

Significance Assessment

Placid Waters South Residential Development

Project No: EP25-135(05)

**Prepared for Wolfdene
July 2026**



Significance Assessment
Placid Waters South Residential Development



Document Control

Doc name:	Significance Assessment Placid Waters South Residential Development				
Doc no.:	EP25-135(08)--016 CIB				
Version	Date	Author		Reviewer	
1	July 2026	Donald Asaye	DTA	Adrain Vlok	ASV
		Charlotte Broun	CIB		
	Prepared for client review				

© 2026 Emerge Associates All Rights Reserved. Copyright in the whole and every part of this document belongs to Emerge Associates and may not be used, sold, transferred, copied or reproduced in whole or in part in any manner or form or in or on any media to any person without the prior written consent of Emerge Associates.

Significance Assessment Placid Waters South Residential Development



Executive Summary

BMP Land Projects Pty Ltd (the Proponent) proposes to develop Lot 9003 Peel Parade, Coodanup, Western Australia, for residential purposes (the Proposed Action). The approximately 21.24 ha development will comprise residential lots, roads, drainage infrastructure, local open space, landscaping and associated services, while retaining and protecting environmentally significant areas within Regional Open Space (ROS) as part of the project design. The Project Area is located adjacent to the Serpentine River and in proximity to the Peel-Yalgorup System Ramsar Wetland, requiring consideration of potential impacts to Matters of National Environmental Significance (MNES) protected under the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act).

This report assesses the potential impacts of the Proposed Action on the relevant MNES, including the Peel-Yalgorup Ramsar Wetland, EPBC Act-listed threatened species, and EPBC Act-listed migratory species, against the Significant Impact Guidelines 1.1 and other relevant Commonwealth guidance. The assessment incorporates the findings of previous ecological investigations together with more recent targeted shorebird surveys undertaken in 2026 and concludes that the Proposed Action is unlikely to result in a significant impact on any MNES.

The assessment considered the ecological character of the Peel-Yalgorup Ramsar Wetland, with particular emphasis on the hydrology, water quality and waterbird components most relevant to the Project Area. Although the development is located adjacent to the Serpentine River, it is situated outside the Ramsar wetland and will not directly disturb the river, estuary or wetland habitats. The development has been designed to retain the foreshore habitat within ROS and incorporates Water Sensitive Urban Design (WSUD) measures, including onsite stormwater retention, treatment and infiltration, to maintain existing hydrological processes and protect water quality. In conjunction with management measures contained within the Environmental Assessment and Management Plan (EAMP), Construction Environmental Management Plan (CEMP), Foreshore and Wetland Management Plan (FWMP), Fauna Management Plan (FMP) and Subdivision Water Management Report (SWMR), the Proposed Action is not expected to alter the ecological character of the Peel-Yalgorup System or adversely affect the hydrological, water quality or habitat processes that support the Ramsar wetland.

The assessment also considered impacts to threatened fauna species, including Carnaby's Black Cockatoo, Baudin's Black Cockatoo, Forest Red-tailed Black Cockatoo, and 14 threatened and migratory shorebird and tern species. The Proposed Action will result in only minor losses of black cockatoo foraging habitat that are substantially below the Commonwealth referral guideline thresholds and will not remove any suitable nesting hollows. Six potential nesting trees will be retained within the avoidance area, and ecological surveys did not record black cockatoos within the Project Area. Similarly, only approximately 0.10 ha of marsh and mudflat habitat suitable for threatened shorebirds and terns will be removed, while approximately 2.41 ha (96%) of suitable habitat, including the majority of the highest quality habitat, will be retained and protected within ROS. Ecological surveys did not record any of the threatened shorebird species. Consequently, the assessment concludes that the Proposed Action will not adversely affect habitat critical to the survival or recovery of these threatened species and is unlikely to trigger any of the threatened species significant impact criteria.

Significance Assessment

Placid Waters South Residential Development



Potential impacts to EPBC Act-listed migratory species were assessed separately for Osprey, Pacific Swift, Glossy Ibis, and 18 migratory shorebird and tern species. Osprey was assessed independently because it utilises a broader range of habitats, and was recorded during ecological surveys. Although approximately 0.10 ha of high-value habitat and 7.53 ha of moderate-value habitat will be removed, the majority of high-value habitat associated with the Serpentine River foreshore will be retained and protected within the avoidance area. Pacific Swift and Glossy Ibis were not recorded during surveys and are expected to utilise the Project Area only opportunistically. Likewise, migratory shorebirds and terns are considered likely to use the marsh and mudflat habitats only occasionally as part of the much larger Peel-Harvey Estuary and Peel-Yalgorup System. The Project Area does not comprise "important habitat" under the EPBC Act Significant Impact Guidelines or the Shorebird Guidelines, and the Proposed Action is not expected to substantially modify, fragment or isolate important habitat, introduce invasive species, or seriously disrupt the lifecycle of any ecologically significant population.

Overall, the assessment demonstrates that the Proposed Action has been designed to avoid and minimise impacts to MNES through the retention of environmentally significant habitat, protection of foreshore areas within ROS, and implementation of comprehensive environmental management and stormwater management measures. The remaining impacts are limited in extent, occur predominantly within previously disturbed or lower quality habitat, and do not affect habitat considered critical to the survival or recovery of any listed species or the ecological character of the Peel-Yalgorup Ramsar Wetland. Accordingly, the Proposed Action is unlikely to result in a significant impact on any MNES under the EPBC Act and is not expected to result in any significant residual impacts.

Significance Assessment

Placid Waters South Residential Development



Table of Contents

1	Introduction	1
1.1	Purpose	1
2	Ramsar Wetland	2
2.1	Ecological Character Description of the Peel-Yalgorup System	2
3	Threatened Species	11
3.1	Assessment of potential impacts to black cockatoos	11
3.2	Assessment of potential impacts to threatened migratory shorebirds and terns.....	14
4	Migratory Species	22
4.1	Assessment of potential impacts on migratory bird species	22
4.1.1	Osprey	22
4.1.1.1	Ecology, habitat and occurrence	23
4.1.2	Other migratory bird species	25
4.1.2.1	Ecology, habitat and occurrence	26
4.2	Assessment of potential impacts to migratory shorebirds and terns.....	28
4.2.1	Ecology, habitat and occurrence.....	29
5	References	33
5.1	General references	33

List of Tables

Table 1: Summary of the ecological character of the Peel-Yalgorup System at the time of listing 1990 (Hale and Butcher 2007).....	2
Table 2: Change in the ecological character of the Peel-Yalgorup Ramsar site since listing (2007) (Hale and Butcher 2007).....	7
Table 3: Assessment of the potential impacts of the proposed action to the Peel-Yalgorup System	8
Table 4: Assessment of the potential impacts of the Proposed Action to CBC, FRTBC and BBC.....	12
Table 5: Assessment of the potential impacts of the Proposed Action to 14 threatened and migratory shorebird and tern species	16
Table 6: Assessment of the potential impacts of the proposed action to Osprey.....	24
Table 7: Assessment of the potential impacts of the proposed action to the Pacific Swift and Glossy Ibis.....	26
Table 8: Assessment of the potential impacts of the proposed action to 18 migratory shorebird and tern species	31

Significance Assessment

Placid Waters South Residential Development



This page has been left blank intentionally.

Significance Assessment

Placid Waters South Residential Development



Abbreviation Tables

Table A1: Abbreviations – Organisations

Organisations	
DBCA	Department of Biodiversity, Conservation and Attractions
DCCEEW	Department of Climate Change, Energy, the Environment and Water

Table A2: Abbreviations – General terms

General terms	
AEP	Annual Exceedance Probability
BBC	Baudin's black cockatoo
BRA	Bioretention Area
CBC	Carnaby's black cockatoo
CBD	Central business district
CEMP	Construction Environmental Management Plan
EAAF	East Asian-Australasian Flyway
EAMP	Environmental Assessment and Management Plan
ECD	Ecological Character Description
FMP	Fauna Management Plan
FRTBC	Forest red-tailed black cockatoo
FSA	Flood storage area
FWMP	Foreshore and Wetland Management Plan
GPT	Gross pollutant trap
MNES	Matters of National Environmental Significance
PMST	Protected Matters Search Tool
POS	Public open space
ROS	Regional open space
SWMR	Subdivision Water Management Plan
UFI	Unique feature identifiers
WSUD	Water sensitive urban design

Significance Assessment

Placid Waters South Residential Development



Table A3: Abbreviations –Legislation

Legislation	
EPBC Act	<i>Environment Protection and Biodiversity Conservation Act 1999</i>

Table A4: Abbreviations – units of measurement

Units of measurement	
ha	Hectare
km	Kilometres
m AHD	m in relation to the Australian height datum
mm	Millimetre

Significance Assessment

Placid Waters South Residential Development



1 Introduction

BMP Land Projects Pty Ltd (the Proponent) proposes to develop Lot 9003 Peel Parade, Coodanup, Western Australia (the Project Area), for residential purposes (the Proposed Action). The Proposed Action will facilitate the development of urban land and protection of conservation values in Regional Open Space (ROS) consistent with the Peel Region Scheme (PRS) and the City of Mandurah Local Planning Scheme No. 12 (LPS 12). The Proposed Action involves residential lots, roads, drainage infrastructure, regional open space, local open space, landscaping and associated services.

The Proposed Action comprises approximately 21.24 ha of land within the City of Mandurah and is located adjacent to the Serpentine River and in proximity to the Peel-Yalgorup System. Given the location of the Project Area and the findings of the ecological investigations undertaken, the Proposed Action has the potential to impact Matters of National Environmental Significance (MNES) protected under the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act).

The relevant MNES include the Peel-Yalgorup System Ramsar Wetlands, threatened species and ecological communities, and migratory species. While the extent of these impacts is limited, an assessment has been undertaken to determine whether they are likely to constitute a significant impact under the EPBC Act.

This report should be read in conjunction with the EPBC Act Referral and the supporting ecological assessments, which document the environmental values of the Project Area, the proposed disturbance footprint and the avoidance and mitigation measures incorporated into the design of the Proposed Action.

1.1 Purpose

This significance assessment has been prepared to support the referral of the Placid Waters Residential Development under the EPBC Act (EPBC 03479).

The purpose of this report is to provide a detailed assessment of the potential impacts of the Proposed Action on the relevant MNES identified within and adjacent to the Project Area, including:

- Peel-Yalgorup Ramsar Wetland (**Section 2**)
- EPBC Act-listed threatened species and ecological communities (**Section 3**)
- EPBC Act-listed migratory species (**Section 4**)

The assessment considers the nature, extent and significance of potential direct and indirect impacts associated with the Proposed Action, having regard to the *Matters of National Environmental Significance: Significant Impact Guidelines 1.1* (DCCEEW 2021) (hereafter referred to as 'the Significant Impact Guidelines 1.1'), and other relevant guidance. The report demonstrates why the Proposed Action is not expected to result in a significant impact on MNES and provides the technical justification supporting the EPBC Act referral.

Significance Assessment

Placid Waters South Residential Development



2 Ramsar Wetland

The Significant Impact Guidelines 1.1 identify criteria for determining whether a proposed action is likely to have a significant impact on a wetland of international importance. **Table 1** and **Table 2** summarise the ecological character of the Peel-Yalgorup System Ramsar Wetland, while **Table 3** provides an assessment of the potential impacts of the Proposed Action against the relevant significant impact criteria, with reference to the significant impact guidelines and the Peel-Yalgorup Ecological Character Description (Hale and Butcher 2007).

The anticipated impacts on the Peel-Yalgorup System as a result of the Proposed Action are not considered to be a significant impact nor would they represent a significant residual impact.

2.1 Ecological Character Description of the Peel-Yalgorup System

The Peel-Yalgorup System, located approximately 80 km south of the Perth Central Business District (CBD) in south-western Australia (south of the Project Area separated by Peel Parade), was designated a 'Wetland of International Importance' under the Ramsar Convention on Wetlands in June 1990 (Hale and Butcher 2007). The wetland system is 26,000 hectares (ha) in size and comprises shallow estuarine waters, saline, brackish and freshwater wetlands of the Peel Inlet, Harvey Estuary, and several lake systems including Lake Mealup and Lake McLarty, and the Yalgorup National Park (Hale and Butcher 2007). The *Ecological Character Description for the Peel-Yalgorup Ramsar Site* (hereafter referred to as the 'Peel-Yalgorup ECD') describes the ecological character of the Ramsar site which is used to set a benchmark for effective planning and management (Hale and Butcher 2007).

A summary of the components, processes and services that maintain the ecological character of the Peel-Yalgorup System (Peel-Harvey Estuary and other waterbodies) at the time of listing (1990) is provided below in **Table 4**, and the most recent summary of the ecological character since preparation of the ecological character description in 2007 is provided below in **Table 2**.

Table 1: Summary of the ecological character of the Peel-Yalgorup System at the time of listing 1990 (Hale and Butcher 2007).

Component	Summary Description
Peel-Harvey Estuary (1990) (continued)	
Water Quality	• High concentrations of nutrients (eutrophic) from catchment • Seasonal variability in salinity • Stratification and deoxygenation of bottom waters.
Acid Sulfate Soils	• Monosulphidic black ooze • Exposed via dredging.
Phytoplankton	• Winter diatom blooms • Spring Nodularia blooms in the Harvey Estuary.
Benthic Plants	• Excessive growth of green macroalgae (Cladophora and/or Chaetomorpha) in the Peel Inlet • Smothering of seagrass.
Littoral Vegetation	• Samphire communities around the shorelines • Paperbark communities in the Harvey River delta.

Significance Assessment

Placid Waters South Residential Development



Table 1 (continued): Summary of the ecological character of the Peel-Yalgorup System at the time of listing 1990 (Hale and Butcher 2007).

Component	Summary Description
Peel-Harvey Estuary (1990) (continued)	
Water Quality	• High concentrations of nutrients (eutrophic) from catchment • Seasonal variability in salinity • Stratification and deoxygenation of bottom waters.
Acid Sulfate Soils	• Monosulphidic black ooze • Exposed via dredging.
Phytoplankton	• Winter diatom blooms • Spring Nodularia blooms in the Harvey Estuary.
Benthic Plants	• Excessive growth of green macroalgae (Cladophora and/or Chaetomorpha) in the Peel Inlet • Smothering of seagrass.
Littoral Vegetation	• Samphire communities around the shorelines • Paperbark communities in the Harvey River delta.
Invertebrates	• Commercially significant taxa include blue swimmer crabs and western king prawns • Diverse communities in the estuary and the intertidal zones.
Fish	• Estuarine and marine species • Migratory route for some species.
Birds	• High diversity and abundance of waterbirds • Regularly supports > 20,000 waterbirds (maximum recorded 150,000 individuals) • Breeding recorded for twelve species • Regularly supports > 1 % of the population of eleven species.
Yalgorup Lakes (1990)	
Geomorphology	• Shallow depressional wetlands • No defined surface water inflow or outflow channels.
Hydrology	• Highly seasonal freshwater inflows predominantly from groundwater • No surface water outflows.
Water Quality	• Brackish to hypersaline conditions • Seasonal salinity cycles • Low nutrient concentrations • Some lakes exhibit stratification • Highly alkaline (calcium and bicarbonate).
Benthic Microbial Community	• Thrombolites in Lake Clifton • Cyanobacterial algal mats across the sediment surface in some lakes.
Flora	• Small buffer zones • Some areas of paperbark communities.
Fauna	• Significant site for waterbirds • Large numbers of Shelduck and Black Swans annually • 1% of population of Banded Stilt, Red-necked Stint, Hooded Plover, Shelduck and Musk Duck • Breeding of eight species.
Lakes Mclarty and Mealup (1990)	
Geomorphology	• Shallow depressional wetlands • No defined surface water inflow or outflow channels.

Significance Assessment

Placid Waters South Residential Development



Table 1 (continued): Summary of the ecological character of the Peel-Yalgorup System at the time of listing 1990 (Hale and Butcher 2007).

Component	Summary Description
Lakes Mclarty and Mealup (1990) (continued)	
Hydrology	- Highly seasonal freshwater inflows predominantly from groundwater - No natural surface water outflows (although there are drains present)
Water Quality	- Fresh to brackish conditions - Alkaline
Flora	- Typha across parts of each lake - Sedges on the margins - Paperbark community at higher elevations
Fauna	- Important habitat for freshwater invertebrates - Provides habitat for a large diversity and number of waterbirds - Breeding recorded for 12 species of waterbird
Lakes Geogrup and Black (2007)	
Geomorphology	- Riverine wetlands on the Serpentine River - Geogrup within the river - Black connected to Geogrup by a narrow channel
Hydrology	- Highly seasonal freshwater inflows predominantly from river flows - Tidal influence for the Indian Ocean via the Peel Inlet
Water Quality	- Seasonal cycle of salinity - High concentrations of nutrients - Low dissolved oxygen concentrations
Flora	- High phytoplankton biomass - Samphire at low elevations in the littoral zone - Paperbark communities at high elevations
Fauna	- Data deficient - Supports waterbirds

Based on **Table 1**, and given the Peel-Yalgorup System is separated by Peel Parade (located outside of the Project Area) and the Peel-Harvey Estuary is the most proximal and material waterbody to the Project Area within the Peel-Yalgorup System, the '**Hydrology**', '**Water Quality**' and '**Bird**' components for the '**Peel-Harvey Estuary**' have been considered to have the most likely impact pathway between the Proposed Action and the Peel-Yalgorup System.

2.1.1 Hydrology

The Proposed Action is unlikely to jeopardise or be at variance with the '**Hydrology**' component of the Peel-Yalgorup System's ecological character. The Project Area is located outside the Peel-Harvey Estuary and will not impact any waterways which contribute to the estuary's hydrological regime. Consequently, the Proposed Action will not affect the highly seasonal freshwater inflows from the Murray, Serpentine or Harvey River systems, local precipitation, or the limited tidal exchange between the estuary and the Indian Ocean. Similarly, the Proposed Action will not alter groundwater inputs to the estuary, as no long-term groundwater abstraction, dewatering, or modification of regional groundwater flow is proposed.

Significance Assessment

Placid Waters South Residential Development



The Subdivision Water Management Report (SWMR) has been prepared to maintain the existing site water balance through the application of water sensitive urban design (WSUD) principles. Stormwater generated within the Project Area will be retained, treated and infiltrated onsite using vegetated swales, bioretention areas, infiltration systems and flood storage areas, thereby minimising changes to runoff volumes, flow paths and discharge rates. These measures are designed to replicate pre-development hydrological conditions and prevent measurable changes to the quantity, timing and movement of surface water and groundwater leaving the Project Area.

Accordingly, the Proposed Action is not expected to alter the hydrological processes or water regime that support the ecological character of the Peel-Yalgorup System and is therefore unlikely to result in a significant impact on the Ramsar wetland.

2.1.2 Water Quality

The Proposed Action is unlikely to jeopardise or be at variance with the '**Water Quality**' component of the Peel-Yalgorup System's ecological character. The Project Area is located outside the Peel-Harvey Estuary, and no works are proposed within the Serpentine River or adjacent ROS. Accordingly, the Proposed Action will not directly affect the processes responsible for the Peel-Yalgorup System's nutrient concentrations, seasonal salinity variability, or periodic stratification and deoxygenation of bottom waters.

The SWMR has been prepared in accordance with WSUD principles to maintain existing hydrological processes, protect groundwater quality and minimise nutrient, sediment and pollutant export from the Project Area. Stormwater will be managed using the following treatment system:

- Residential lots will retain runoff from the 1% Annual Exceedance Probability (AEP) rainfall event onsite, primarily through sock wells and infiltration into permeable landscaped areas, promoting at-source infiltration and recharge of the superficial aquifer.
- Road runoff from the first 15 mm of rainfall will be directed to vegetated swales or bio-retention areas, via a gross pollutant trap, where sediments, nutrients and other pollutants will be removed through filtration, biological update and infiltration.
- Runoff above the first 15 mm rainfall and up to the 1% AEP event, will be conveyed to flood storage areas within public open space for temporary detention and controlled infiltration.
- Where a pit and pipe drainage network is required, gross pollutant traps will be installed upstream of bio-retention areas to remove litter, coarse sediments and debris prior to treatment.

The stormwater system has been designed to replicate pre-development hydrological conditions by retaining, treating and infiltrating stormwater as close as practicable to where it is generated. This approach retains groundwater recharge, reduces nutrient loading to groundwater through treatment prior to infiltration and minimises the volume and rate of runoff leaving the Project Area.

During construction, erosion, sediment and pollution controls will be implemented in accordance with the Environmental Assessment and Management Plan (EAMP), Construction Environmental Management Plan (CEMP) and Foreshore and Wetland Management Plan (FWMP) to prevent sediment-laden runoff and contaminants entering waterways.

Significance Assessment

Placid Waters South Residential Development



Accordingly, the Proposed Action is not expected to adversely affect water quality, nutrient concentrations, salinity or the hydrological processes that support the ecological character of the Peel-Yalgorup System. Consequently, the Proposed Action is unlikely to result in a significant impact on the Ramsar wetland.

2.1.3 Birds

The Proposed Action is unlikely to jeopardise or be at variance with the '**Bird**' component of the Peel-Yalgorup Ramsar Wetland's ecological character. The Project Area is located outside of the Peel-Yalgorup Ramsar Wetland and will not result in the loss, fragmentation or modification of habitats within the Peel-Harvey Estuary that support the Peel-Yalgorup System's high diversity and abundance of waterbirds. While the Project Area adjoins the Serpentine River, the majority of native vegetation, including the highest quality vegetation within the Project Area, will be retained and protected within ROS and the avoidance area. Consequently, the Proposed Action will avoid disturbance to the foreshore habitats that provide the greatest ecological value for waterbirds.

While the marsh and mudflat habitats within the Project Area provide suitable foraging and opportunistic roosting habitat for some migratory shorebirds and migratory bird species, these habitats represent a very small proportion of the extensive and substantially higher quality habitat available throughout the Peel-Yalgorup System. The remainder of the Project Area comprises predominantly disturbed or degraded terrestrial vegetation that provides limited habitat value for migratory waterbirds and shorebirds.

During construction, management measures implemented through the EAMP, CEMP and Fauna Management Plan (FMP) will minimise indirect impacts such as dust, noise, lighting, sedimentation, pollutants and human disturbance. In addition, the SWMR has been designed to maintain existing hydrological and water quality processes that support adjacent waterbird habitat.

Accordingly, the Proposed Action is not expected to affect the abundance, diversity, distribution, breeding success or habitat values that underpin the ecological character of the Peel-Yalgorup System, and is therefore unlikely to result in a significant impact on the Ramsar wetland.

2.1.4 Change in the ecological character

Based on **Table 2** below, the '**Hydrological**' and '**Water Quality**' components of the Peel-Harvey Estuary have changed from the initial time of listing, whilst there has been no evidence of change to the abundance or diversity of birds (Hale and Butcher 2007). Notwithstanding this, the Proposed Action is not considered to be at variance with any of these ecological character components, for the reasons discussed above.

Significance Assessment

Placid Waters South Residential Development



Table 2: Change in the ecological character of the Peel-Yalgorup Ramsar site since listing (2007) (Hale and Butcher 2007).

Component	Summary Description
Peel-Harvey Estuary (2007)	
Geomorphology	• Dawesville Channel.
Hydrology	• Increased exchange with the Indian Ocean • Changed tidal regime.
Water Quality	• Nutrient concentrations in the water column decreased • Salinity conditions more marine (temporally and spatially) • Stratification reduced.
Acid Sulfide Soils	• Monosulphidic black ooze • Exposed via dredging • Selenium risk.
Phytoplankton	• Decreased phytoplankton biomass • No <i>Nodularia</i> blooms recorded in the Harvey Estuary.
Benthic Plants	• Decreased macroalgal biomass • Increased extent of seagrass.
Littoral Vegetation	• Changes to samphire – data deficient • Deterioration of tree health in the Harvey Estuary.
Fish	• Increase in marine species • Decrease in Cobbler • Possible decrease in estuarine species.
Birds	• No evidence of change in abundance or diversity.
Yalgorup Lakes (2007)	
Hydrology	Changes to lake levels – data deficient Potential decrease in groundwater inflows.
Water Quality	Salinity and nutrient increases – data deficient Potential increase in nutrients in Lake Clifton and increases in salinity.
Benthic Microbial Community	Some evidence in breakdown of microbial mats Thrombolite condition – data deficient.
Fauna	Some changes to fish populations in Lake Clifton and recorded fish kills No evidence of change in abundance or diversity of waterbirds.

(Note that as Lakes Geogrup and Black were yet to be listed at the time and therefore the changes in ecological character are not applicable to these wetlands and have been omitted from this table.)

Significance Assessment

Placid Waters South Residential Development



2.2 Assessment of potential impacts to the Peel-Yalgorup System

An assessment against the significant impact criteria was undertaken and is provided in **Table 3**. Consideration has been given to the significant impact guidelines wetlands of international importance 'significant impact criteria', and management measures proposed as part of the Proposed Action.

Table 3: Assessment of the potential impacts of the proposed action to the Peel-Yalgorup System

Significant impact criteria for Wetlands of international importance (DotE 2013)	Will a significant impact result from the Proposed Action?	
	Likelihood	Assessment for Peel-Yalgorup System
An action is likely to have a significant impact on the ecological character of a declared Ramsar wetland if there is a real chance or possibility that it will result in:		
1. 'areas of the wetland being destroyed or substantially modified'	Unlikely to occur	The Peel-Yalgorup System, and particularly the Peel-Harvey Estuary which is the most proximal waterbody to the Project Area, is located south of the Project Area (outside the Project Area) and is separated by Peel Parade which runs along the entire southern site boundary. Given this separation, there are no direct impacts anticipated for the Peel-Harvey Estuary and broader Peel-Yalgorup System and therefore it is unlikely that areas of the wetland would be destroyed. Furthermore, the Proposed Action will not substantially modify any part of the Peel-Yalgorup Ramsar Wetland because all development activities will be confined to the disturbance footprint, which is located outside of the wetland and separated from it by existing infrastructure (Peel Parade). Management measures detailed in the EAMP and the CEMP will prevent construction related impacts extending beyond the Project Area through boundary delineation, exclusion fencing, dust suppression, lighting management, erosion and sediment controls, waste management, weed and dieback and hygiene protocols. In addition, the SWMR has been designed to maintain pre-development hydrological conditions and water quality through WSUD measures, including onsite infiltration, bio-retention areas (BRAs), vegetated swales, flood storage areas (FASs) and ongoing drainage maintenance. These measures will prevent changes to groundwater and surface water regimes, minimise nutrient and sediment export, and avoid offsite discharge to the Peel-Yalgorup System. Collectively, these controls will ensure the wetland's physical habitat, ecological processes and hydrological functioning remain unchanged, such that no part of the Ramsar wetland is substantially modified.

Significance Assessment

Placid Waters South Residential Development



Table 3 (continued): Assessment of the potential impacts of the proposed action to the Peel-Yalgorup System

Significant impact criteria for Wetlands of international importance (DotE 2013)	Will a significant impact result from the Proposed Action?	
	Likelihood	Assessment for Peel-Yalgorup System
2. 'a substantial and measurable change in the hydrological regime of the wetland, for example, a substantial change to the volume, timing, duration and frequency of ground and surface water flows to and within the wetland'	Unlikely to occur	The Proposed Action is not expected to result in a substantial or measurable change to the hydrological regime of the Peel-Yalgorup System. The Project Area is located outside of the wetland and stormwater generated by the development will be retained, treated and infiltrated onsite through a WSUD approach incorporating soakwells, vegetated swales, BRAs and FSAs. The drainage network has been specifically designed to maintain pre-development hydrological conditions by promoting at source infiltration, minimising offsite discharge and preserving existing groundwater recharge processes. The SWMR demonstrates that groundwater and surface water management measures will maintain existing flow volumes, timing, duration and frequency, while protecting water quality and preventing changes to the hydrological processes that support the Peel-Yalgorup System. Ongoing monitoring and maintenance of drainage infrastructure, in accordance with the SWMR, will further ensure that hydrological performance objectives are achieved over the long-term. Accordingly, the Proposed Action is unlikely to cause a substantial or measurable change to groundwater or surface water flows to, from or within the wetland.
3. 'the habitat or lifecycle of native species, including invertebrate fauna and fish species, dependent upon the wetland being seriously affected'	Unlikely to occur	The Proposed Action is unlikely to seriously affect the habitat or lifecycle of native species dependent on the Peel-Yalgorup System. The disturbance footprint is located outside of the wetland and will not result in the loss, fragmentation or modification of wetland habitats that support wetland dependent fauna, including fish, invertebrate species and water birds. Potential indirect impacts during construction will be managed through the EAMP, CEMP and FMP. These measures include controls to prevent dust, sediment, weed, waste and pollutants entering adjacent wetland habitats, together with procedures to minimize fauna injury and mortality. Prior to vegetation clearing, habitat trees will be inspected by suitable qualified personnel, fauna spotted will supervise clearing activities, and clearing will cease where necessary until fauna have safely dispersed from the disturbance area. In addition, the SWMR has been designed to maintain existing hydrological and water quality conditions through onsite stormwater retention, treatment and infiltration using WSUD measures. This will maintain groundwater recharge and minimise nutrient and sediment export, ensuring the environmental conditions that support wetland-dependent species and their lifecycle processes are maintained. Accordingly, the Proposed Action is unlikely to adversely affect the habitat, breeding, feeding, refuge or movement requirements of native species dependent on the Peel-Yalgorup System and is therefore not expected to seriously affect the ecological processes that support these species.

Significance Assessment

Placid Waters South Residential Development



Table 3 (continued): Assessment of the potential impacts of the proposed action to the Peel-Yalgorup System

Significant impact criteria for Wetlands of international importance (DotE 2013)	Will a significant impact result from the Proposed Action?	
	Likelihood	Assessment for Peel-Yalgorup System
4. 'a substantial and measurable change in the water quality of the wetland – for example, a substantial change in the level of salinity, pollutants, or nutrients in the wetland, or water temperature which may adversely impact on biodiversity, ecological integrity, social amenity or human health'	Unlikely to occur	The Proposed Action is unlikely to result in a substantial or measurable change to the water quality of the Peel-Yalgorup System. The Project Area is located outside the Ramsar wetland and no works are proposed within the Serpentine River, Peel-Harvey Estuary or other wetland habitats. Consequently, there is no direct pathway for the Proposed Action to alter water quality within the wetland. The SWMR has been designed in accordance with WSUD principles to maintain existing hydrological processes and water quality. Stormwater will be retained, treated and infiltrated onsite through an integrated system of vegetated swales, BRAs, gross pollutant traps (GPTs), and FSAs. These measures are designed to remove sediments, nutrients, hydrocarbons, gross pollutants and other contaminants prior to infiltration, maintain groundwater recharge, and minimise offsite discharge. During construction, the CEMP, EAMP and FWMP will implement erosion and sediment controls, dust suppression, spill response procedures, waste management, and weed and dieback hygiene measures to prevent contaminants entering adjacent waterways. Collectively, these avoidance, design and management measures will maintain existing surface water and groundwater quality and prevent measurable changes to nutrient concentrations, salinity, pollutants, water temperature or other water quality parameters that support the ecological character of the Peel-Yalgorup System. Accordingly, the Proposed Action is unlikely to adversely affect the biodiversity, ecological integrity, social amenity or human health values of the Ramsar wetland.
5. 'an invasive species that is harmful to the ecological character of the wetland being established (or an existing invasive species being spread) in the wetland.'	Unlikely to occur	The Proposed Action is unlikely to result in the establishment or spread of invasive species within the Peel-Yalgorup System. The Project Area is located within a previously disturbed environment where invasive species are already relatively common and widespread. Furthermore, implementation of the EAMP and CEMP, including vehicle hygiene protocols, disturbance footprint delineation, and ongoing weed monitoring and control, will minimise the risk of introducing or spreading weeds and plant pathogens. Accordingly, the Proposed Action is unlikely to adversely affect the ecological character of the wetland through invasive species establishment or spread.

The above assessment against the impact guidelines indicates that the Proposed Action is unlikely to have a significant impact on the ecological character of the Peel-Yalgorup System. Whilst the Ramsar site occurs proximal to the Project Area (across Peel Parade to the south), any the risk of any unplanned direct or indirect impacts will be minimised through the implementation of management measures in the EAMP, CEMP, FWMP, FMP, and SWMP.

3 Threatened Species

The Significant Impact Guidelines 1.1 identify criteria for determining whether a proposed action is likely to have a significant impact on listed threatened species. **Table 4** and **Table 5** below provide an assessment of the potential impacts of the Proposed Action against the relevant significant impact criteria for the three species of black cockatoo (Carnaby's black cockatoo (CBC), Forest red-tailed black cockatoo (FRTBC) and Baudin's black cockatoo (BBC)), together with 14 threatened and migratory terns and shorebird species.

Most of the threatened tern and shorebird species considered in this assessment are also listed under the EPBC Act as migratory species. Consistent with the Significant Impact Guidelines 1.1 (DCCEE 2021), these species have been assessed under the threatened species significant impact criteria, as these represent the more stringent assessment framework. Accordingly, they have not been separately assessed under the migratory species criteria to avoid duplication.

The anticipated impacts these species as a result of the Proposed Action are not considered to represent a significant residual impact.

3.1 Assessment of potential impacts to black cockatoos

The Proposed Action will result in the permanent loss of approximately 0.17 ha, 0.14 ha and 0.12 ha of high-quality foraging habitat for CBC, BBC and FRTBC, respectively. These areas are well below the referral thresholds for foraging habitat outlined in the *Referral guideline for 3 WA threatened black cockatoo species* (DAWE 2022b) and therefore represent a minor loss of foraging habitat.

The Proposed Action will also result in the removal of 80 potential nesting trees. However, none of these trees support suitable nesting hollows, and therefore do not currently provide breeding habitat for black cockatoos. Six potential nesting trees will be retained within the avoidance area. Ecological surveys also did not record any black cockatoos within the Project Area, with CBC and BBC assessed as 'possible' to occur and FRTBC assessed as 'likely' to occur based on habitat availability and species distribution.

Notwithstanding the limited extent of these impacts, the potential impacts to CBC, BBC and FRTBC arising from the loss of foraging habitat and potential future breeding trees have been assessed against the significant impact criteria in **Table 4**. As CBC and BBC are listed as endangered, while FRTBC is listed as vulnerable, the relevant assessment criteria differ and have been applied accordingly.

Significance Assessment

Placid Waters South Residential Development



Table 4: Assessment of the potential impacts of the Proposed Action to CBC, FRTBC and BBC

Significant impact criteria for Endangered and Vulnerable species (DotE 2013)	Will a significant impact result from the proposed action?	
	Likelihood	Assessment for CBC, FRTBC and BBC
1. 'Lead to a long-term decrease in the size of a population (for FRTBC: important population, rather than population).'	Unlikely to occur	To lead to a long-term decrease in the size of a population, the Proposed Action would need to bring about a sustained reduction in birth rates and/or a sustained increase in mortality rates for the species. The Project Area does not contain suitable or known nesting trees for CBC, FRTBC or BBC. While 80 potential breeding trees occur, these do not currently provide suitable breeding habitat for black cockatoos and thus the Project Area does not currently support nesting for either species. The Project Area contains marginal foraging habitat (0.17 ha, 0.14 ha and 0.12 ha of high-quality foraging habitat for CBC, BBC and FRTBC, respectively) that could be used by the three species of black cockatoo. Due to the small amount of foraging habitat available, it can't be relied upon to support any potential breeding individuals. As such, the Proposed Action is unlikely to result in a sustained reduction in birth rates or increase in mortality rates for any species of black cockatoo.
2. 'Reduce the area of occupancy of the species (for FRTBC: important population, rather than species).'	Unlikely to occur	The Proposed Action is unlikely to reduce the area of occupancy of CBC, BBC, or an important population of FRTBC. Ecological surveys did not record any individuals, roosts or evidence of roosting within the Project Area, indicating that there is no evidence that the Project Area is currently occupied by these species. The Project Area lies outside the modelled breeding distribution for all three species, and while it is located within 12 km of known CBC breeding sites, none of the total 86 potential nesting trees located within the Project Area or the 80 potential nesting trees proposed for removal contain hollows suitable for breeding. Furthermore, large trees within the Project Area do not meet the criteria for known or potential roost trees but instead represent potential black cockatoo roosting habitat, with the nearest known black cockatoo roost approximately 2.2 km north of the Project Area (MANCOOR002). As the Project Area does not support breeding or known roosting habitat and is not known to be occupied by CBC, BBC or FRTBC, the Proposed Action will not reduce the area occupied by these species or an important population.
3. 'Fragment an existing population into two or more populations'	Unlikely to occur	CBC, BBC and FRTBC are highly mobile species and have been recorded travelling within 20 km of nests for foraging. There are substantial and better-connected areas of habitat within 6 and 12 km of the Project Area providing potential foraging, breeding and roosting habitat for all three species of black cockatoo. These areas are large and contiguous in nature. Given the small scale of clearing and the available habitat within 6 and 12 km of the project area, it is unlikely that the Proposed Action would fragment an existing population of CBC, BBC or FRTBC into two or more populations.
4. 'Adversely affect habitat critical to the survival of a species'	Unlikely to occur	The Proposed Action will not adversely affect habitat critical to the survival of CBC, BBC or FRTBC. The Project Area does not contain suitable or known nesting hollows and therefore does not provide breeding habitat for any of the three species. Ecological surveys also recorded no evidence of roosting, despite the presence of some mature trees with the potential to provide roost habitat.

Significance Assessment

Placid Waters South Residential Development



Table 4 (continued): Assessment of the potential impacts of the Proposed Action to CBC, FRTBC and BBC

Significant impact criteria for Endangered and Vulnerable species (DotE 2013)	Will a significant impact result from the proposed action?	
	Likelihood	Assessment for CBC, FRTBC and BBC
[continued from above]		The Proposed Action will result in the removal of only 0.17 ha, 0.14 ha and 0.12 ha of high-quality foraging habitat for CBC, BBC and FRTBC, respectively. These areas are well below the referral thresholds identified in the Referral guideline for 3 WA threatened black cockatoo species (DAWE 2022) and represent a negligible proportion of the extensive foraging habitat available throughout the local and regional landscape. Accordingly, the Project Area does not support habitat that is critical to the survival of CBC, BBC or FRTBC, and the Proposed Action will not adversely affect habitat critical to the survival of these species.
5. 'Disrupt the breeding cycle of a population (for FRTBC: important population, rather than population)'	Unlikely to occur	A review of the DBCA's dataset (DBCA-054) indicates that the Project Area lies within 12 km of a potential breeding site for CBC, however, it occurs outside the wider breeding distribution (Glossop <i>et al.</i> 2011). Furthermore, no breeding occurs within the project area as no suitable nesting trees were identified during targeted surveys. Consequently, the foraging habitat within the project area is not considered to be relied upon by breeding individuals, and the Proposed Action is not expected to disrupt the breeding cycle of CBC. Similarly, no known breeding habitat for BBC or FRTBC occurs within the Project Area, as no suitable nesting trees were identified. Accordingly, the Proposed Action is not expected to disrupt the breeding cycle of any of the three black cockatoo species.
6. 'Modify, destroy, remove, isolate or decrease the availability or quality of habitat to the extent that the species is likely to decline'	Unlikely to occur	The Proposed Action will not result in a magnitude of impact that would be so substantial that either species is likely to decline. As outlined in response to the above criteria, there is substantial CBC, BBC and FRTBC known roosting sites and potential foraging habitat in the broader and local area (6-12 km of the Project Area) which is likely to support black cockatoos utilising the area and breeding within nesting trees with suitable hollows. This habitat will likely provide suitable habitat to support any BC utilising the local area such that the removal of potential breeding habitat (unsuitable nesting trees) within the Project Area would not lead to an outcome whereby either the CBC, FRTBC or BBC are likely to decline.
7. 'Result in invasive species that are harmful to a critically endangered or endangered or vulnerable species becoming established in the critically endangered or endangered or vulnerable species' habitat'	Unlikely to occur	The key consideration for this criterion would be the introduction of species that are known to compete with CBC, FRTBC or BBC for nesting hollows or foraging resources. These species include the native and introduced corellas, galahs, Australian shelducks, Australian wood ducks and feral European honeybees. There are no suitable or known nesting hollows within the Project Area, so this is not a relevant consideration. The Project Area is located within and bound by a previously disturbed and developed environment, where invasive species are relatively common and widespread. As such, it is unlikely that the Proposed Action would result in such species becoming established, as they are likely already established across the local and broader area.

Significance Assessment

Placid Waters South Residential Development



Table 4 (continued): Assessment of the potential impacts of the Proposed Action to CBC, FRTBC and BBC

Significant impact criteria for Endangered and Vulnerable species (DotE 2013)	Will a significant impact result from the proposed action?	
	Likelihood	Assessment for CBC, FRTBC and BBC
8. 'Introduce disease that may cause the species to decline'	Unlikely to occur	CBC, FRTBC and BBC can be susceptible to diseases such as beak and feather disease virus, avian polyomavirus and chlamydophilosis. Insects, <i>Phytophthora cinnamomi</i> (dieback) and other soil-borne, foliar and canker pathogens can also affect the health of their habitat. The Proposed Action is unlikely to be responsible for the introduction of these diseases, or increase the susceptibility of birds to these diseases, as the Project Area is located within an area already exposed to a high degree of human interaction and disturbance. However, as part of initial clearing and construction activities, standard best-practice construction management mitigation measures will be implemented in accordance with the CEMP to avoid the introduction of soil-borne pathogens and weeds. Management measures include ensuring clean machinery is used, clearing is restricted to permitted areas only, and any required imported soil will be from certified sources free of pathogens and disease.
9. 'Interfere with the recovery of the species (for FRTBC: interfere substantially, rather than interfere)'	Unlikely to occur	The Proposed Action is not expected to interfere with the recovery of CBC or BBC or interfere substantially with the recovery of FRTBC. The recovery plans for these species focus on maintaining and improving breeding populations through the protection of breeding habitat and nesting hollows, reducing habitat loss and degradation, minimising threats such as illegal shooting and competition for nest hollows, and maintaining habitat connectivity. The Proposed Action will not remove any suitable nesting hollows or breeding habitat, will not disrupt breeding or roosting behaviour, and will result in the loss of only minor areas of foraging habitat that are well below the referral thresholds identified in the referral guideline. Furthermore, six potential nesting trees will be retained within the avoidance area. Accordingly, the Proposed Action will not compromise the objectives of the recovery plans or impede the recovery of CBC, BBC or FRTBC across their range, and is therefore unlikely to interfere with the recovery of these species.

Based on the above, the Proposed Action is unlikely to trigger any of the significant impact criteria for CBC, FRTBC or BBC. As such, it is considered unlikely that the Proposed Action would result in a significant impact on black cockatoos.

3.2 Assessment of potential impacts to threatened migratory shorebirds and terns

The Proposed Action will result in the loss of approximately 0.1 ha of suitable foraging habitat for 14 threatened and migratory shorebirds and tern species. The habitat proposed to be cleared comprises 0.05 ha of 'marsh' in 'good' condition and 0.05 ha of 'mudflat' habitat in 'completely degraded' condition. These habitats may provide opportunistic foraging opportunities for the following species:

- Two critically endangered migratory shorebird species:
 - Curlew Sandpiper (*Calidris ferruginea*)
 - Eastern curlew (*Numenius madagascariensis*)

Significance Assessment

Placid Waters South Residential Development



- Four endangered migratory shorebird species:
 - Red knot (*Calidris canutus*)
 - Lesser sand plover (*Charadrius mongolus*)
 - Black-tailed godwit (*Limosa limosa*)
 - Common Greenshank (*Tringa nebularia*)
- Eight vulnerable and migratory shorebird and tern species
 - Great sand plover (*Charadrius leschenaultii*)
 - Ruddy turnstone (*Arenaria interpres*)
 - Sharp-tailed sandpiper (*Calidris acuminata*)
 - Great knot (*Calidris tenuirostris*)
 - Grey Plover (*Pluvialis squatarola*)
 - Terek sandpiper (*Xenus cinereus*)
 - Little tern (*Sternula albifrons*)
 - Australian fairy tern (*Sternula nereis nereis*)

The previous ecological surveys undertaken for the Project Area (Emerge Associates 2024)(Emerge Associates 2026) did not record any of these threatened and migratory shorebird or tern species. Based on the survey findings and habitat availability, all 14 species were assessed as having a 'possible' likelihood of occurrence.

Of the 14 species identified above, the majority are also listed as migratory species under the EPBC Act. Consistent with the Significant Impact Guidelines 1.1 (DCCEEW 2024), these species have been assessed against the threatened species significant impact criteria rather than the migratory species criteria, as the threatened species criteria represent the more stringent assessment framework. Accordingly, these species have not been separately assessed under the migratory species criteria to avoid duplication.

The potential impacts to these 14 species arising from the loss of potential foraging habitat have been assessed against the relevant significant impact criteria in **Table 5**. As the species comprise a range of EPBC Act conservation listings, including critically endangered, endangered and vulnerable, the assessment has applied the corresponding significant impact criteria for each listing category.

3.2.1 Shorebird habitat and occurrence

Shorebirds use tidal mudflats, saltmarshes, and shallow waters for foraging. Habitat selection varies by species and is influenced by specialised feeding techniques, prey availability (including invertebrates, crustaceans, and small fishes), and sediment characteristics. In coastal areas, they typically forage on soft tidal substrates exposed at low tide (DCCEEW 2017).

Shorebirds require safe roosting areas during high tide. They generally prefer open, slightly elevated habitats that provide good visibility of predators but may use more sheltered locations during poor weather. Common roosting habitats include estuary mouth sands, saltmarshes, adjacent grasslands, mangroves, freshwater wetlands, claypans, and occasionally rock groynes and exposed reefs (DCCEEW 2017).

The Directory of Important Wetlands in Australia identifies nationally important wetlands and Ramsar sites as internationally important wetlands. The northern portion of the Project Area lies

Significance Assessment

Placid Waters South Residential Development



within important wetland, 'Peel-Harvey Estuary' (DBCA 2026a). The 'Peel-Yalgorup System' Ramsar site lies adjacent to the southern portion of the Project Area. Multiple associated 'conservation' category wetland features are mapped as extending within the Project Area (UFIs 3255, 15232, 14573 and 15229) (DBCA 2026b). The locations of mapped wetlands within and adjacent to the Project Area.

Shorebirds are regularly recorded in the Peel Inlet within the Peel-Yalgorup System. The Peel Inlet is a BirdLife International Important Bird Area and is the most important area for waterbirds in south-western Australia (DCCEEW 2025). It supports many migratory bird species and significant global species populations (more than 1% global species populations) (BirdLife International 2023). Depending on the frequency and depth of inundation of the mudflat and marsh areas within the Project Area, they may provide foraging and roosting habitat for any number of the species that frequent the Peel-Yalgorup System. The most recent ecological assessment (Emerge Associates 2026) identified six fauna habitats within the Project Area, of which two were determined to represent suitable shorebird and migratory shorebird habitat, namely 'marsh' and 'mudflat'. These habitats occur in the northern portion of the Project Area.

While not classified as shorebirds as per the EPBC Act Policy Statement 3.21: *Industry guidelines for avoiding, assessing and mitigating impacts on EPBC Act listed migratory shorebird species*, Emerge Associates (2026) concluded that the Australian fairy tern (*Sternula nereis nereis*) and little tern (*Sternula albigrons*) utilise the same marsh and mudflat habitats for foraging and roosting as shorebirds. Accordingly, these tern species have been assessed alongside the shorebird species, as the Proposed Action has the potential to affect the same habitat values used by both groups.

Table 5: Assessment of the potential impacts of the Proposed Action to 14 threatened and migratory shorebird and tern species

Significant impact criteria for critically endangered, endangered, and vulnerable species (DotE 2013)	Will a significant impact result from the proposed action?	
	Likelihood	Assessment for 14 threatened migratory shorebirds and terns
1. 'Lead to a long-term decrease in the size of a population (for eight vulnerable migratory shorebirds: important population, rather than population).'	Unlikely to occur	To lead to a long-term decrease in the size of a population, the Proposed Action would need to bring about a sustained reduction in birth rates and/or a sustained increase in mortality rates for the species. The Project Area contains 2.51 ha of suitable foraging habitat for the 14 threatened and migratory shorebird and tern species. Approximately 0.1 ha (4%) in 'completely degraded' and 'good' condition is proposed for removal, which provides marginal habitat for the 14 species on occasional visits to the Project Area. As part of the Proposed Action, the majority of the suitable foraging habitat (2.41 ha, 96%) will be retained and protected within ROS which forms part of the avoidance area. Furthermore, the Project Area does not support breeding habitat for the species and therefore cannot be used to support any potential breeding individuals. As such, the Proposed Action is unlikely to result in a sustained reduction in birth rates or increase in mortality rates for 14 threatened migratory shorebird and tern species.

Significance Assessment

Placid Waters South Residential Development



Table 5 (continued): Assessment of the potential impacts of the Proposed Action to 14 threatened and migratory shorebird and tern species

Significant impact criteria for critically endangered, endangered, and vulnerable species (DotE 2013)	Will a significant impact result from the proposed action?	
	Likelihood	Assessment for 14 threatened migratory shorebirds and terns
2. 'Reduce the area of occupancy of the species (for eight vulnerable migratory shorebirds: important population, rather than species)'	Unlikely to occur	The Proposed Action is unlikely to reduce the area of occupancy of the six Critically Endangered and Endangered shorebird species, or an important population of the eight Vulnerable shorebird and tern species. No individuals, evidence of foraging, roosting or breeding by these species were recorded during targeted ecological surveys, and the revised Likelihood of Occurrence Assessment concluded that all 14 species have only a 'possible' likelihood of occurring within the Project Area. The Project Area does not support breeding habitat and is not known to support regular occupancy by any of these species. Although approximately 2.51 ha of marsh and mudflat habitat provides potentially suitable foraging habitat, the Proposed Action will remove only 0.1 ha (approximately 4%), comprising 0.05 ha of marsh in Good condition and 0.05 ha of mudflat in Completely degraded condition. The remaining 2.41 ha (96%) of suitable habitat, including the majority of the highest-value marsh and mudflat habitat, will be retained within the avoidance area and ROS adjoining the Serpentine River. Given the small extent of habitat to be removed, the absence of confirmed occupancy, and the retention of the vast majority of suitable habitat, the Proposed Action is not expected to reduce the area of occupancy of these species or an important population of the Vulnerable species.
3. 'Fragment an existing population into two or more populations'	Unlikely to occur	The Proposed Action is unlikely to fragment an existing population of the threatened migratory shorebird and tern species. The habitat within the Project Area represents a small area of potentially suitable, opportunistic foraging habitat contiguous with the much larger expanse of habitat associated with the Peel-Yalgorup System. The Proposed Action will retain 2.41 ha (96%) of the identified marsh and mudflat habitat within the avoidance area adjoining the Serpentine River and Regional Open Space, maintaining habitat connectivity with the broader Peel-Yalgorup System. Consequently, the Proposed Action will not create a physical or ecological barrier that would isolate individuals or divide an existing population into two or more populations. Implementation of the EAMP, CEMP and FMP will further minimise temporary construction-related disturbance.

Significance Assessment

Placid Waters South Residential Development



Table 5 (continued): Assessment of the potential impacts of the Proposed Action to 14 threatened and migratory shorebird and tern species

Significant impact criteria for critically endangered, endangered, and vulnerable species (DotE 2013)	Will a significant impact result from the proposed action?	
	Likelihood	Assessment for 14 threatened migratory shorebirds and terns
4. 'Adversely affect habitat critical to the survival of a species'	Unlikely to occur	The Wildlife Conservation Plan for Migratory Shorebirds recognises that the protection of important habitat is fundamental to the conservation and long-term survival of migratory shorebird species (DoE 2015). Consistent with the EPBC Act Policy Statement 3.21 (DCCEEW 2017), important habitat is habitat that regularly support 0.1% of the flyway population of a single species, 2,000 migratory shorebirds, or 15 migratory shorebird species. Such habitat is considered critical to survival of the species. Of the 14 threatened and migratory species, 12 are migratory shorebird species to which the shorebird guidelines apply. Ecological surveys did not record any threatened migratory shorebird species, and the marsh and mudflat habitats within the Project Area comprise only a small area of potentially suitable foraging habitat that may be utilised opportunistically by occasional visitors as part of the broader Peel-Harvey Estuary habitat complex. The ecological assessment concluded that this habitat does not constitute important habitat under the Shorebird Guidelines, as there is no evidence that it regularly supports 0.1% of the flyway population of a single species, 2,000 migratory shorebirds or 15 migratory shorebird species. The remaining two species, Australian fairy tern and little tern, are not classified as shorebirds under the shorebird guidelines. However, they were assessed alongside shorebird species because they utilise the same marsh and mudflat habitat for foraging and potential roosting. The Project Area does not contain breeding colonies, nesting habitat or other extensive foraging habitat known to be critical to the survival of either species. Furthermore, the habitat proposed for clearing does not meet the definition of habitat critical to the survival described in the National Recovery Plan for the Australian Fairy Tern or the draft little tern Conservation Advice, which focus on known breeding sites, breeding habitat and other habitats essential to the persistence of the species (DAWE 2020, 2022a) The Proposed Action will remove only 0.1 ha of suitable habitat, comprising 0.05 ha of marsh in good condition and 0.05 ha of mudflat in completely degraded condition. The remaining 2.41 ha (96%) of suitable marsh and mudflat habitat, including the majority of the highest quality habitat, will be retained and protected with the ROS which forms part of the avoidance area. This habitat will remain connected to the extensive habitats of the adjacent Serpentine River. Accordingly, the Project Area does not contain habitat that is considered critical to the survival of any of the 14 threatened shorebird and tern species. Given the very limited extent of habitat proposed for removal, the retention of the vast majority of suitable habitat, and the continued connectivity with the extensive habitat of the Peel-Yalgurup System, the Proposed Action is not expected to adversely affect habitat critical to the survival of any of these species.

Significance Assessment

Placid Waters South Residential Development



Table 5 (continued): Assessment of the potential impacts of the Proposed Action to 14 threatened and migratory shorebird and tern species

Significant impact criteria for critically endangered, endangered, and vulnerable species (DoE 2013)	Will a significant impact result from the proposed action?	
	Likelihood	Assessment for 14 threatened migratory shorebirds and terns
5. 'Disrupt the breeding cycle of a population (for eight threatened migratory shorebirds: important population, rather than population)'	Unlikely to occur	The Proposed Action is unlikely to disrupt the breeding cycle of the 14 threatened shorebird and tern species. None of these species were recorded during the ecological surveys, and no evidence of breeding, nesting or regular occupancy was identified within the Project Area. The marsh and mudflat habitats provide only limited, opportunistic foraging and potential roosting habitat and do not support breeding habitat for these species. Furthermore, the Proposed Action will retain and protect 2.41 ha (96%) of the suitable marsh and mudflat habitat within the avoidance area, maintaining habitat connectivity with the adjacent Serpentine River. As the Project Area does not support a breeding population or important population of any of the 14 species, and breeding habitat will not be affected, the Proposed Action is not expected to disrupt the breeding cycle of a population or important population.
6. 'Modify, destroy, remove, isolate or decrease the availability or quality of habitat to the extent that the species is likely to decline'	Unlikely to occur	The Proposed Action is unlikely to modify, destroy, remove, isolate or decrease the availability or quality of habitat to the extent that any of the 14 threatened shorebird and tern species are likely to decline. The Project Area supports only 2.51 ha of potentially suitable marsh and mudflat habitat, of which only 0.1 ha (approximately 4%) will be removed. The habitat proposed for clearing comprises 0.05 ha of marsh in 'good' condition and 0.05 ha of mudflat in 'completely degraded' condition, representing a minor component of the available habitat within the Project Area and an insignificant proportion of the extensive habitat available throughout the Peel-Yalgorup System. The remaining 2.41 ha (96%) of suitable habitat, including the majority of the highest-quality vegetation, will be retained within the avoidance area and remain connected to the adjoining ROS, Serpentine River and Peel-Yalgorup System. Given the absence of breeding habitat, the lack of recorded use by these species, the limited extent of habitat removal and the retention of the majority of suitable habitat, the Proposed Action is not expected to reduce habitat availability or quality to an extent that would cause a decline in any of the 14 threatened shorebird and tern species.
7. 'Result in invasive species that are harmful to a species becoming established in the species habitat'	Unlikely to occur	The Proposed Action is unlikely to result in invasive species harmful to the 14 threatened migratory shorebird and tern species becoming established within their habitat. The Wildlife Conservation Plan for Migratory Shorebirds identifies invasive plants, exotic marine pests and introduced predators (including cats and foxes) as threats to migratory shorebirds and their habitats (DoE 2015). Similarly, the National Recovery Plan for the Australian fairy tern and the Conservation Advice for the little tern identify introduced predators, including foxes, cats, dogs, rats and pigs, together with invasive weeds, as key threats to these species (DAWE 2020, 2022a). The Project Area is located within an established urban environment where surrounding residential development, roads and existing disturbance indicate that introduced predators and weeds, where present, are already established. The Proposed Action will not introduce new pathways for invasive species

Significance Assessment

Placid Waters South Residential Development



Table 5 (continued): Assessment of the potential impacts of the Proposed Action to 14 threatened and migratory shorebird and tern species

Significant impact criteria for critically endangered, endangered, and vulnerable species (DoE 2013)	Will a significant impact result from the proposed action?	
	Likelihood	Assessment for 14 threatened migratory shorebirds and terns
[continued from above]		establishment, nor create habitat conditions that would facilitate the establishment or spread of invasive plants, exotic marine pests or introduced predators beyond existing baseline conditions. During construction, the EAMP, CEMP and Fauna Management Plan (FMP) include measures to prevent the introduction and spread of weeds and plant pathogens through vehicle and machinery hygiene, weed management, waste management and ongoing environmental monitoring. These measures will minimise the risk of introducing or spreading invasive species within retained marsh and mudflat habitats. Furthermore, no threatened migratory shorebird or tern species were recorded during ecological surveys, and the Project Area does not contain breeding colonies or other habitat critical to the survival of these species. The majority of suitable habitat (2.41 ha (96%)) will be retained and protected within the ROS which forms part of the avoidance area. Accordingly, the Proposed Action is not expected to result in invasive species becoming established within the habitat of the 14 threatened migratory shorebird and tern species, nor increase existing invasive species pressures above current baseline conditions.
8. 'Introduce disease that may cause the species to decline, or interfere with the recovery of the species'	Unlikely to occur	There is no evidence that disease is currently a significant direct threat to the 14 threatened and migratory shorebirds or tern species. No animals or disease-causing organisms are proposed to be introduced to the Project Area and therefore no potential vector is available for disease spread. Plant diseases introduced through vehicle movements have the potential to impact the 14 threatened migratory shorebirds through degradation of habitat vegetation if appropriate management isn't in place. Vehicle and machinery checks during clearing and construction will be utilised as part of the management measures provisioned in the EAMP, CEMP and FMP to minimise the opportunity for plant diseases to enter or spread from the Project Area. Accordingly, the Proposed Action is not expected to result in the introduction of disease that may cause the species to decline or interfere with the recovery of the species.
9. 'Interfere with the recovery of the species'	Unlikely to occur	The Wildlife Conservation Plan for Migratory Shorebirds (DoE 2015) seeks to ensure the long-term conservation of migratory shorebirds by protecting important habitat throughout the East Asian–Australasian Flyway, conserving wetland habitats in Australia, minimising anthropogenic threats, and improving ecological knowledge to inform management. Similarly, the National Recovery Plan for the Australian Fairy Tern aims to maintain or increase populations through the protection of breeding habitat and minimisation of threats across the species' range. The Conservation Advice for the Little Tern focuses on protecting and maintaining breeding colonies, reducing threats to breeding success and supporting population recovery. As demonstrated in the assessment above, the Project Area does not comprise important habitat under the Shorebird Guidelines, nor does it support breeding habitat, breeding colonies or regular occupancy by any of the 14 threatened shorebird and tern species. The Proposed Action will remove only

Significance Assessment

Placid Waters South Residential Development



Table 5 (continued): Assessment of the potential impacts of the Proposed Action to 14 threatened and migratory shorebird and tern species

Significant impact criteria for critically endangered, endangered, and vulnerable species (DotE 2013)	Will a significant impact result from the proposed action?	
	Likelihood	Assessment for 14 threatened migratory shorebirds and terns
[continued from above]		0.10 ha of marginal foraging habitat, while retaining 2.41 ha (96%) of suitable marsh and mudflat habitat within the avoidance area. The retained habitat will remain connected to the extensive habitats of the Serpentine River and Peel-Yalgorup System, which continue to provide substantially greater foraging and roosting opportunities. The Proposed Action will not reduce the availability of important habitat, disrupt breeding, increase anthropogenic threats or diminish habitat connectivity. In addition, implementation of the EAMP, CEMP and FMP will minimise construction and operational impacts on retained habitats and fauna. Accordingly, the Proposed Action is not expected to compromise the recovery objectives for the 14 threatened shorebird and tern species and is therefore unlikely to interfere with the recovery of any of these species.

Based on the above, the Proposed Action is unlikely to trigger any of the significant impact criteria for the 14 threatened migratory shorebirds and tern species. As such, it is considered unlikely that the Proposed Action would result in a significant impact on these species.

Significance Assessment

Placid Waters South Residential Development



4 Migratory Species

The Significant Impact Guidelines 1.1 identify criteria for determining whether a proposed action is likely to have a significant impact on listed migratory species. The Proposed Action has the potential to affect three EPBC Act-listed migratory species: Osprey (*Pandion haliaetus*), Pacific Swift (*Apus pacificus*) and Glossy Ibis (*Plegadis falcinellus*).

Osprey has been assessed separately from the other migratory species because its habitat requirements and use of the Project Area differ substantially. Unlike Pacific Swift and Glossy Ibis, Osprey utilises a range of habitat types for foraging, nesting and roosting, was recorded during ecological surveys, and an active nest was identified immediately adjacent to the Project Area. Consequently, the ecological assessment identified both high-value and moderate-value habitat for Osprey within the Project Area. In contrast, Pacific Swift and Glossy Ibis were not recorded during surveys, were assessed as having only a 'possible' likelihood of occurrence and would utilise only limited areas of habitat opportunistically. **Table 6** provides an assessment of the potential impacts of the Proposed Action on the Osprey, while **Table 7** provides an assessment of the potential impacts of the Proposed Action on the Pacific swift and Glossy Ibis.

The anticipated impacts to these species are not considered likely to constitute a significant impact under the EPBC Act.

4.1 Assessment of potential impacts on migratory bird species

4.1.1 Osprey

The Proposed Action will result in the loss of approximately 0.1 ha of high-value habitat, comprising 0.05 ha of marsh and 0.05 ha of mudflat habitat, together with 7.53 ha of moderate-value habitat comprising native woodland (4.55 ha), riparian woodland (1.09 ha) and scattered trees and shrubs (1.89 ha).

The ecological assessment classified habitat according to its function for the species. The marsh and mudflat habitats represent high-value habitat, as they provide suitable foraging habitat adjacent to potential nesting and roosting habitat. The woodland habitats represent moderate-value habitat, as they provide potential nesting, perching and roosting opportunities but comparatively limited foraging habitat due to their separation from productive aquatic environments.

The previous ecological survey (Emerge Associates 2024) recorded several Ospreys flying over the Project Area, displaying prey searching behaviour at several points during the survey. The survey also identified a stag tree directly adjacent to the north-eastern Project Area boundary (outside the Project Area and near the avoidance area) containing a nest with a fledgling and pair of adults perched on the tree. These observations indicate that the Project Area is likely utilised for breeding and foraging. The most intact and suitable high-value habitat (2.51 ha) for breeding and foraging occurs within the northern portion of the Project Area, within the ROS which will be protected and retained within the avoidance area (Emerge Associates 2024).

Significance Assessment

Placid Waters South Residential Development



As no EPBC Act referral thresholds exist for impacts to Osprey habitat, the potential impacts have been assessed against the listed migratory species significant impact criteria in **Table 6**.

4.1.1.1 Ecology, habitat and occurrence

The following section summarises the ecology, habitat requirements and occurrence of the Osprey within and surrounding the Project Area to provide context for the assessment of potential significant impacts. This summary has been prepared with reference to available conservation advice, including the *Recovery and Conservation Plan for the Osprey (Pandion haliaetus) on Yorke Peninsula, South Australia* (herein referred to as the 'Osprey recovery plan') and the ecological assessments (Australian Government 2020; Emerge Associates 2024, 2026).

Osprey (*Pandion haliaetus*) are found within coastal and estuarine environments across Australia, where their distribution and breeding are closely linked to the availability of productive foraging habitat and suitable nesting and roosting habitat (Australian Government 2020). Breeding pairs typically establish long-term territories centred on elevated nest sites, while adults remain relatively sedentary throughout the year and forage primarily within nearby marine, estuarine and freshwater environments (Australian Government 2020). Although the species is capable of travelling considerable distances while foraging, breeding success is dependent on reliable fish resources and the availability of suitable elevated structures for nesting and roosting. The Osprey recovery plan identifies the protection of breeding sites, minimisation of disturbance, and maintenance of productive foraging habitat as key requirements for the long-term persistence of the species.

Consistent with these habitat requirements, the highest-value habitat identified within the Project Area is associated with the mudflat and marsh communities adjoining the Serpentine River (within the foreshore area), where aquatic foraging habitat occurs in close proximity to suitable breeding and roosting opportunities. In contrast, the moderate-value habitat comprises predominantly terrestrial native woodland, riparian woodland and scattered trees that provide suitable perching, roosting and potential nesting structures but comparatively limited foraging habitat due to their separation from productive aquatic environments (Emerge Associates 2026). These terrestrial habitat attributes are characteristic of the broader coastal landscape surrounding the Peel-Harvey Estuary and are not uncommon within the local or regional environment (Hale and Butcher 2007). The habitat value classifications adopted for the Project Area are therefore consistent with the ecological requirements and habitat preferences described in the conservation advice. This is further supported by previous ecological surveys, which recorded several Ospreys displaying prey-searching behaviour over the Project Area and identified an active nest immediately adjacent to the north-eastern Project Area boundary (outside the Project Area and near the Avoidance area), confirming the importance of the habitat within the foreshore area and the surrounding coastal environment to local breeding (Emerge Associates 2024, 2026).

Significance Assessment

Placid Waters South Residential Development



Table 6: Assessment of the potential impacts of the proposed action to Osprey

Significant impact criteria for Migratory species (DotE 2013)	Will a significant impact result from the proposed action?	
	Likelihood	Assessment for Ospreys
'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'	Unlikely to occur	The Significant Impact Guidelines (DotE 2013) define "important habitat" for a migratory species as habitat that: • is utilised by the species occasionally or periodically within a region that supports an ecologically significant proportion of the population of the species; • is of critical importance to the species at particular life-cycle stages; or • occurs within an area where the species is declining. For the purposes of this assessment, the highest value habitat for Osprey within the Project Area is the 2.51 ha of mudflat and marsh habitat adjoining the Serpentine River foreshore. This habitat provides suitable foraging habitat in close proximity to known breeding and roosting opportunities, including an active nest recorded immediately adjacent to the north-eastern boundary of the Project Area during previous ecological surveys (Emerge Associates 2024). Given its proximity to the Serpentine River, the Peel-Harvey Estuary and known Osprey breeding activity, this foreshore habitat has been treated as potentially important habitat for the species for the purposes of applying the significant impact criterion. The Proposed Action would remove 0.1 ha of this 2.51 ha habitat unit, representing approximately 4% of the potentially important habitat within the Project Area. The remaining 2.41 ha, or 96%, would be retained within the Avoidance Area. The retained habitat includes the majority of the mudflat and marsh habitat adjoining the Serpentine River and would continue to provide foraging habitat in proximity to known breeding and roosting opportunities. The Proposed Action would not isolate the retained habitat from the Serpentine River, the Peel-Harvey Estuary or adjacent foreshore habitats, nor would it fragment the retained habitat in a manner that would materially reduce its ecological function for Osprey. The remainder of the habitat proposed to be removed comprises 7.53 ha of moderate-value terrestrial habitat, including native woodland, riparian woodland and scattered trees in "Good", "Degraded" and "Completely Degraded" condition. This habitat may provide elevated structures suitable for occasional nesting, roosting or perching; however, it is separated from the most productive aquatic and estuarine foraging environments and does not, of itself, represent habitat that supports an ecologically significant proportion of the Osprey population, is critical to a particular life-cycle stage, or occurs within an area where the species is known to be declining. Comparable nesting, roosting and perching opportunities are also widely available in the broader local and regional landscape, including approximately 2,172.8 ha and 6,490.4 ha of remnant native vegetation mapped within 6 km and 12 km of the Project Area, respectively. Accordingly, while Osprey may utilise parts of the Project Area, the habitat proposed to be removed does not constitute an area of important habitat for the species, except for the small 0.1 ha portion of foreshore habitat that has been treated conservatively as potentially important habitat. The removal of this 0.1 ha area, in the context of the retention of 96% of the highest value foreshore habitat within the Avoidance Area and the continued availability of adjoining coastal and estuarine habitats, is not considered likely to substantially modify, destroy or isolate an area of important habitat for Osprey.

Significance Assessment

Placid Waters South Residential Development



Table 6 (continued): Assessment of the potential impacts of the proposed action to Osprey

Significant impact criteria for Migratory species (DotE 2013)	Will a significant impact result from the proposed action?	
	Likelihood	Assessment for Ospreys
[continued from above]		On this basis, the Proposed Action is unlikely to meet this significant impact criterion for this listed migratory species.
'Result in an invasive species that is harmful to the migratory species becoming established in an area of important habitat for the migratory species'	Unlikely to occur	The Proposed Action is not likely to result in an invasive species that is harmful to Osprey becoming established within an area of important habitat for the species. While the Project Area adjoins habitat that may be considered important for Osprey, the Proposed Action will not create conditions that would facilitate the establishment or spread of invasive species harmful to the species or its habitat. The Project Area is situated within a previously disturbed and urbanised environment where introduced species are already relatively common and widespread, and ecological surveys did not record any invasive species likely to adversely affect Osprey. The EAMP, CEMP and FMP include management measures to minimise the introduction and spread of weeds, plant pathogens and pest species during construction, including hygiene protocols, weed management and ongoing monitoring. Accordingly, the Proposed Action is unlikely to result in an invasive species becoming established within important habitat for the Osprey.
'Seriously disrupt the lifecycle (breeding, feeding, migration or resting behaviour) of an ecologically significant proportion of the population of a migratory species'	Unlikely to occur	The Proposed Action is not likely to seriously disrupt the lifecycle (breeding, feeding, migration or resting behaviour) of an ecologically significant proportion of the Osprey population. The species is widely distributed throughout coastal Australia, where it occupies breeding territories associated with suitable coastal, estuarine and freshwater environments. Ecological surveys recorded several Ospreys displaying prey searching behaviour over the Project Area and identified an active nest immediately adjacent to the north-eastern boundary of the Project Area (near the avoidance area and outside the Project Area). The nest is located adjacent to the highest-value habitat associated with the Serpentine River, which will also be protected retained within Regional Open Space, allowing the species to continue utilising the area for breeding, foraging and roosting. The Proposed Action will remove only 0.1 ha of high-value habitat that may support foraging, breeding and roosting, while retaining the remaining 2.41 ha (96%) of this habitat within the Avoidance area. The majority of habitat proposed for removal comprises moderate value terrestrial habitat that provides comparatively limited ecological function for the species and is well represented throughout the surrounding coastal landscape. Accordingly, the Proposed Action is unlikely to seriously disrupt breeding, feeding or resting behaviour and will not seriously disrupt the lifecycle of an ecologically significant proportion of the Osprey population.

Based on the above, the Proposed Action is unlikely to trigger any of the significant impact criteria for Osprey. As such, it is considered unlikely that the proposed action would result in a significant impact on Osprey.

4.1.2 Other migratory bird species

The Proposed Action will result in the loss of approximately 0.05 ha of suitable foraging habitat associated with 'completely degraded' mudflat habitat that may be opportunistically utilised by:

Significance Assessment

Placid Waters South Residential Development



- Pacific swift (*Apus pacificus*)
- Glossy Ibis (*Plegadis falcinellus*)

Neither species was recorded during ecological surveys, and both were assessed as having a possible likelihood of occurrence within the Project Area (Emerge Associates 2024, 2026).

Unlike Osprey, these species are unlikely to utilise the broader range of habitat types present within the Project Area. Pacific Swift is a highly aerial species that may opportunistically forage over the Project Area and does not rely on terrestrial habitats for breeding or roosting. Glossy Ibis may occasionally forage within inundated mudflat and marsh habitats adjacent to the Serpentine River; however, the Project Area represents only a small component of the extensive wetland habitat available throughout the adjacent Peel-Harvey Estuary.

As no EPBC Act referral thresholds exist for impacts to these species, the potential impacts have been assessed against the listed migratory species significant impact criteria in **Table 7**.

4.1.2.1 Ecology, habitat and occurrence

Pacific Swift is a highly mobile aerial species that may opportunistically fly over the Project Area while foraging and is not dependent on terrestrial habitats within the Project Area for breeding or roosting. Glossy Ibis typically forages within wetlands, inundated mudflats, marshes and adjacent swamp vegetation. Given the Project Area's proximity to the Serpentine River and Peel-Harvey Estuary, the species may occasionally utilise the mudflat habitat for foraging when inundated; however, these habitats represent only a small component of the extensive wetland habitat available within the surrounding Peel-Yalgorup System. Neither species was recorded during ecological surveys, and no recovery plan or conservation advice has been prepared for either species.

Table 7: Assessment of the potential impacts of the proposed action to the Pacific Swift and Glossy Ibis

Significant impact criteria for Migratory species (DotE 2013)	Will a significant impact result from the proposed action?	
	Likelihood	Assessment for the Pacific Swift and Glossy Ibis
'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'	Unlikely to occur	The Significant Impact Guidelines (DotE 2013) for listed migratory species defines an area of 'important habitat' for migratory species as the following: • Habitat utilised by a migratory species occasionally or periodically within a region that supports an ecologically significant proportion of the population of the species. • Habitat that is of critical importance to the species at particular life-cycle stages • Habitat within an area where the species is declining Pacific Swift (<i>Apus pacificus</i>) and Glossy Ibis (<i>Plegadis falcinellus</i>) have been assessed together as neither species is dependent on habitat within the Project Area and both were assessed as having only a 'possible' likelihood of occurrence. Pacific Swift is a highly mobile aerial species that may opportunistically forage over the Project Area but does not rely on terrestrial habitats within the Project Area for breeding or roosting. Glossy Ibis may occasionally forage within inundated mudflat habitats adjacent to the Serpentine River; however, the ecological assessment identified only the 1.39 ha mudflat habitat as suitable for the species within the Project Area (Emerge Associates 2024).

Significance Assessment

Placid Waters South Residential Development



Table 7 (continued): Assessment of the potential impacts of the proposed action to the Pacific Swift and Glossy Ibis

Significant impact criteria for Migratory species (DotE 2013)	Will a significant impact result from the proposed action?	
	Likelihood	Assessment for the Pacific Swift and Glossy Ibis
[continued from above]		The Project Area does not provide breeding or roosting habitat for either species, and the available mudflat habitat represents only a small area of degraded to completely degraded opportunistic foraging habitat within the much larger and higher-quality habitats of the adjacent Serpentine River, Peel-Harvey Estuary and Peel-Yalgorup System. Consequently, the habitat within the Project Area is not considered to comprise important habitat under the Significant Impact Guidelines, as it is not known to support an ecologically significant proportion of either species, is not critical to any life-cycle stage, and is not within an area identified as important for the conservation of either species. Furthermore, the Proposed Action will remove only 0.05 ha of mudflat habitat, with approximately 1.34 ha (96.4%) retained and protected within ROS which forms part of the avoidance area. Given the very small extent of habitat loss and the retention of the vast majority of suitable habitat, and the Pacific Swifts' lack of dependence on terrestrial vegetation, the Proposed Action will not substantially modify, destroy or isolate an area of important habitat for Pacific Swift or Glossy Ibis.
'Result in an invasive species that is harmful to the migratory species becoming established in an area of important habitat for the migratory species'	Unlikely to occur	The Proposed Action is unlikely to result in an invasive species that is harmful to Pacific Swift or Glossy Ibis becoming established within an area of important habitat. As discussed above, the Project Area is not considered to contain important habitat for either species under the Significant Impact Guidelines. Pacific Swift is a highly mobile aerial species that may opportunistically forage over the Project Area but is not dependent on terrestrial habitats within the Project Area for breeding or roosting. Glossy Ibis may occasionally forage within the mudflat habitat adjacent to the Serpentine River during periods of inundation; however, this habitat comprises only 1.39 ha of 'degraded' to 'completely degraded' habitat and represents a small, marginal component of the extensive wetland habitats available within the adjacent Peel-Harvey Estuary and Peel-Yalgorup System. The Project Area is located within an existing urban environment where invasive species are already widespread, and the Proposed Action will not introduce land uses or conditions likely to facilitate the establishment or spread of invasive species beyond the existing baseline. Furthermore, the EAMP, CEMP and FMP include hygiene protocols, weed management measures and monitoring to prevent the introduction and spread of weeds, plant pathogens and pest species. Accordingly, the Proposed Action is unlikely to result in invasive species becoming established within important habitat for Pacific Swift or Glossy Ibis.
'Seriously disrupt the lifecycle (breeding, feeding, migration or resting behaviour) of an ecologically significant proportion of the population of a migratory species'	Unlikely to occur	The Proposed Action is unlikely to seriously disrupt the lifecycle (including breeding, feeding, migration or resting behaviour) of an ecologically significant proportion of the Pacific Swift or Glossy Ibis population. Ecological surveys did not record either species within the Project Area, and both were assessed as having only a 'possible' likelihood of occurrence. Should either species occur, their use of the Project Area is expected to be infrequent and opportunistic. Pacific Swift is a highly mobile aerial species that may occasionally forage over the Project Area but is not reliant on terrestrial

Significance Assessment

Placid Waters South Residential Development



Table 7 (continued): Assessment of the potential impacts of the proposed action to the Pacific Swift and Glossy Ibis

Significant impact criteria for Migratory species (DotE 2013)	Will a significant impact result from the proposed action?	
	Likelihood	Assessment for the Pacific Swift and Glossy Ibis
[continued from above]		habitat within the site for breeding, roosting or migration. Glossy Ibis may opportunistically forage within inundated mudflat habitat adjacent to the Serpentine River but is not expected to breed or roost within the Project Area. The Proposed Action will remove only 0.05 ha of suitable mudflat habitat for Glossy Ibis, while approximately 1.34 ha (96.4%) of mapped mudflat habitat will be retained within the avoidance area and remain directly connected to the extensive wetland habitats of the adjacent Serpentine River. Consequently, the Proposed Action will not materially affect the availability of habitat or interfere with the feeding, migration or resting behaviour of either species and is therefore unlikely to seriously disrupt the lifecycle of an ecologically significant proportion of either population.

Based on the above, the Proposed Action is unlikely to trigger any of the significant impact criteria for either of the Pacific Swift or Glossy Ibis. As such, it is considered unlikely that the proposed action would result in a significant impact on either species.

4.2 Assessment of potential impacts to migratory shorebirds and terns

The Proposed Action will result in the loss of approximately 0.1 ha of suitable foraging habitat for 18 migratory shorebird and tern species. The habitat proposed to be cleared comprises 0.05 ha of marsh in 'good' condition and 0.05 ha of mudflat habitat in 'completely degraded' condition which may provide opportunistic foraging habitat as part of the wider Peel-Harvey Estuary.

The species assessed comprise:

- Migratory shorebirds species (13 species), classified as shorebirds as per EPBC Act Policy Statement 3.21:
 - Common Sandpiper (*Actis hypoleucos*)
 - Long-toed Stint (*Calidris subminuta*)
 - Red-necked stint (*Calidris ruficollis*)
 - Pectoral sandpiper (*Calidris melanotos*)
 - Little ringed plover (*Charadrius dubius*)
 - Bar-tailed Godwit (*Limosa lapponica*)
 - Whimbrel (*Numenius phaeopus*)
 - Pacific Golden Plover (*Pluvialis fulva*)
 - Sanderling (*Calidris alba*)
 - Wood sandpiper (*Tringa glareola*)
 - Grey-tailed Tattler (*Tringa brevipes*)
 - Marsh Sandpiper (*Tringa stagnatilis*)
- Migratory tern species (five species) not classified as shorebirds as per EPBC Act Policy Statement 3.21, but known to utilise the same marsh and mudflat habitat:

Significance Assessment

Placid Waters South Residential Development



- White-winged black tern (*Chidonias leucopterus*)
- Gull-billed tern (*Gelochelidon nilotica*)
- Caspian tern (*Hydroprogne caspia*)
- Common tern (*Sterna Hirundo*)
- Crested tern (*Thalasseus bergii*)

One migratory tern species, Caspian Tern, was recorded flying over the Project Area during the 2026 targeted shorebirds survey (Emerge Associates 2026). However, no other migratory shorebird species were recorded during the ecological surveys undertaken in 2023 or 2026. Based on the ecological survey findings and habitat availability, the Likelihood of Occurrence assessment determined that the remaining migratory shorebird and tern species have a 'possible' likelihood of occurring within the Project Area.

As there are no quantitative EPBC Act referral thresholds for impacts to migratory shorebird or tern habitat, the potential impacts of the Proposed Action have been assessed against the Significant Impact Guidelines 1.1 (DCCEEW 2024) for listed migratory species, with consideration of the habitat values and important habitat criteria described in EPBC Act Policy Statement 3.21 (DCCEEW 2017). The assessment is provided in **Table 8**.

4.2.1 Ecology, habitat and occurrence

Shorebirds use tidal mudflats, saltmarshes, and shallow waters for foraging. Habitat selection varies by species and is influenced by specialised feeding techniques, prey availability (including invertebrates, crustaceans, and small fishes), and sediment characteristics. In coastal areas, they typically forage on soft tidal substrates exposed at low tide (DCCEEW 2017).

Shorebirds require safe roosting areas during high tide. They generally prefer open, slightly elevated habitats that provide good visibility of predators but may use more sheltered locations during poor weather. Common roosting habitats include estuary mouth sands, saltmarshes, adjacent grasslands, mangroves, freshwater wetlands, claypans, and occasionally rock groynes and exposed reefs (DCCEEW 2017).

The Directory of Important Wetlands in Australia identifies nationally important wetlands and Ramsar sites as internationally important wetlands. The northern portion of the Project Area lies within important wetland, 'Peel-Harvey Estuary' (DBCA 2026a). The 'Peel-Yalgorup System' Ramsar site lies adjacent to the southern portion of the Project Area. Multiple associated 'conservation' category wetland features are mapped as extending within the Project Area (UFIs 3255, 15232, 14573 and 15229) (DBCA 2026b). The locations of mapped wetlands within and adjacent to the Project Area.

Shorebirds are regularly recorded in the Peel Inlet within the Peel-Yalgorup System. The Peel Inlet is a BirdLife International Important Bird Area and is the most important area for waterbirds in south-western Australia (DCCEEW 2025). It supports many migratory bird species and significant global species populations (more than 1% global species populations) (BirdLife International 2023). Depending on the frequency and depth of inundation of the mudflat and marsh areas within the Project Area, they may provide foraging and roosting habitat for any number of the species that frequent the Peel-Yalgorup System. The most recent ecological assessment (Emerge Associates 2026)

Significance Assessment

Placid Waters South Residential Development



identified six (6) fauna habitats within the Project Area, of which two (2) were determined to represent suitable shorebird and migratory shorebird habitat, namely 'marsh' and 'mudflat'. These habitats occur in the northern portion of the Project Area.

While not classified as shorebirds as per the EPBC Act Policy Statement 3.21: *Industry guidelines for avoiding, assessing and mitigating impacts on EPBC Act listed migratory shorebird species*, Emerge Associates (2026) concluded that the five migratory tern species listed above utilise the same marsh and mudflat habitats for foraging and roosting as shorebirds. Accordingly, these tern species have been assessed alongside the shorebird species, as the Proposed Action has the potential to affect the same habitat values used by both groups.

Significance Assessment

Placid Waters South Residential Development



Table 8: Assessment of the potential impacts of the proposed action to 18 migratory shorebird and tern species

Significant impact criteria for Migratory species (DotE 2013)	Will a significant impact result from the proposed action?	
	Likelihood	Assessment for 18 migratory shorebird and tern species
'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'	Unlikely to occur	The shorebird guidelines (DoEE 2017) identify nationally important habitat for listed migratory shorebirds as habitat that regularly supports 0.1% of the flyway population of a single species, 2,000 migratory shorebirds, or 15 migratory shorebird species. The Significant Impact Guidelines 1.1 for listed migratory species defines an area of 'important habitat' for migratory species as the following: • Habitat utilised by a migratory species occasionally or periodically within a region that supports an ecologically significant proportion of the population of the species. • Habitat that is of critical importance to the species at particular life-cycle stages • Habitat within an area where the species is declining The marsh and mudflat habitat within the Project Area (2.51 ha) does not meet these criteria. No listed migratory shorebird or tern species were recorded during targeted surveys, and all 18 species were assessed as having only a 'possible' likelihood of occurrence, indicating that any use of the Project Area would be infrequent and opportunistic. Although the marsh and mudflat habitat provides suitable foraging habitat, it represents only a small component of the extensive and substantially higher-quality coastal and estuarine habitats of the adjacent Peel-Harvey Estuary and Peel-Yalgorup System. Consequently, the habitat within the Project Area is not considered to comprise important habitat in its own right. Any use of the Project Area by migratory shorebirds and terns is therefore expected to occur in conjunction with the broader estuary complex rather than as an isolated habitat resource. Notwithstanding this, the Proposed Action will remove only 0.1 ha of suitable habitat (0.05 ha of marsh and 0.05 ha of mudflat), while 2.41 ha (96%) will be retained and protected within ROS which forms part of the avoidance area. The retained habitat will remain directly connected to the adjoining estuarine habitat, and implementation of the EAMP, CEMP, FMP and SWMR will maintain hydrological connectivity, water quality and ecological function. Accordingly, the Proposed Action will not substantially modify, fragment, destroy or isolate an area of important habitat for listed migratory shorebird species.
'Result in an invasive species that is harmful to the migratory species becoming established in an area of important habitat for the migratory species'	Unlikely to occur	The Proposed Action is unlikely to result in an invasive species that is harmful to listed migratory shorebirds and terns becoming established within an area of important habitat. As discussed above, the Project Area does not contain habitat that meets the definition of important habitat under the Shorebird Guidelines or the Significant Impact Guidelines 1.1 for migratory species. Furthermore, the Project Area is located within an existing urban environment where introduced weeds and pest species are already established, and the Proposed Action will not introduce activities or environmental changes likely to facilitate their further establishment or spread into retained shorebird habitat or the adjacent Peel-Harvey Estuary.

Significance Assessment

Placid Waters South Residential Development



Table 8 (continued): Assessment of the potential impacts of the proposed action to 18 migratory shorebird and tern species

Significant impact criteria for Migratory species (DotE 2013)	Will a significant impact result from the proposed action?	
	Likelihood	Assessment for 18 migratory shorebird and tern species
[continued from above]		The EAMP, CEMP and FMP include hygiene protocols, weed management measures and ongoing monitoring to prevent the introduction and spread of weeds, plant pathogens and pest species during construction and operation. Accordingly, the Proposed Action is unlikely to result in invasive species becoming established within habitat used by listed migratory shorebirds and terns or adversely affect the ecological values of the adjacent estuarine environment.
‘Seriously disrupt the lifecycle (breeding, feeding, migration or resting behaviour) of an ecologically significant proportion of the population of a migratory species’	Unlikely to occur	The Proposed Action is unlikely to seriously disrupt the breeding, feeding, migration or resting behaviour of an ecologically significant proportion of the population of any listed migratory shorebird or tern species. One migratory species, Caspian Tern, was recorded flying over the Project Area during the 2026 targeted shorebirds survey (Emerge Associates 2026). However, no other migratory shorebird species were recorded during the targeted shorebird surveys undertaken in 2026 or the fauna assessment in 2023. Based on the ecological survey findings and habitat availability, the Likelihood of Occurrence assessment determined that the remaining migratory shorebird and tern species have a 'possible' likelihood of occurring within the Project Area. Should these species occur, they are expected to utilise the marsh and mudflat habitat opportunistically for foraging or temporary roosting as part of the broader Peel-Harvey Estuary and Peel-Yalgorup System. The Project Area does not provide breeding habitat and is not known to support regular roosting by listed migratory shorebirds. The Proposed Action will remove only 0.1 ha of suitable foraging habitat while retaining 2.41 ha (96%) of suitable marsh and mudflat habitat within the avoidance area. The retained habitat will remain contiguous with the extensive habitat of the adjoining waterway, ensuring continued access to substantially larger and higher-quality foraging and roosting habitat. In addition, implementation of the EAMP, CEMP, FMP and SWMR will minimise disturbance and maintain existing hydrological processes and water quality. Accordingly, the Proposed Action is not expected to disrupt the lifecycle of an ecologically significant proportion of the population of any listed migratory shorebird species.

Based on the above, the Proposed Action is unlikely to trigger any of the significant impact criteria for either of the 18 migratory shorebird and tern species. As such, it is considered unlikely that the proposed action would result in a significant impact on the 18 migratory shorebird and tern species.

Significance Assessment

Placid Waters South Residential Development



5 References

5.1 General references

The references listed below have been considered as part of preparing this document.

Australian Government 2020, *Recovery & Conservation Plan for the Osprey (Pandion halliaetus) on Yorke Peninsula, South Australia*

BirdLife International 2023, *Important Bird Areas*,
<<https://datazone.birdlife.org/site/factsheet/peel-harvey-estuary-iba-australia/text>>.

W. a. t. E. Department of Agriculture (DAWE) 2020, *National Recovery Plan for the Australian Fairy Tern (Sternula nereis nereis)*, Canberra.

W. a. t. E. Department of Agriculture (DAWE) 2022a, *Conservation Advice for Sternula albifrons (little tern)*

Department of Agriculture, Water and the Environment (DAWE) 2022b, *Referral guideline for 3 WA threatened black cockatoo species: Carnaby's Cockatoo, Baudin's Cockatoo and the Forest Red-tailed Black-cockatoo*, Canberra.

Department of Biodiversity, Conservation and Attractions, (DBCA) 2026a, *Directory of Important Wetlands in Australia - Western Australia (DBCA-045)*, Perth, Western Australia, <<https://catalogue.data.wa.gov.au/dataset/directory-of-important-wetlands-in-western-australia>>.

Department of Biodiversity, Conservation and Attractions, (DBCA) 2026b, *Geomorphic Wetlands, Swan Coastal Plain (DBCA-019)*, Western australia
<<https://catalogue.data.wa.gov.au/dataset/geomorphic-wetlands-swan-coastal-plain>>.

Department of Climate Change, Energy, the Environment and Water (DCCEEW) 2017, *EPBC Act Policy Statement 3.21—Industry guidelines for avoiding, assessing and mitigating impacts on EPBC Act listed migratory shorebird species*, Commonwealth of Australia.

Department of Climate Change, Energy, the Environment and Water (DCCEEW) 2021, *Matters of National Environmental Significance: Significant Impact Guidelines 1.1*, Australian Government, Canberra.

Department of Climate Change, Energy, the Environment and Water, (DCCEEW) 2025, *Peel-Yalgorup System*, <<https://www.dcceew.gov.au/water/wetlands/australian-ramsar-wetlands/peel-yalgorup-system>>.

Department of Environment (DoE) 2015, *Wildlife Conservation Plan for Migratory Shorebirds*.

Department of the Environment (DotE) 2013, *Matters of National Environmental Significance - Significant impact guidelines 1.1 Environment Protection and Biodiversity Conservation Act 1999*, Canberra.

Emerge Associates 2024, *Basic Fauna and Targeted Black Cockatoo Assessment 28 Placid Waters Parade, Coodanup*, EP23-081(03)--004 AJU, Version 1.

Significance Assessment

Placid Waters South Residential Development



Emergence Associates 2026, *Shorebird Survey - Placid Waters South Planning Support* EP25-135(11)--013 KSB, Version 1.

Glossop, B., Clarke, K., Mitchell, D. and Barrett, G. 2011, *Methods for mapping Carnaby's cockatoo habitat*, Department of Environment and Conservation, Perth.

Hale, J. and Butcher, R. 2007, *Ecological Character Description of the Peel-Yalgrope Ramsar Site*, Department of Environment and Conservation

Peel-harvey Catchment Council.

