tamarix aphylla Athel Pine, Athel Tree, Tamarisk, Athel Tamarisk, Athel Tamarix, Desert Tamarisk, Flowering Cypress, Salt Cedar [16018]		Species or species habitat likely to occur within area
Reptiles		
Hemidactylus frenatus Asian House Gecko [1708]		Species or species habitat likely to occur within area

Nationally Important Wetlands		[Resource Information]
Name		State
Forrestdale Lake		WA
Gibbs Road Swamp System		WA

Caveat

The information presented in this report has been provided by a range of data sources as acknowledged at the end of the report.

This report is designed to assist in identifying the locations of places which may be relevant in determining obligations under the Environment Protection and Biodiversity Conservation Act 1999. It holds mapped locations of World and National Heritage properties, Wetlands of International and National Importance, Commonwealth and State/Territory reserves, listed threatened, migratory and marine species and listed threatened ecological communities. Mapping of Commonwealth land is not complete at this stage. Maps have been collated from a range of sources at various resolutions.

Not all species listed under the EPBC Act have been mapped (see below) and therefore a report is a general guide only. Where available data supports mapping, the type of presence that can be determined from the data is indicated in general terms. People using this information in making a referral may need to consider the qualifications below and may need to seek and consider other information sources.

For threatened ecological communities where the distribution is well known, maps are derived from recovery plans, State vegetation maps, remote sensing imagery and other sources. Where threatened ecological community distributions are less well known, existing vegetation maps and point location data are used to produce indicative distribution maps.

Threatened, migratory and marine species distributions have been derived through a variety of methods. Where distributions are well known and if time permits, maps are derived using either thematic spatial data (i.e. vegetation, soils, geology, elevation, aspect, terrain, etc) together with point locations and described habitat; or environmental modelling (MAXENT or BIOCLIM habitat modelling) using point locations and environmental data layers.

Where very little information is available for species or large number of maps are required in a short time-frame, maps are derived either from 0.04 or 0.02 decimal degree cells; by an automated process using polygon capture techniques (static two kilometre grid cells, alpha-hull and convex hull); or captured manually or by using topographic features (national park boundaries, islands, etc). In the early stages of the distribution mapping process (1999-early 2000s) distributions were defined by degree blocks, 100K or 250K map sheets to rapidly create distribution maps. More reliable distribution mapping methods are used to update these distributions as time permits.

Only selected species covered by the following provisions of the EPBC Act have been mapped:

- migratory and
- marine

The following species and ecological communities have not been mapped and do not appear in reports produced from this database:

- threatened species listed as extinct or considered as vagrants
- some species and ecological communities that have only recently been listed
- some terrestrial species that overfly the Commonwealth marine area
- migratory species that are very widespread, vagrant, or only occur in small numbers

The following groups have been mapped, but may not cover the complete distribution of the species:

- non-threatened seabirds which have only been mapped for recorded breeding sites
- seals which have only been mapped for breeding sites near the Australian continent

Such breeding sites may be important for the protection of the Commonwealth Marine environment.

Coordinates

-32.16868 115.92463

Acknowledgements

This database has been compiled from a range of data sources. The department acknowledges the following custodians who have contributed valuable data and advice:

- [-Office of Environment and Heritage, New South Wales](#)
- [-Department of Environment and Primary Industries, Victoria](#)
- [-Department of Primary Industries, Parks, Water and Environment, Tasmania](#)
- [-Department of Environment, Water and Natural Resources, South Australia](#)
- [-Department of Land and Resource Management, Northern Territory](#)
- [-Department of Environmental and Heritage Protection, Queensland](#)
- [-Department of Parks and Wildlife, Western Australia](#)
- [-Environment and Planning Directorate, ACT](#)
- [-Birdlife Australia](#)
- [-Australian Bird and Bat Banding Scheme](#)
- [-Australian National Wildlife Collection](#)
- [-Natural history museums of Australia](#)
- [-Museum Victoria](#)
- [-Australian Museum](#)
- [-South Australian Museum](#)
- [-Queensland Museum](#)
- [-Online Zoological Collections of Australian Museums](#)
- [-Queensland Herbarium](#)
- [-National Herbarium of NSW](#)
- [-Royal Botanic Gardens and National Herbarium of Victoria](#)
- [-Tasmanian Herbarium](#)
- [-State Herbarium of South Australia](#)
- [-Northern Territory Herbarium](#)
- [-Western Australian Herbarium](#)
- [-Australian National Herbarium, Canberra](#)
- [-University of New England](#)
- [-Ocean Biogeographic Information System](#)
- [-Australian Government, Department of Defence](#)
- [Forestry Corporation, NSW](#)
- [-Geoscience Australia](#)
- [-CSIRO](#)
- [-Australian Tropical Herbarium, Cairns](#)
- [-eBird Australia](#)
- [-Australian Government – Australian Antarctic Data Centre](#)
- [-Museum and Art Gallery of the Northern Territory](#)
- [-Australian Government National Environmental Science Program](#)
- [-Australian Institute of Marine Science](#)
- [-Reef Life Survey Australia](#)
- [-American Museum of Natural History](#)
- [-Queen Victoria Museum and Art Gallery, Inveresk, Tasmania](#)
- [-Tasmanian Museum and Art Gallery, Hobart, Tasmania](#)
- [-Other groups and individuals](#)

The Department is extremely grateful to the many organisations and individuals who provided expert advice and information on numerous draft distributions.

Please feel free to provide feedback via the [Contact Us](#) page.

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