Shoalhaven City Council

# Review of Environmental Factors (REF) - Dog off-leash access

## River Road Reserve, Shoalhaven Heads

## Assessment and approvals overview

| Item | Details |
|---|---|
| Assessment Type | Division 5.1 *Environmental Planning and Assessment (EP&A) Act 1979* (NSW) - REF |
| Proponent | Shoalhaven City Council |
| Prepared by | Lodge Environmental on behalf of Shoalhaven City Council |
| Determining authority / authorities | Shoalhaven City Council |
| Required approvals (consents, licenses and permits) | Nil |
| Required publication | This REF is published on Shoalhaven City Council's website (as the determining authority), in accordance with Section 171(4) *Environmental Planning and Assessment Regulation 2021* (as a matter of public interest). |

| Document Review | | | |
|---|---|---|---|
| | Name | Signature | Date |
| Author | Primary: Shoalhaven City Council<br>Secondary: Lodge Environmental |  | 24/10/2023 |
| Reviewer | Shoalhaven City Council | PS | 19/11/2024 |
| Approver | Shoalhaven City Council | MR | 22/11/2024 |

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# 1 Introduction

## 1.1 Background

This document provides the environmental assessment for a dog off-leash access area and associated ancillary works at Jerry Bailey Reserve – Shoalhaven Heads Wharf, Carters Corner Reserve and Gumley Reserve, colloquially known as and henceforth referred to as 'River Road Reserve', Shoalhaven Heads, in line with requirements for such activities under Part 5 of the *Environmental Planning and Assessment Act 1979* (EP&A Act). This assessment relates to the impact of the proposed activity on the community and the environment in accordance with Section 171 of the *Environmental Planning and Assessment Regulation 2021* (NSW) (EP&A Regulation).

The Shoalhaven City Council (SCC) revised Access Areas for Dogs Policy and Access Areas for Dogs Policy Implementation Plan and were adopted in December 2023 (CL23.463). The Policy and Plan are consistent with section 13(6) of the Companion Animals Act 1998 (CA Act), which states:

> *'A local authority can by order declare a public place to be an off-leash area. Such a declaration can be limited so as to apply during a particular period or periods of the day or to different periods of different days. However, there must at all times be at least one public place in the area of a local authority that is an off-leash area.'*

The objectives of the Access Areas for Dogs Policy are to:

- Provide clear and accessible designations for 'dog off-leash' and 'dog-prohibited' areas within the Shoalhaven local government area (LGA) to ensure population health and wellbeing benefits associated with dog ownership are achieved in balance with the protection of biodiversity and maintenance of ecosystem health.
- Protect flora and fauna from the adverse impacts of dogs and, more generally, to limit the impact of dogs on biodiversity and the natural environment.
- Support a risk-based approach to the designation and management of dog control areas to balance social and environmental needs in accordance with legislation.
- Provide clarity to all users with respect to areas where dogs are restricted or prohibited and to ensure a range of public places remain dog-free, and therefore accessible, to a wide spectrum of users across the Shoalhaven.
- Outline expectations regarding the safe shared use of public places in the Shoalhaven for dog owners and other users.
- Direct efforts to develop educational resources that promote responsible dog ownership and positive interactions with companion dogs within public places.
- Provide a framework for ongoing review and adaptive management (of the policy and dog-related matters in Shoalhaven).
- Promote compliance with all relevant legislation governing dog ownership in New South Wales.
- Enable effective enforcement (of the policy).

The policy recognises in accordance with the CA Act that 'all dogs within designated off-leash areas must be under effective control at all times and be able to be recalled immediately and controlled by means other than a leash. Dogs must not rush at, or provide unwanted attention to, other people or dogs'.

## 1.2 Purpose of this Review of Environmental Factors

This Review of Environmental Factors (REF) is one of several REFs that assesses the suitability and permissibility of formal dog off-leash areas in the Shoalhaven LGA.

This REF assesses the potential environmental impacts of a proposed dog off-leash access area and associated ancillary works at River Road Reserve, Shoalhaven Heads. Boundaries to the dog off-leash area that minimise environmental and social impacts in response to the proposed activity are recommended.

The REF describes the proposed activity and legislative context, assesses potential environmental impacts and recommends mitigation measures based on existing measures to satisfy Council's due diligence and statutory responsibilities. Information obtained through stakeholder consultation, including with the NSW National Parks and Wildlife Service (NPWS), NSW Fisheries, and broader community, was considered in the preparation of this assessment.

## 1.3 Proposed activity

The proposed activity comprises a 24 hour dog off-leash area along parts of River Road Reserve (referred to as the 'subject site' in this REF (Figure 1). The subject site is the stretch of River Road Reserve between the eastern public boat ramp and western wharf, on the northern bank of the Shoalhaven River, at Shoalhaven Heads. This includes the area of potential direct impacts on the community and the environment from the proposed activity. An area including a 50-metre buffer to the subject site, where direct and indirect impacts on the community and the environment may occur, has also been assessed, and is referred to in this REF as the 'study area'.

The subject site is designated as a dog off-leash access area under the Access Areas for Dogs Policy and has been used for dog off-leash access since 2006 (Council Ordinary Meeting 27 July 2006 MIN06.870). Council adopted the recommendation that 'River Road Reserve adjacent to the river edge - from the boat ramp in the east to the wharf at the end of Jerry Bailey Road be a dog off-leash area' be included in the Access Areas for Dogs Policy.

The proposed activity includes:

- Provision of a 24-hour dog off-leash access area situated along River Road Reserve, between the public boat ramp to the east and the wharf at the end of Jerry Bailey Road in the west.
- Ancillary works such as the installation or replacement of Access Areas for Dogs Policy signage. Existing signposts will be utilised where possible (e.g., Appendix 1).

Accordingly, the REF assesses the direct and indirect community and environmental impacts associated with the proposed activity (inclusive of ancillary works) within the subject site and study area.


*Figure 1 River Road Reserve, Shoalhaven Heads - subject site and study area.*

## 1.4 Sources of information

This REF has been informed by:

- Database searches:
  - NSW BioNet Atlas (accessed on 25 September 2023 and 5 August 2024)
  - Atlas of Living Australia inclusive of iNaturalist Australia data (accessed on 5 August 2024)
  - Protected Matters Search Tool (accessed on 5 August 2024)
  - Birdata (including Birdlife Australia's shorebird monitoring program survey data) (accessed on 25 September 2023 and 5 August 2024)
  - Council's GIS Enquiry (various data layers from September 2022 to August 2024). This contains GIS layers with data sourced under licence, including sensitive data locations and records of threatened species, as well as Birdata.
  - Aboriginal Heritage Information Management System (AHIMS) (accessed on 22 November 2022, and 5 August 2024)
  - Council records and archives (January 2023)
- Consultation with NPWS, including consultation with the NPWS Shorebird Ranger and records from the NSW Shorebird Recovery Program.
- Consultation with NSW Department of Primary Industries and Regional Development (NSW Fisheries) regarding threatened species and key fish habitats.
- Consultation with Council's Rangers to ascertain the appropriateness of existing controls and the enhancement of mitigation measures to ensure a nil to negligible impact on the community and the environment.
- Consultation with the community during the update to the Access Areas for Dog Policy in 2021
- An on-site survey for the presence of Aboriginal objects on 28 November 2022 and 24 September 2024.
- A site inspection by qualified ecologists from Lodge Environmental on 29 September 2023 to validate plant community types, fauna habitat values and inform likelihood of occurrence for threatened and migratory species to occur at the subject site.
- A site inspection by SCC staff on 10 November 2022 and 24 September 2024 to assess the range of environmental and social factors required to be considered.

Likelihood of occurrence was assessed for threatened flora and fauna listed under the *Biodiversity Conservation Act 2016* (NSW) (BC Act), *Environment Protection and Biodiversity Conservation Act 1999* (Cth) (EPBC Act) and Fisheries Management Act (FM Act) that have been recorded within 10 kilometres of the subject site (hereafter referred to as the 'locality').

Based on the nature of the subject site and proposed activity, it was considered that the above listed habitat assessment, literature review and database searches were appropriate means for assessing the potential impact on environmental factors in accordance with section 171 of the EP&A Regulation.

# 2 Existing Environment

## 2.1 Location

Shoalhaven Heads township stretches along the northern side of the Shoalhaven River and is located at the southern end of Seven Mile Beach. River Road Reserve, forms over parts of Jerry Bailey Reserve – Shoalhaven Heads Wharf Reserve and the land parcel containing Gumley Reserve. It is situated along the northern edge of the Shoalhaven River and is approximately 1.0 kilometre in length (Figure 2). The boundaries of River Road Reserve, for the purpose of the dog off-leash area, are from the boat ramp in the east, along the foreshore to the Shoalhaven Heads wharf in the west. It is located approximately 1 kilometre north of Comerong Island Nature Reserve and 230 metres west of Shoalhaven Heads Inlet, which is a dog-prohibited area.


Figure 2 Location of River Road Reserve, in Shoalhaven Heads, on the south coast of NSW.

## 2.2 Land ownership and management

The River Road Reserve foreshore (Part Lot 7004 DP 94785, Part Lot 7005 DP 1075719) is Crown Land with Council appointed as the Trust Manager under the *Crown Land Management Act 2016* (NSW) (CLM Act). The purpose of this Crown Land reserve (No. 528855) was deemed to be for 'public recreation', and this was published in the NSW Government Gazette on 21 June 1918, 13 September 1968 and 30 June 1972.

Under the CLM Act, dedicated or reserved Crown Land managed by Council is assigned categories in accordance with section 3.23 of the CLM Act, whereby the land is managed as if it were community land under the *Local Government Act 1993* (NSW) (LG Act). River Road Reserve was categorised as a Park in 2020. The subject site is zoned as RE1 – Public Recreation under the Shoalhaven Local Environmental Plan 2014 (SLEP).

## 2.3 Community values

Many people have a strong affinity to the coast. River Road Reserve is a shared-use area used by the community for social and recreational purposes and valued for many reasons, including:

- Aesthetics — passive recreation undertaken to appreciate the aesthetic appeal.
- Cultural and spiritual values — water is particularly important for indigenous peoples.
- Aquatic ecosystems — respect for the health or integrity of the waterway's ecosystem(s).
- Exercise and active recreation – activities including walking, swimming, fishing, kayaking, birdwatching and dog walking

Existing infrastructure in the area includes boat ramps, playgrounds, picnic tables, parkland, and fishing and boating facilities. The foreshore reserve consists of carparks and amenities blocks in two locations, and there are viewing platforms regularly used for bird watching, fishing and other associated activities. There are several access tracks connecting shared user footpaths and River Road Reserve to the foreshore.

Shoalhaven Heads is a popular tourist destination with a holiday park located at the eastern end of River Road Reserve, with direct access to the foreshore.

The public currently use River Road Reserve as a 24-hour dog off-leash access area throughout the year.

## 2.4 Landscape features

Shoalhaven Heads is located within the Interim Biogeographic Regionalisation for Australia (IBRA) Sydney Basin bioregion and subregion of Jervis (SYB14). River Road Reserve is stretch of sandy foreshore situated along the northern mouth of the Shoalhaven River (Appendix 1). Two sections of the reserve (largest between the Renown Avenue and immediately east of Mathews Street) are backed by a constructed rock revetment to mitigate erosion on the foreshore. Other sections of the reserve are backed by vegetation (grass, feature plantings and intact riparian vegetation communities) and paved shared user footpaths. The natural vegetated sections of the foreshore encompass the local River Road Bushcare site.

The study area is mapped as low risk for acid sulfate soils. High risk acid sulfate soils occur along the Shoalhaven River itself, outside of the subject site and study area.

## 2.5 Biodiversity

In the context of this REF, the subject site:

- is known to contain threatened species listed under the BC Act and the EPBC Act.
- contains vegetation that has been validated as a threatened ecological community listed under the BC Act.
- is not mapped on the Biodiversity Value Map (BV Map) which identifies land with high biodiversity value as defined by the *Biodiversity Conservation Regulation 2017* (NSW) (BC Regulation).

Sandy riverbanks, such as at River Road Reserve, are key foraging and roosting sites for shorebirds and seabirds. The study area has records of these including Pied Oystercatcher, Little Tern and White-Bellied Sea Eagle. Optimal shorebird breeding and foraging habitat is approximately 230 metres to the east of the dog off-leash access area and includes Shoalhaven Heads Inlet, which is a dog-prohibited area.

## 2.6 Cultural heritage

An AHIMS search was conducted on 22 November 2022, repeated and confirmed on 5 August 2024 and indicated that there were no recorded Aboriginal heritage sites within the subject site. There was one recorded Aboriginal heritage site 150 metres from the southern end of the subject site. However, the impact of the proposed activity on this site is considered negligible.

No items of local non-indigenous heritage significance or any items on the state heritage list or the SLEP are located within, or in proximity to the subject site.

Further assessment of indigenous and non-indigenous heritage is provided in Section 5.3.

# 3 Permissibility

The proposed activity is permissible under all relevant legislation (Table 1) subject to the implementation of spatial limitations and recommended mitigation measures (Section 8).

*Table 1 Summary of legislation and permissibility*

| **NSW State Legislation** |
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| ***Environmental Planning and Assessment Act 1979* (EP&A Act)** |
| Permissible ☑ Not permissible ☐ |
| Section 4.1 (Development that does not need consent) of the EP&A Act states that:<br><br>*'If an environmental planning instrument provides that specified development may be carried out without the need for development consent, a person may carry the development out, in accordance with the instrument, on land to which the provision applies.'*<br><br>Designating a dog off-leash access area constitutes an 'activity' (given activity also applies to 'use of the land'). Section 2.73(3) of the *State Environmental Planning Policy (Transport and Infrastructure) 2021* (Transport & Infrastructure SEPP) provides that:<br><br>*(a) 'Any of the following development may be carried out by or on behalf of a council without consent on a public reserve under the control of or vested in the council— (a) development for any of the following purposes—*<br>*(ii) recreation areas and recreation facilities (outdoor), but not including grandstands'*<br><br>Section 4.68(1) (Continuance of and limitations on other lawful uses) of the EP&A Act states:<br><br>*'Nothing in an environmental planning instrument operates so as to require consent to be obtained under this Act for the continuance of a use of a building, work or land for a lawful purpose for which it was being used immediately before the coming into force of the instrument or so as to prevent the continuance of that use except with consent under this Act being obtained.'*<br><br>The use of the land at River Road Reserve for a dog off-leash area constitutes 'continuing use' under section 4.68(1) of the EP&A Act.. The use of the land at River Road Reserve for a dog off-leash area does not involve the enlargement, expansion or intensification for the purpose of a recreation area.<br><br>Dog access on River Road Reserve constitutes an 'activity' as defined under Part 5 of the EP&A Act. Section 5.5 of the Act *Duty to consider environmental impact* requires Council to *examine and take into account to the fullest extent possible all matters affecting or likely to affect the environment by reason of the activity*. This REF assesses all potential impacts of the proposed activity. All aspects of the proposed activity are documented in Section 1.3. Section 4 includes an assessment against factors a) – p) in Section 171 of the *Environmental Planning and Assessment Regulation* (2021). Potential impacts of the proposed activity are detailed in Section 7 and the spatial limitations of the proposed activity and other mitigation measures are provided in Section 8.<br><br>Section 5.7 of the EP&A Act requires Council to examine and consider an Environmental Impact Statement (EIS) in respect of the activity. Specific assessments for threatened species listed under the *Biodiversity Conservation Act 2016* (BC Act) and *Environment Protection and Biodiversity Conservation Act 1999* (Cth) (EPBC Act) and migratory species listed under the EPBC Act are |

| NSW State Legislation |
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| conducted in Appendix 3 and Appendix 4. These assessments conclude mitigation measures, listed in Section 8, are adequate to ensure the proposed activity does not constitute a significant impact to listed threatened or migratory species. As such, an EIS is not required for the proposed activity. |
| ***Companion Animals Act 1998 (CA Act)*** |
| Permissible ☑ Not permissible ☐ |
| The principal object of this Act is to provide for the effective and responsible care and management of companion animals.<br><br>Section 13(6) of the CA Act states that 'a local authority can by order declare a public place to be an off-leash area. Such a declaration can be limited so as to apply during a particular period or periods of the day or to different periods of different days. However, there must at all times be at least one public place in the area of a local authority that is an off-leash area.'<br><br>Section 14 of the CA Act states that 'dogs are prohibited in the following places (whether or not they are leashed or otherwise controlled) -<br>(a) Children's play areas (meaning any public place, or part of a public place, that is within 10 metres of any playing apparatus provided in that public place or part for the use of children).<br>(b) Food preparation/consumption areas (meaning any public place, or part of a public place, that is within 10 metres of any apparatus provided in that public place or part for the preparation of food for human consumption or for the consumption of food by humans).<br>(c) Recreation areas where dogs are prohibited (meaning any public place, or part of a public place, provided or set apart by a local authority for public recreation or the playing of organised games and in which the local authority has ordered that dogs are prohibited and in which, or near the boundaries of which, there are conspicuously exhibited by the local authority at reasonable intervals notices to the effect that dogs are prohibited in or on that public place or part).<br>(d) Public bathing areas where dogs are prohibited (meaning any public place or any part of a public place that is used for or in conjunction with public bathing or public recreation (including a beach), in which the local authority has ordered that dogs are prohibited and in which, or near the boundaries of which, there are conspicuously exhibited by the local authority at reasonable intervals notices to the effect that dogs are prohibited in or on that public place).<br>(e) School grounds (meaning any property occupied or used for a purpose connected with the conduct of a government school or non- government school under the Education Act 1990, other than any property used for a residence or the curtilage of a residence).<br>(f) Childcare centres (meaning any property occupied or used for a purpose connected with the conduct of an approved education and care service within the meaning of the Children (Education and Care Services) National Law (NSW) or the Children (Education and Care Services) Supplementary Provisions Act 2011, other than any property used for a residence or the curtilage of a residence).<br>(g) Shopping areas where dogs are prohibited (meaning a shopping arcade or shopping complex, including any part of it that is used by the public for parking or access to shops, in which or part of which the local authority has ordered that dogs are prohibited and in which, or near the boundaries of which, there are conspicuously exhibited by the local authority at reasonable intervals notices to the effect that dogs are prohibited there). This paragraph does not apply to any shop or part of a shop. |

| NSW State Legislation |
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| (h) Wildlife protection areas (meaning any public place or any part of a public place set apart by the local authority for the protection of wildlife and in which the local authority has ordered that dogs are prohibited for the purposes of the protection of wildlife and in which, or near the boundaries of which, there are conspicuously exhibited by the local authority at reasonable intervals notices to the effect that dogs are prohibited in or on that public place).'<br><br>There are playgrounds and picnic areas to the east of the subject site which hold a dog prohibition under this Act. Further to the east closer to the Shoalhaven inlet is a signed dog prohibition area that is preserved for wildlife protection. All other areas within the vicinity of the subject site remain dog on-leash areas. |
| ***Crown Land Management Act 2016* (CLM Act)** |
| Permissible ☑ Not permissible ☐ |
| Council is the appointed Crown Land Manager (CLM) of River Road Reserve (Crown Land reserve R52855, Lot 7005 DP 1075719, Part Lot 7004 DP 94785).<br><br>Where a Plan of Management (PoM) exists for Crown Land, it may identify and authorise certain works that can be undertaken by a public authority and the pre-conditions (if any) for implementing those works.<br><br>The PoM most relevant to the land is the *Generic Community Plan of Management – Parks* https://doc.shoalhaven.nsw.gov.au/displaydoc.aspx?record=D11/116070 (refer to Section 1.3.2).<br>This plan states:<br>*Foreshore reserves are highly valued for their social, cultural, economic, and environmental attractions. By their very nature, these reserves have a degree of environmental sensitivity as the transition zone between aquatic and terrestrial ecosystems*<br><br>The Core Objectives for management of community land categorised as Park that are set out in the Act and the PoM are:<br>• to encourage, promote and facilitate recreational, cultural, social and educational pastimes and activities, and<br>• to provide for passive recreational activities or pastimes and for the casual playing of games, and<br>• to improve the land in such a way as to promote and facilitate its use to achieve the other core objectives for its management.<br><br>The proposed activity is in line with these objectives. The proposed activity will not impact on the foreshore's role as a transition area between the aquatic and terrestrial environment. The PoM, as well as Council's *Foreshore Reserves Policy* (POL19/76), does not preclude the activity. |
| ***Coastal Management Act 2016 (CM Act)*** |
| Permissible ☑ Not permissible ☐ |
| The CM Act establishes the framework and overarching objectives for coastal management in New South Wales. The purpose of the CM Act is to manage the use and development of the coastal environment in an ecologically sustainable way. The CM Act achieves this by designating 'coastal management areas' for the NSW coastal zone and assigning specific objectives for the management of these areas. |

| NSW State Legislation |
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| River Road Reserve is designated as both Coastal Environment Area and Coastal Use Area. Under the CM Act, the management objectives for these areas includes the protection and enhancement of the coastal environment (including but not limited to ecosystem integrity, water quality, coastal and estuarine processes), as well as the protection and enhancement of the social and cultural values of the coast (including but not limited to access to public open space for recreational activities).<br><br>The Lower Shoalhaven River Coastal Management Program (CMP) covers the subject site and is a long-term strategy for managing the coastline and estuary at this location. Through five stages of development, the program considers historic events, current conditions and future trends to develop a management plan for actions over a 10-year timeframe. The Lower Shoalhaven River CMP is in Stage 3 of its development at the time of this REF preparation (https://getinvolved.shoalhaven.nsw.gov.au/lower-shoalhaven-river-cmp).<br><br>The proposed activity (with the implementation of mitigation measures in Section 8) is considered consistent with these strategies, because dogs will continue to be prohibited from environmentally sensitive areas such as Shoalhaven Heads Inlet. |
| ***State Environmental Planning Policy (Resilience and Hazards SEPP) 2021*** |
| Permissible ☑ Not permissible ☐ |
| Section 2.10 of Division 3 of the Resilience and Hazards SEPP Coastal environment area states that development consent must not be granted to development on land that is within the coastal environment area unless the consent authority has considered whether the proposed development is likely to cause an adverse impact on the following:<br><br>(a) The integrity and resilience of the biophysical, hydrological (surface and groundwater) and ecological environment,<br>(b) Coastal environmental values and natural coastal processes,<br>(c) the water quality of the marine estate (within the meaning of the *Marine Estate Management Act 2014*), in particular, the cumulative impacts of the proposed development on any of the sensitive coastal lakes identified in Schedule 1,<br>(d) Marine vegetation, native vegetation and fauna and their habitats, undeveloped headlands and rock platforms,<br>(e) Existing public open space and safe access to and along the foreshore, beach, headland or rock platform for members of the public, including persons with a disability,<br>(f) Aboriginal cultural heritage, practices and places,<br>(g) The use of the surf zone.<br><br>(2) Development consent must not be granted to development on land to which this section applies unless the consent authority is satisfied that—<br><br>(a) The development is designed, sited and will be managed to avoid an adverse impact referred to in subsection (1), or<br>(b) If that impact cannot be reasonably avoided—the development is designed, sited and will be managed to minimise that impact, or<br>(c) If that impact cannot be minimised—the development will be managed to mitigate that impact. |

| **NSW State Legislation** |
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| The proposed activity is considered not to have an adverse effect on the above and is therefore permissible under Resilience and Hazards SEPP. |
| ***Shoalhaven Local Environmental Plan 2014*** **(SLEP)** |
| Permissible ☑ Not permissible ☐ |
| In circumstances where development consent is not required, the SLEP does not apply. However, all relevant factors of consideration as outlined in Part 5 of the EP&A Act are required to be complied with. This REF, including Section 40 Assessment of Environmental Factors (Section 171 of the EP&A Regulation), fulfils this requirement. |
| ***Protection of the Environment Operations Act 1997*** **(POEO Act)** |
| Permissible ☑ Not permissible ☐ |
| The POEO Act regulates and controls pollution of land, air, water, and the emission of noise and provides for environment protection licenses, notices and offences.<br><br>The objectives of the POEO Act are as follows:<br>(a) to protect, restore and enhance the quality of the environment in NSW, having regard to the need to maintain ecologically sustainable development,<br>(b) to provide increased opportunities for public involvement and participation in environment protection,<br>(c) to ensure that the community has access to relevant and meaningful information about pollution,<br>(d) to reduce risks to human health and prevent the degradation of the environment by the use of mechanisms that promote the following—<br>(i). pollution prevention and cleaner production,<br>(ii). the reduction to harmless levels of the discharge of substances likely to cause harm to the environment,<br>(iii). the elimination of harmful wastes,<br>(iv). the reduction in the use of materials and the re-use, recovery or recycling of materials,<br>(v). the making of progressive environmental improvements, including the reduction of pollution at source,<br>(vi). the monitoring and reporting of environmental quality on a regular basis,<br>(vii). the proper environmental management of chemicals throughout their whole lifecycle,<br>(e) to rationalise, simplify and strengthen the regulatory framework for environment protection,<br>(f) to improve the efficiency of administration of the environment protection legislation,<br>(g) to assist in the achievement of the objectives of the *Waste Avoidance and Resource Recovery Act 2001*. |

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| The proposed activity (with the implementation of mitigation measures in Section 8) is considered to align with the objects of the POEO Act as impacts associated with pollution or waste management are considered unlikely to occur.<br><br>Furthermore, the proposed activity does not constitute a scheduled activity as listed in Schedule 1 of the POEO Act and does not require an environmental protection licence. |
| ***National Parks and Wildlife Act 1974* (NPW Act)** |
| Permissible ☑ Not permissible ☐ |
| The NSW Department of Climate Change, Energy, the Environment and Water (DCCEEW) administers the NPW Act, which manages:<br>• Conservation of nature<br>• Conservation of objects, places and features of cultural value<br>• Public appreciation, understanding and enjoyment of nature and cultural heritage.<br>• Land reserved under this Act.<br><br>The NPW Act binds all activities and responsibilities of the Crown. DCCEEW must consider the objectives listed above, the public interest and appropriate management of the subject site. The NPW Act controls activities carried out in designated Parks, Reserves and Aboriginal areas. The NPW Act also requires consideration of impacts to all native birds, reptiles, amphibians and mammals protected under this Act.<br><br>The proposed activity does not take place on any designated Parks, Reserves and Aboriginal areas. Seven Mile Beach National Park is located 2 kilometres north of the study area. Additional consideration is required for potential impacts to Aboriginal cultural heritage. Such impacts are adequately addressed in Section 7 to ensure that the proposed activity aligns with the NPW Act. |
| ***Biodiversity Conservation Act 2016* (BC Act)** |
| Permissible ☑ Not permissible ☐ |
| The purpose of the BC Act is to maintain a healthy, productive and resilient environment for the greatest well-being of the community, now and into the future, consistent with the principles of ecologically sustainable development, and in particular—<br>(a) to conserve biodiversity at bioregional and state scales, and<br>(b) to maintain the diversity and quality of ecosystems and enhance their capacity to adapt to change and provide for the needs of future generations, and<br>(c) to improve, share and use knowledge, including local and traditional Aboriginal ecological knowledge, about biodiversity conservation, and<br>(d) to support biodiversity conservation in the context of a changing climate, and<br>(e) to support collating and sharing data, and monitoring and reporting on the status of biodiversity and the effectiveness of conservation actions, and<br>(f) to assess the extinction risk of species and ecological communities, and identify key threatening processes, through an independent and rigorous scientific process, and<br>(g) to regulate human interactions with wildlife by applying a risk-based approach, and |

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(h) to support conservation and threat abatement action to slow the rate of biodiversity loss and conserve threatened species and ecological communities in nature, and

(i) to support and guide prioritised and strategic investment in biodiversity conservation, and

(j) to encourage and enable landholders to enter into voluntary agreements over land for the conservation of biodiversity, and

(k) to establish a framework to avoid, minimise and offset the impacts of proposed development and land use change on biodiversity, and

(l) to establish a scientific method for assessing the likely impacts on biodiversity values of proposed development and land use change, for calculating measures to offset those impacts and for assessing improvements in biodiversity values, and

(m) to establish market-based conservation mechanisms through which the biodiversity impacts of development and land use change can be offset at landscape and site scales, and

(n) to support public consultation and participation in biodiversity conservation and decision-making about biodiversity conservation, and

(o) to make expert advice and knowledge available to assist the Minister in the administration of this Act

A species is considered threatened if:

- there is a reduction in its population size
- it has a restricted geographical distribution, or
- there are few mature individuals.

A species may be listed under the BC Act as:

- vulnerable
- endangered
- critically endangered, or
- presumed extinct.

How threatened a species is in NSW depends on:

- the extent of its population reduction across NSW and over time
- the size of its geographical distribution, or
- the number of mature individuals.

Populations of species and ecological communities can also be listed as threatened.

Processes that threaten species may be listed as key threatening processes.

Habitat essential to the survival of endangered or critically endangered species, as well as populations of species or ecological communities can be declared as critical habitat.

The proposed activity is;

- Unlikely to have a significant impact on species and communities listed in the schedules of this Act (refer to Appendices 2 and 3).
- Not within an area declared to be of 'outstanding biodiversity value' as defined in this Act.
- Not considered to have a *serious and irreversible impacts on biodiverstiy values*.
- Not likely to increase the role of any listed key threatening processes.

| NSW State Legislation |
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| The proposed activity (with the implementation of mitigation measures in Section 8) is not deemed to be *likely to significantly affect threatened species* and a Biodiversity Development Assessment Report (BDAR) and entry into the Biodiversity Offset Scheme (BOS) is not required. |
| **Fisheries Management Act 1994 (FM Act)** |
| Permissible ☑ Not permissible ☐ |
| If a planned development or activity is likely to have any impact on a threatened species, populations or ecological communities, or their habitats listed under the *Fisheries Management Act 1994* (FM Act), a preliminary assessment of the potential impacts must be made (under Division 6, Subdivsion 1, section 220ZZ), which is known as the 'Assessment of Significance' or '7 Part Test'.<br><br>The assessment of significance is applied to species, populations and ecological communities listed on Schedules 4, 4A and 5 of the FM Act. A species does not have to be considered as part of the assessment of significance if adequate surveys or studies have been carried out that clearly show that the species:<br>• does not occur in the study area, or<br>• will not use on-site habitats on occasion, or<br>• will not be influenced by off-site impacts of the proposal.<br><br>Otherwise all species likely to occur in the study area (based on general species distribution information), and known to use that type of habitat, should be considered in the rationale that determines the list of threatened species, populations and ecological communities for the assessment of significance.<br><br>The proposed activity is unlikely to have a significant impact on species, populations or ecological communities listed in the schedules of this Act (refer to Appendices 2 and 5). |
| ***Heritage Act 1977* (Heritage Act)** |
| Permissible ☑ Not permissible ☐ |
| The Heritage Act is concerned with all aspects of the conservation of heritage places and items. Heritage items of state significance are listed on the State Heritage Register. The Heritage Act provides protection for non-Aboriginal historic artefacts and/or sites (older than 50 years). A review of potential impacts on non-Aboriginal heritage is detailed in Section 5.3. |
| ***Local Land Services Act 2013*** |
| Permissible ☑ Not permissible ☐ |
| No clearing of vegetation is proposed. No separate authorisation under the Act is required. |
| ***Water Management Act 2000*** |
| Permissible ☑ Not permissible ☐ |
| Local councils are exempt from section 91E(1) of the Act in relation to all controlled activites that they carry out in, on or under waterfront land (by virtue of section 41 of the *Water Management (General) Regulation 2018).*<br>The proposal would not interfere with the aquifer and therefore an interference licence is not required (section 91F). |
| ***Aboriginal Land Rights Act 1993*** |

| NSW State Legislation |
|---|
| Permissible ☑ Not permissible ☐ |
| There are unresolved land claims on the subject site. However, the Act does not preclude the activity taking place on the subject site or study area. The Crown reserve has lawfully been used as recreational area prior to the lodgement of the land claim.<br><br>The activity would not affect or complicate the assessment of the land claim as it does not permanently impact the land as the activity is ongoing and intermittent and would not diminish the size or nature of the land.<br><br>Therefore, the land would remain as 'claimable land' as defined in the Act. |

| Commonwealth legislation |
|---|
| ***Environment Protection and Biodiversity Conservation Act 1999* (EP&BC Act)** |
| Permissible ☑ Not permissible ☐ |
| The proposed activity would not be undertaken on Commonwealth land and no Matters of National Environmental Significance are likely to be significantly impacted by the proposed activity (refer to Appendices 2 and 4). |
| ***Native Title Act 1993*** |
| Permissible ☑ Not permissible ☐ |
| The *Native Title Act 1993* recognises traditional interests in land of Aboriginal and Torres Strait Islander people and provides an avenue for land title claims against Crown land.<br>The proposed activity can be undertaken as a valid act under Subdivision 24LA *Low Impact Future Acts* as the act does not consist of, authorise, or otherwise involve:<br>(a) the grant of a freehold estate<br>(b) the grant of a lease<br>(c) the conferral of a right of exclusive possession<br>(d) the excavation or clearing of any of the land or waters<br>(e) mining<br>(f) the construction of placing on the land, or in the waters, of any building, structure, or other thing (other than fencing or a gate), that is a fixture, or<br>(g) the disposal or storing, on the land or in the waters, of any garbage or any poisonous, toxic or hazardous substance.<br><br>The non-extinguishment principle applies to the act and no referral or request for comment to NTSCORP is required. |

# 4 Assessment of environmental factors

Section 171 of the EP&A Regulation lists the factors to be investigated when consideration is being given to the likely impact of an activity on the environment under Part 5 of the EP&A Act. An assessment of the proposed activity against these environmental factors has been undertaken (Table 2).

*Table 2 Assessment Section 171 (EP&A Regulation) environmental factors*

| In accordance with Section 171(2) of the EP&A Regulation, Council has considered the following environmental factors: | Assessment of impact | Reason |
|---|---|---|
| a) the environmental impact on the community | Negligible/ Positive | The subject site and study area is located within Community Land and is frequently used as a public reserve for social and recreational activities.<br><br>The proposed activity would not impact on the community's access to, and amenity of River Road Reserve.<br><br>The proposed activity would not impact on views, community services and infrastructure such as water, waste management, educational, medical or social service (refer to impact assessment at Section 7.3). |
| b) the transformation of the locality | Negligible | The subject site and study area is located adjacent to the Shoalhaven River and zoned RE1 Public Recreation under the Shoalhaven LEP. The objectives of this zone are:<br><br>• To enable land to be used for public open space or recreational purposes.<br><br>• To provide a range of recreational settings and activities and compatible land uses.<br><br>• To protect and enhance the natural environment for recreational purposes.<br><br>The proposed activity is compatible with these objectives. |
| c) the environmental impact on the ecosystems of the locality | Negligible | The ecosystems in the locality range from aquatic, intertidal and terrestrial. The proposed activity is relevant because the presence of dogs can impact on wildlife occupying these environs.<br><br>The Threatened Ecological Community *Bangalay Sand Forest in the Sydney Basin and South East Corner Bioregions* and key fish habitat Zostera seagrasses are both located within the study area.<br><br>However, analysis indicates the impact on these ecosystems is considered negligible |

| In accordance with Section 171(2) of the EP&A Regulation, Council has considered the following environmental factors: | Assessment of impact | Reason |
|---|---|---|
| | | given the assessments carried out and with the implementation of mitigative controls.<br><br>Refer to Section 5.2 for further information on this analysis. |
| d) reduction of the aesthetic, recreational, scientific or other environmental quality or value of the locality | Negligible/ Positive | There will be minimal impact on the aesthetic, recreational, scientific or other environmental qualities or value of the locality. The subject site is zoned for public recreation and will remain a public reserve - recreation opportunities will not be diminished.<br><br>The proposed activity will enhance the recreational values of the subject site by providing a controlled dog off-leash access area that allows shared and balanced use for the public.<br><br>Dog disturbance will be minimal while they are off-leash at the subject site as dogs are required, under the *Companion Animals Act 1998* (NSW) (CA Act), to remain under control of their owner/walker. The person in control of the dog(s) is also responsible for waste disposal (including dog faeces). Compliance inspections will be carried out regularly to enforce these legal obligations and to help build a culture of appropriate public pet supervision. This will be reinforced with appropriate communications such as signage and SCC website information.<br><br>The proposed activity would not involve any direct impact on the natural attributes of the subject site or study area. The foreshore is regularly monitored for erosion and appropriate land management is implemented at the subject site, if required.<br><br>The proposed activity would result in an increased noise source (i.e., dogs barking). The subject site is adjacent to existing public and recreational facilities, such as children's playgrounds and barbeque picnic areas, where noise is also generated. The subject site are heavily used by the public for a diversity of activities. Therefore, noise levels from the proposed activity are considered to be within a normal range conducive to the existing public use of the subject site. As a result, noise would not be considered a disruptive level. Reports or |

| In accordance with Section 171(2) of the EP&A Regulation, Council has considered the following environmental factors: | Assessment of impact | Reason |
|---|---|---|
| | | complaints made to Council regarding noise will be monitored. |
| e) the effects on any locality, place or building that has –<br>(i) aesthetic, anthropological, archaeological, architectural, cultural, historical, scientific or social significance, or<br>(ii) other special value for present or future generations | Negligible | The subject site and study area has no significant aesthetic, architectural, cultural, historical, scientific or social values likely to be impacted on by this activity.<br>No items in the vicinity of the subject site listed on the State Heritage Register and the SLEP would be impacted on by the proposed activity.<br>The subject site and study area is not within an Aboriginal Place declared under the NPW Act.<br>In accordance with the NSW DCCEEW's Due Diligence Code of Practice, the proposed activity does not require an Aboriginal Heritage Impact Permit as the proposed activity is unlikely to harm an Aboriginal artefact to harm Aboriginal heritage sites.<br>Refer to Section 5.3 for details. |
| f) the impact on the habitat of protected animals, within the meaning of the *Biodiversity Conservation Act 2016* | Negligible | The impact on protected animals listed under the BC Act that have been recorded within the locality, have been considered in association with the proposed activity.<br>No habitat will be removed or otherwise impacted on by the proposed activity.<br>The Test of Significance (BC Act) detailed in Appendix 3 Test of Significance (BC Act) concludes that the proposed activity would not have a significant impact on threatened fauna and flora.<br>Protected animals listed under the BC Act that occur in the Shoalhaven LGA, including all native birds, reptiles, amphibians and mammals will not be significantly impacted on by the proposed activity and no further assessment is required.<br>Refer to Section 5.2 for details. |
| g) the endangering of a species of animal, plant or other form of life, whether living on land, in water or in the air | Negligible | The subject site is a public reserve which does contains some habitat suitable for plant and animal species.<br>There are no protected species likely to rely on the subject site of the proposed activity to the extent that modification would put them further in danger. |

| In accordance with Section 171(2) of the EP&A Regulation, Council has considered the following environmental factors: | Assessment of impact | Reason |
|---|---|---|
| | | The Tests of Significance (BC Act) provided in Appendix 3 concludes that the proposed activity would not have a significant impact upon threatened flora and fauna listed under this Act.<br><br>The Significant Impact Criteria Assessment (EPBC Act) provided in Appendix 4 concludes that the proposed activity would not have a significant impact upon threatened flora and fauna, or migratory fauna listed under this Act.<br><br>The Assessment of Significance (FM Act) provided in Appendix 5 concludes that the proposed activity would not have a significant impact on species, populations and ecological communities listed under this Act.<br><br>Refer to Section 5.2 and Section 7 for analysis details. |
| h) long-term effects on the environment | Negligible | The use of the subject site for 24-hour dog off-leash access will result in intermittent and ongoing use of the river and foreshore by the public.<br><br>The sign installation will improve understanding and awareness of dog access rules and inform the public on the threat from dog disturbance on threatened species. Furthermore, the continued analytical responses to monitoring information from complaints, observations and data will lead to the implementation of adaptive management to confirm that the proposed activity will not have a long-term effect on the environment into perpetuity.<br><br>Refer to Section 8 for details. |
| i) degradation of the quality of the environment | Negligible | The proposed activity involves ongoing and intermittent use of the river and foreshore by the public for the use of dog off-leash access. The mitigation measures (Section 8) to be implemented will minimise impacts on, and risks to the quality of the environment.<br><br>Dune stability will be managed in accordance with the NSW Coastal Dune Management Manual and the Lower Shoalhaven River Coastal Management Program (CMP) (currently in development). Access tracks are established, and condition monitored to minimise impacts to surrounding dune vegetation. No additional access tracks are |

| In accordance with Section 171(2) of the EP&A Regulation, Council has considered the following environmental factors: | Assessment of impact | Reason |
|---|---|---|
| | | proposed. The proposed activity is unlikely to introduce priority weeds, vermin, or feral animals into the area or contaminate the soil.<br><br>Long-term or long-lasting impact on aquatic ecosystems through the input of sediment or nutrient into the ecosystem is unlikely.<br><br>The proposed activity is unlikely to disturb the soil surface within the subject site beyond that which occurs in response to natural events and other recreational uses.<br><br>The mitigation measures (refer Section 8) to be implemented will minimise impacts on, and risks to the quality of, the environment. |
| j) risk to the safety of the environment | Negligible / Positive | The subject site and study area is within a sensitive natural environment located in the riparian zone of the Lower Shoalhaven River. However, the proposed activity will not increase the risk of any safety hazards above and beyond past and present recreational activities that occur within the subject site and study area.<br><br>The proposed activity would not increase the levels of risks to the safety of the environment that may occur in response to hazardous wastes, bushfire, flood, landslip or coastal hazard. |
| k) reduction in the range of beneficial uses of the environment | Negligible/ Positive | The subject site and study area is used for social and river related recreation opportunities, as well as access to them. The proposed activity would have no impact on this beneficial use. The spatial limitation and prescribed mitigation measures (refer Section 8) provides shared and balanced use of the area, and thus the proposed activity will not lead to a reduction in the range of beneficial uses of the local environment within the subject site and study area.<br><br>The proposed activity would not prevent the use of other recreational activities, as it is currently used as a passive recreation area, and the local picnic area is located outside of the dog off-leash access area in accordance with the CA Act. |
| l) pollution of the environment | Negligible | The proposed activity is not expected to result in pollution of the environment. It is unlikely that |

| In accordance with Section 171(2) of the EP&A Regulation, Council has considered the following environmental factors: | Assessment of impact | Reason |
|---|---|---|
| | | the proposed activity (including mitigation measures) would result in water, noise, or air pollution, spillages, dust, odours, vibration or radiation.<br><br>The subject site and study area is mapped as containing a low risk of acid sulfate soils. The adjacent river is classified as containing a high risk of acid sulfate soils. The associated signage installation may involve minor excavation within the low-risk area and is unlikely to result in the oxidation of acid sulphate soils.<br><br>With the requirement that dog owners clean up faeces, waste pollution from dogs is unlikely to have an impact on the natural environment. Garbage receptacles are located at main access points to the off-leash area to promote compliance. This will be monitored and enforced as a component of the implementation of mitigation measures (refer Section 8). |
| m) environmental problems associated with the disposal of waste | Negligible | The proposed activity would not result in the generation of trackable waste, hazardous waste, liquid waste, or restricted solid waste as described in the POEO Act.<br><br>Under the requirement that dog owners clean up faeces, waste pollution from dogs is unlikely to have an impact on the natural environment. Garbage receptacles are located at main access points to the dog off-leash area to promote compliance and these are regularly serviced to prevent overburden. This will be monitored and enforced as a component of the implementation of mitigation measures (refer Section 8). |
| n) increased demands on natural or other resources that are, or are likely to become, in short supply | Negligible | No natural or other resources that are, or are likely to become, in short supply will have increasing demands in response to the proposed activity. |
| o) the cumulative environmental effect with other existing or likely future activities | Negligible/ Positive | The subject site and study area is used for social and recreational activities all year round. The proposed activity would not create a cumulative environmental effect with other existing or likely future activities within the subject site and study area. Adaptive management will be utilised through the analysis of information obtained from data, complaints and observations, as well as an |

| In accordance with Section 171(2) of the EP&A Regulation, Council has considered the following environmental factors: | Assessment of impact | Reason |
|---|---|---|
| | | assessment of any future activities, to ensure that the proposed activity does not have a cumulative effect. |
| p) the impact on coastal processes and coastal hazards, including those under projected climate change conditions | Negligible | The proposed activity is not likely to have any impact on coastal process and coastal hazards, including those projected under climate change conditions.<br><br>The subject site and study area is regularly monitored for coastal and storm erosion. Dune stability will be managed in accordance with the NSW Coastal Dune Management Manual and the Lower Shoalhaven River Coastal Management Program (CMP) (in development). Access tracks are established and condition monitored to minimise impacts to surrounding dune vegetation. No additional access tracks are proposed. |
| q) applicable local strategic planning statements, regional strategic plans or district strategic plans made under the Act, Division 3.1 | Negligible | The proposed activity is consistent with Shoalhaven 2040 - Our Strategic Land-use Planning Statement (Shoalhaven City Council, 2020) and the Illawarra Shoalhaven Regional Plan 2041 (NSW DPE, 2021) |
| r) other relevant environmental factors | Negligible | There are no other relevant environmental factors pertaining to the proposed activity. |

*Note – the' locality' in this context is as per the EP&A Regulation and refers to the subject site and study area within this REF.*

# 5 Detailed assessment of key environmental factors

The following sections present the detailed assessments of the key environmental factors relevant to the proposed activity. Threatened fauna and flora, heritage and community values are included. Potential impacts of the proposed activity in relation to these are assessed in Section 7.

## 5.1 Vegetation and habitat assessment

The subject site was assessed by SCC staff on 10 November 2022, ecologists from Lodge Environmental on 29 September 2023 and SCC staff again on 24 September 2024. All surveys involved a vegetation and habitat assessment of the subject site and study area. Flora and fauna species within the subject site and study area were documented as well as an investigation of habitat availability for threatened fauna species.

The subject site and study area underwent a significant upgrade in 2021 with the construction of a coastal protection rock revetment wall, and a further works to address erosion and degradation issues on the foreshore by extending the foreshore restoration through revetment wall and stormwater outlet protections, sand renourishment and revegetation in 2023. Beginning in 2023 and ongoing at the time of writing, are works to construct a kerb and gutter with associated stormwater drainage anda shared pathway along River Road from Mathews Street to Renown Avenue. Part of River Road Reserve is backed by dwellings, and most of the western end is a natural area reserve.

Plant Community Types (PCTs) mapped within the study area include the PCT 3638 South Coast Sands Bangalay Forest and PCT 4091 Grey Mangrove-River Mangrove Forest. PCT 3638 is associated with the *Bangalay Sand Forest of the Sydney Basin and South East Corner bioregions* Threatened Ecological Community (TEC) listed as Endangered under the BC Act (Figure 3). There are no EPBC Act listed Threatened Ecological Communities (TECs) mapped within the subject site.

Within the subject site, the foreshore is backed by vegetation on a steep embankment, with the lower foreshore area largely devoid of living vegetation, but with an accumulation of occasional seagrass wrack and driftwood, providing a physical barrier between the sand and the vegetation. This driftwood provides important habitat for the establishment of stabilising flora, such as spinifex, cakile and carpobrotus species as well as trapping and stabilising sediment (Murphy *et al.* 2021).

The river section of the subject site forms part of a Nationally Important Wetland, the Shoalhaven/Crookhaven Estuary, with Zostera seagrass meadows located close to shore along the length of the river at this location. There are no recorded mangroves at the subject site. However, they grow at the nearby Shoalhaven Inlet and have potential to grow within the study area.

The western end of the subject site, where the carpark is located, contains a grassed area to the south, with some scattered Norfolk Pine (*Araucaria heterophylla*), Coast Banksia (*Banksia integrifolia*), Cook's Pine (*Araucaria columnaris*) and Swamp Mahogony (*Eucalyptus robusta*) (Plate 5 and 7, Appendix 1).

Vegetation occurring along the foreshore south-west of the rock revetment wall is located on a steep foreshore dune. The area contains a mix of scattered native species including Bangalay (*Eucalyptus botryoides*) and Swamp Mahogany (*Eucalyptus robusta*) within the canopy, Native Daphne (*Pittosporum undulatum*), Coffee Bush (*Breynia oblongifolia*) and Large Mock-Olive (*Notelaea longifolia*) within the midstratum and with a combination of native and common weed species throughout the ground stratum (Plate 8, Appendix 1 Photographs of the subject site).

The foreshore reserve in the north contains a grassed park area which is regularly maintained by council (Plate 11, 12 and 13, Appendix 1).

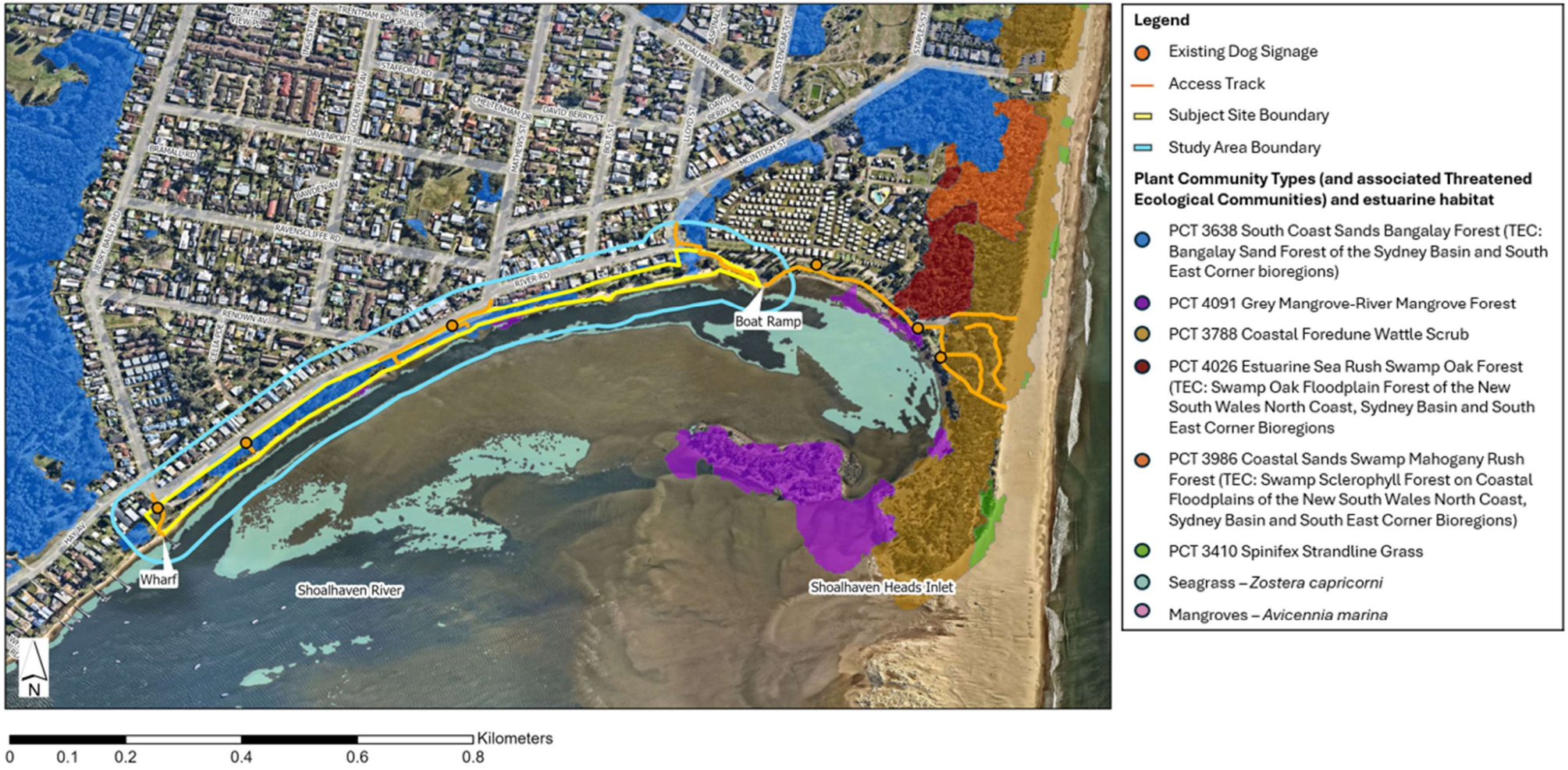


*Figure 3 Plant Community Types, Threatened Ecological Communities (TEC) and protected estuarine vegetation recorded within and adjacent to the subject site.*

## 5.2 Threatened species and ecological communities

This section has been informed by desktop analysis (including databases searches of BioNet, Birdlife Australia's Birdata, Atlas of Living Australia, iNaturalist, the EPBC Protected Matters Search Tool and Council's GIS Enquiry), consultation with relevant agencies including NPWS (detailed in Section 6), and site inspections conducted on 10 November 2022 and 24 September 2024 by SCC staff and 29 September 2023 by ecologists from Lodge Environmental.

The likelihood of occurrence for threatened flora and fauna listed in the NSW BC Act and/or Commonwealth EPBC Act recorded within 10 kilometres of the subject site were identified from a database search and site visit. The likelihood of occurrence was assessed for each of these species as high, medium or low based on species records and habitat features and presented in Appendix 2 Likelihood of occurrence assessment.

All BC Act listed entities determined likely to occur within the subject site and study area have been assessed according to the Test of Significance as required by section 7.3 of the BC Act. This is presented in Appendix 3.

All EPBC Act listed matters determined likely to occur within the subject site and study area have been assessed according to Significant Impact Criteria as detailed in the *Significant Impact Guidelines 1.1 – Matters of National Environmental Significance.* This is presented in Appendix 4.

All FM Act listed entities determined likely to occur within the subject site and study area have been assessed according to the Assessment of Significance as required by section 220ZZ of the FM Act. This is presented in Appendix 5.

### 5.2.1 Fauna

Based on the habitat present within the subject site and study area,, a total of 37 threatened and/or migratory fauna species that are listed in the BC Act and/or the EPBC Act and/or FM Act were identified as having the potential to occur (Table 3).

*Table 3 Threatened and migratory fauna species that potentially occur at the subject site*

| Common Name | Scientific Name | Legislation | |
|---|---|---|---|
| | | BC Act | EPBC Act |
| **Birds** | | | |
| Australian Gull-billed Tern | *Gelochelidon macrotarsa* | - | M |
| Australian Pied Oystercatcher | *Haemotopus longirostris* | E | - |
| Bar-tailed Godwit | *Limosa lapponica* | - | M |
| Beach Stone-curlew | *Esacus magnirostris* | CE | |
| Black-tailed Godwit | *Limosa limosa* | V | M |
| Broad-billed Sandpiper | *Limicola falcinellus* | V | M |
| Caspian Tern | *Hydroprogne caspia* | - | M |
| Common Tern | *Sterna hirundo* | - | M |
| Double-banded Plover | *Charadrius bicinctus* | - | M |
| Eastern Curlew | *Numenius madagascariensis* | - | CE, M |
| Eastern Great Egret | *Ardea alba modesta* | - | M |

| Common Name | Scientific Name | Legislation | |
|---|---|---|---|
| | | BC Act | EPBC Act |
| Eastern Osprey | *Pandion cristatus* | V | - |
| Fork-tailed Swift | *Apus pacificus* | - | M |
| Great Knot | *Calidris tenuirostris* | V | CE, M |
| Greater Crested Tern | *Thalasseus bergii* | - | M |
| Greater Sand Plover | *Charadrius leschenaultii* | - | V, M |
| Grey Plover | *Pluvialis squatarola* | - | M |
| Grey-tailed Tattler | *Tringa brevipes* | - | M |
| Lesser Sand-plover | *Charadrius mongolus* | V | E |
| Little Tern | *Sternula albifrons* | E | - |
| Nunivak Bar-tailed Godwit | *Limosa lapponica baueri* | - | V |
| Pacific Golden Plover | *Pluvialis fulva* | - | M |
| Red Knot | *Calidris canutus* | - | E |
| Red-necked Stint | *Calidris ruficollis* | - | M |
| Regent Honeyeater | *Anthochaera Phrygia* | CE | CE, M |
| Ruddy Turnstone | *Arenaria interpres* | - | M |
| Sanderling | *Calidris alba* | V | M |
| Sharp-tailed Sandpiper | *Calidris acuminata* | - | M |
| Sooty Oystercatcher | *Haematopus fuliginossus* | V | - |
| Terek Sandpiper | *Xenus cinereus* | V | M |
| Whimbrel | *Numenius phaeophus* | - | M |
| White-bellied Sea-eagle | *Haliaeetus leucogaster* | V | - |
| White-fronted Chat | *Epthianura albifrons* | V | - |
| White-throated Needletail | *Hirundapus caudacutus* | - | V, M |
| **Fish** | | | |
| Australian Grayling | *Prototroctes maraena* | FM Act - E | V,M |
| White's Seahorse | *Hippocampus whitei* | FM Act - E | E |
| **Reptiles** | | | |
| Green Turtle | *Chelonia mydas* | V | V M |

*VP = Vulnerable Population, V = Vulnerable, E = Endangered, CE = Critically Endangered, M = Migratory*

Known shorebird nesting areas are limited to Shoalhaven Heads Inlet to the south east of the study area. There are 16 species of threatened or migratory shorebird recorded at the subject site and/or study area (Refer to Appendix 7) and some of them, such as the Little Tern, are known to colonise and nest within the Shoalhaven Inlet and others recorded foraging within the subject site or study area.

During the site inspection by SCC staff, Australian Pied Oystercatchers, and Little Terns were observed. Ecologists from Lodge Environmental observed White-bellied Sea-eagle at Shoalhaven Heads Inlet during site inspections. All fauna and flora species recorded during field survey by ecologists from Lodge Environmental are listed in Appendix 6.

All birds recorded at the subject site by Birdata surveys are listed in Appendix 7.

No other threatened fauna or signs of threatened fauna were detected during surveys. Targeted nocturnal survey was not undertaken since no potential threatened species roosting / nesting habitat (e.g. hollows) would be removed or otherwise impacted as part of the proposal and it was considered that nocturnal survey was not required to inform the assessment.

An assessment of potential impact to threatened fauna based on the above findings is provided in Section 7.1.

### 5.2.2 Threatened flora and ecological communities

During the site inspection in preparation for this REF, no threatened flora was observed within the subject site or study area. Based on the habitat present at the subject site there are no threatened flora species considered likely to occur within the subject site.

This assessment determined one (1) listed TEC:

- *Bangalay Sand Forest in the Sydney Basin and South East Corner Bioregions*

was identified as occurring as the patch of vegetation along the foreshore south-west of the rock revetment wall.

An assessment of the potential impact on this threatened ecological community is provided in Section 7.2.

The estuarine macrophyte *Zostera capricorni* (eelgrass) is mapped close to the shore of the subject site is considered threatened species habitat under the FM Act. Mangroves have not been recorded within the subject site or study area. However, *Avicennia marina* (Grey Mangrove) occur at the nearby Shoalhaven Inlet and have potential to occur on site. An assessment of the potential impact on this threatened species habitat is provided in section 7.2.

## 5.3 Heritage

### 5.3.1 Indigenous

Under Section 86 of the NPW Act, it is an offence to disturb, damage, or destroy any Aboriginal heritage object without an Aboriginal Heritage Impact Permit (AHIP). The NPW Act provides that if a person who exercises ‘due diligence’ in determining that their actions will not harm Aboriginal objects has a defence against prosecution if they later unknowingly harm an object without an AHIP (Section 87(2) of the NPW Act). To affect this, the NSW DPE have published the Due Diligence Code of Practice for the Protection of Aboriginal Objects in New South Wales (hereafter referred to as ‘Due Diligence Code’) to assist individuals and organisations to exercise due diligence when carrying out activities that may harm Aboriginal objects and to determine whether they should apply for an AHIP.

Step 1 of the Due Diligence Code does not apply to the proposed activity as disturbance to the ground surface is negligible.

In accordance with Step 2a of the Due Diligence Code, a search on AHIMS indicated that there were no recorded Aboriginal heritage sites within the proposed subject site.

Step 2b of the Due Diligence Code then requires a consideration of whether Aboriginal objects are likely to be in the area of the proposed activity with consideration to certain landscape features listed in the Code to have higher propensity for objects, *i.e.:*

- within 200 metres of waters; or
- located in a sand dune system; or;
- located on a ridge top, ridge line or headland; or
- located within 200 metres below or above a cliff face; or
- within 20 metres of or in a cave, rock shelter, or cave mouth.

The proposed activity area does comprise such landforms (within 200 m of waters and sand dune).

A literature search was conducted utilising Council's document archive and AHIMS on 22 November 2022, repeated and confirmed on 5 August 2024. No Aboriginal cultural heritage sites were recorded within the subject site. The nearest Aboriginal cultural heritage site is within a location that will not be impacted on by the proposed activity.

The river front environment could also be described as 'disturbed land' as defined by the Due Diligence Code), i.e.:

*Land is disturbed if it has been the subject of a human activity that has changed the land's surface, being changes that remain clear and observable. Examples include ploughing, construction of rural infrastructure (such as dams and fences), construction of roads, trails and tracks (including fire trails and tracks and walking tracks), clearing vegetation, construction of buildings and the erection of other structures, construction or installation of utilities and other similar services (such as stormwater drainage and other similar infrastructure) and construction of earthworks."*

Accordingly, the proposed activity is within disturbed land as the lands have been subjected to continued disturbance through active, natural coastal processes. The Due Diligence Code states that if the subject site does contain one of the above listed features and is on land that is not disturbed, then Step 3 must occur. As the proposed activity is within disturbed land, and there are no known Aboriginal objects within the subject site, it can proceed with caution and Step 3 is not required.

Step 3 of the Due Diligence Code applies if the activity is on land that is not disturbed or contains known Aboriginal objects. Due to the nature of the activity, i.e., dog walking, it can be determined that disturbance of the landscape feature(s) can be avoided. Therefore, the proposed activity can proceed with caution and Step 4 (which includes further investigation by a competent person), is not required.

Signage installation in additional locations where signposts are not already present has potential to cause harm to Aboriginal objects or disturbance to landscape features. In this case, Step 4 (which includes further investigation by a competent person) will be applied.

In the context of this environmental assessment the area to be affected by the proposed activity:

- is subject to undetermined Aboriginal Land Claims.
- is not an Aboriginal Place in the context of the NPW Act.

In consideration of the above, it is reasonable to conclude that there is a low probability of Aboriginal objects being impacted by the proposed activity. As a result, an AHIP is not required for the proposed activity.

### 5.3.2 Non-Indigenous

No heritage items listed under Schedule 5 of the SLEP 2014 are recorded within the study area.

The proposed activity would not involve, or be close to, items on the state heritage list. No further consideration is warranted.

# 6 Consultation

This REF was prepared in consultation with internal and external stakeholders. This section reports on the stakeholders involved and the submissions received in relation to the proposed activity.

## 6.1 Department of Primary Industries and Regional Development (NSW Fisheries)

DPIRD - NSW Fisheries were consulted during the development of this REF to confirm the assessments of the impacts on FM Act listed matters – seagrasses and mangroves, and is satisfied that the REF assessment of the proposed activity is adequate.

## 6.2 Department of Climate Change, Energy, the Environment and Water (DCCEEW)

The NPWS Shorebird Ranger for the Shoalhaven region was consulted during the development of this REF. Corroborating evidence of threatened and migratory shorebird nesting locations was provided as well as mitigation measures, which have been incorporated into the safeguards and mitigation measures in Section 8.

## 6.3 Council Departments

This REF has been prepared in consultation with Council's Environmental Services Department, Ranger Services and Open Space and Recreation Planning Units. Ranger Services has confirmed a monitoring presence will continue at River Road Reserve. Other internal representatives from various council teams were also consulted and attended internal workshops, including Shoalhaven Animal Shelter, Tourism, Community Engagement, and Property. The mitigation measures in Section 8 have been developed in accordance with this consultation.

## 6.4 Community

Council undertook a comprehensive review of Access Areas for Dogs Policy (endorsed by Council in 2023), which involved community and stakeholder engagement. The Council provided workshops, drop-in sessions, online surveys, and Council submissions to allow community members and relevant stakeholders to share their views on dog off-leash access areas in the Shoalhaven LGA. The Community Engagement Summary Report released on 7 December 2021 revealed that external stakeholder input included:

- Jervis Bay Marine Park/Department of Primary Industries and Regional Develop
- DCCEEW
- NPWS
- Destination NSW
- Destination Sydney Surrounds South
- Shoalhaven Tourism Advisory Group.

There were 123 community working group members engaged in the consultation which included a range of demographics reflecting the Shoalhaven community, including both dog and non-dog owners, dog trainers, members of Community Consultative Bodies (CCB), business operators, people living with disabilities and shorebird rescue organisations. There were 1,396 survey respondents (80.6% were residents, 14.6% ratepayers (but not full-time residents) and 4.8% visitors) and 216 community members engaged in five public drop-in sessions located at Plantation Point Reserve in Vincentia, Mollymook Beach in Mollymook, Broughton Court in Berry, Jellybean Park in Nowra and

outside Ulladulla Civic Centre. Council also received 108 submissions from residents, visitors, and community groups.

The various submissions received both supported and raised concerns with the proposed activity, including issues such as:

- Signage – confusion regarding the boundaries of off-leash, on-leash and prohibited dog areas, inconsistent and confusing messaging, a lack of signage at access points, non-visual signs making it difficult for other language groups, no indication of offences on signs.
- Compliance – ranger presence, dog off-leash activity outside of designated hours, and people not picking up after their dogs.
- User conflict and safety – conflict between river-users with and without dogs, and conflict between dogs and native fauna.

The mitigation measures in Section 8 have been developed in accordance with the consultation undertaken, notably:

- Increased Council Ranger presence.
- Increased and improved signage that is clear and consistent across the Shoalhaven.
- Dog prohibited buffer between off-leash area and sensitive areas or of high biodiversity value.
- The provision of rubbish bins for dog faeces.
- Liaison with NPWS South Coast Shorebird Recovery Program Coordinator.

Council's Access Areas for Dogs Policy and associated Dog Off-leash Guide provides dog owners with public domain conduct guidelines as well as defining dog off-leash, on-leash and prohibited areas within the ownership, management, care, and control of Council.

Signage and supporting infrastructure will need to be erected to ensure community awareness, and compliance with the CA Act and Council's Access Areas for Dogs Policy.

# 7 Impact Assessment

## 7.1 Threatened fauna

The impact of the proposed activity on the species listed in Section 5.2 has been assessed in the Test of Significance (BC Act listed entities) presented in Appendix 3, the Significant impact Criteria Assessment (EPBC listed matters) presented in Appendix 4, and the Assessment of Significance (FM Act listed entities) presented in Appendix 5. These assessments conclude the proposed activity will not have a significant impact on threatened fauna species or their habitat, with the implementation of adequate geographic limitations and prescribed mitigation measures. Factors considered in this assessment are discussed further below. Impacts on threatened fauna species that have habitat preferences for those outside of the intertidal or beach habitat, and subject site, is expected to be negligible.

This section focusses primarily on threatened shorebirds as these are the species assessed as likely to occur and have habitat that intersects with, or is potentially indirectly impacted on by, the proposed activity.

In a review of the impacts of dogs on nesting shorebirds, Maguire (2018) detailed the following impacts:

- Disturbance: 'chasing and the unpredictable movement, proximity and speed of unrestrained dogs can lead to the prolonged absence of adult shorebirds from the nest.
- Egg predation.
- Egg crushing.
- Chick predation.

Maguire (2018) concluded that, while dog-free areas are the most effective at protecting shorebirds, this must be combined with alternative off-leash areas to promote greater compliance in more environmentally sensitive areas where dogs are prohibited.

Long-term conservation programs for beach-nesting birds often focus on achieving coexistence between recreation and wildlife. In some management strategies, dog owners were requested to leash their dogs when approaching and passing vulnerable habitat areas. Maguire (2018) observed low compliance with leashing regulations and suggested that this is an ineffective approach. The alternative, which involves prohibiting dog access from these sensitive beaches, is typically met with conflict and division within the community as dog owners are faced with the risk of losing access (Johnston *et al.* 2013). A proposed solution to this issue is to provide a dog off-leash area in low-risk zones to divert users away from environmentally sensitive habitat areas, which remain dog-prohibited areas.

The Australian Government's former Department of Energy and Environment (DoEE 2017; Policy Statement 3.21) states '*Options for mitigating impacts from disturbance include the use of buffer zones around important areas for migratory shorebirds. Appropriate buffers will depend on local circumstances, including the species present, type of habitat (ephemeral or permanent), habitat use (roosting or foraging) and scale of disturbance. As a guide, studies have recommended buffer zones with widths ranging from 165 metres to 255 metres*'.

This guide has been applied in this assessment for shorebirds generally (not only migratory birds), as a precautionary guide, in the absence of more detailed local information. The buffer distances provided by the current dog-prohibited areas at the nearby Shoalhaven Inlet exceeds these recommendations. These distances are considered adequate to ensure these habitats are not impacted on by the proposed activity. Furthermore, it must be noted that SCC need to abide by these threatened shorebird buffer distances as a Crown Land licence holder for entrance interventions of

Intermittently Closed and Open Lakes and Lagoons (ICOLLs) and river mouths. Such conditions are set and mandated by the NSW Government.

Threatened marine species that spawn in or otherwise spend time in the estuary environment as juveniles or adults have been considered in this REF, due to the presence of the Shoalhaven/Crookhaven Estuary at the subject site, and dog off-leash access to the waterway. Hennings (2016) found that disturbance to estuaries through dog water activity can induce a stress response for wildlife or repel them from the area, which may impact on reproduction and survival. Dog waste may also impact water quality within the estuary. However, as outlined by Maguire above, dedicated dog off-leash areas promote greater compliance in more environmentally sensitive areas.

Tests of Significance have been undertaken for the following threatened species listed under the BC Act that have been recorded or are considered to potentially occur within the subject site:

- Australian Grayling *Prototroctes maraena,* listed as Endangered
- Australian Pied Oystercatcher *Haematopus longirostris,* listed as Endangered
- Beach Stone-curlew *Esacus magnirostris,* listed as Critically Endangered
- Black-tailed Godwit *Limosa limosa,* listed as Vulnerable
- Broad-billed Sandpiper *Limicola falcinellus,* listed as Vulnerable
- Eastern Osprey *Pandion cristatus*, listed as Vulnerable
- Great Knot *Calidris tenuirostris,* listed as Vulnerable
- Green Turtle *Chelonia mydas*, listed as Vulnerable
- Lesser Sand Plover *Charadrius mongolus,* listed as Vulnerable
- Little Tern *Sternula albifrons,* listed as Endangered
- Regent Honeyeater *Anthochaera Phrygia,* listed as Critically Endangered
- Sanderling *Calidris alba,* listed as Vulnerable
- Sooty Oystercatcher *Haematopus fuliginosus,* listed as Vulnerable
- Terek Sandpiper *Xenus cinereus,* listed as Vulnerable
- White-bellied Sea Eagle *Haliaeetus leucogaster*, listed as Vulnerable
- White-fronted Chat *Epthianura albifrons,* listed as Vulnerable
- White's Seahorse *Hippocampus whitei*, listed as Endangered

The Tests of Significance in Appendix 3 Test of Significance (BC Act) have determined that the impact of the proposed activity on these species is negligible.

Assessments in accordance with the Commonwealth Significant Impact Guidelines 1.1 have been undertaken for the following threatened and migratory species listed under the EPBC Act that have been recorded or are considered to potentially occur within the subject site:

<u>Critically Endangered</u>

- Eastern Curlew *Numenius madagascariensis*
- Great Knot *Calidris tenuirostris*
- Regent Honeyeater *Anthochaera phrygia*

Endangered

- Lesser Sand Plover *Charadrius mongolus*
- Red Knot *Calidris canutus*
- White's Seahorse *Hippocampus whitei*

Vulnerable

- Australian Grayling *Prototroctes maraena*
- Greater Sand Plover *Charadrius leschenaultii*
- Green Turtle *Chelonia mydas*
- Nunivak Bar-tailed Godwit *Limosa lapponica baueri*

Migratory

- Australian Gull-Billed Tern *Gelochelidon macrotarsa*
- Bar-tailed Godwit *Limosa lapponica*
- Black-tailed Godwit *Limosa limosa*
- Broad-billed Sandpiper *Limicola falcinellus*
- Caspian Tern *Hydroprogne caspia*
- Common Tern *Sterna hirundo*
- Double Banded Plover *Charadrius bicinctus*
- Eastern Curlew *Numenius madagascariensis*
- Eastern Great Egret *Ardea alba modesta*
- Fork-tailed Swift *Apus pacificus*
- Great Knot *Calidris tenuirostris*
- Greater Crested Tern *Thalasseus bergii*
- Greater Sand Plover *Charadrius leschenaultia*
- Green Turtle *Chelonia mydas*
- Grey Plover *Pluvialis squatarola*
- Grey-tailed Tattler *Tringa brevipes*
- Pacific Golden Plover *Pluvialis fulva*
- Red-necked Stint *Calidris ruficollis*
- Regent Honeyeater *Anthochaera phrygia*
- Ruddy turnstone *Arenaria interpres*
- Sanderling *Calidris alba*
- Sharp-tailed Sandpiper *Calidris acuminata*
- Terek Sandpiper *Xenus cinereus*
- Whimbrel *Numenius phaeophus*

- White-throated Needletail *Hirundapus caudacutu*

The assessments against the Significant Impact Criteria (EPBC Act) have determined that the impact of the proposed activity on these species is negligible.

Assessments of Significance have been undertaken for the following threatened species and habitats listed under the FM Act that have been recorded or are considered to potentially occur within the subject site:

**Fish**

- Australian Grayling *Prototroctes maraena,* listed as Endangered
- White's Seahorse *Hippocampus whitei*, listed as Endangered

**Fish Habitat**

- *Zostera capricorni* seagrass
- *Avicennia marina* Mangroves

The Assessments of Significance in Appendix 5 have determined that the impact of the proposed activity on these species and habitats is negligible.

## 7.2 Threatened flora and ecological communities

The patch of vegetation along the foreshore south of the break wall is confirmed as the TEC *Bangalay Sand Forest in the Sydney Basin and South East Corner Bioregions* listed under the BC Act. A Test of Significance was conducted for this TEC (Appendix 3 Test of Significance (BC Act)) which determined that the impact of the proposed activity on this TEC is negligible.

Due to the character of the subject site, i.e., a sand beach, the impacts of the proposed activity on the TEC Bangalay Sand Forest in the Sydney Basin and South East Corner have been assessed as negligible. The access tracks to the foreshore are long-established through the TEC foredune vegetation and are maintained by Council, regardless of dog access. Given the nature of these tracks, it is unlikely that any additional impacts (direct or indirect) on the TEC in response to the proposed activity will occur.

The estuarine macrophyte *Zostera capricorni* (eelgrass) is mapped close to the shore of the subject site and mangroves are mapped within the vicinity and both listed threatened fish habitat under the FM Act. An Assessment of Significance was conducted for these habitats (Appendix 5) which determined that the impact of the proposed activity on these is negligible.

There are no threatened flora species considered likely to occur within the subject site.

## 7.3 Social impact

Community and social values of the subject site and study area are described in Section 2.3.

The subject site is located within Community Land and is frequently used as a public reserve for social and recreational activities.

SCC's Access Areas for Dogs Policy states as a goal: to 'support a risk-based approach to the designation and management of dog control areas to balance social and environmental needs in accordance with legislation.'

The proposed activity will not impact on views, community services and infrastructure such as water, waste management, educational, medical or social services.

The social risks that are associated with dog off-leash access include potential injury or death from dog attack, incompatibility between different groups of beach users, conflict between different groups of users, and broader social disharmony as the community is polarised by dog access preferences that have been dictated by environmental and social constraints.

The public currently use River Road Reserve as a 24-hour dog off-leash access area throughout the year. These time arrangements have been monitored by SCC's Ranger Services. Such monitoring has revealed a low incidence of social conflict. As such, these arrangements will remain in place and monitoring will continue and adjustments can be made in future years if the social conflicts between recreational user groups increase.

Shoalhaven Heads is a popular tourist destination with a holiday park located at the eastern end of River Road Reserve, with direct access to the foreshore. Existing infrastructure in the area includes boat ramps, playgrounds, parkland, and fishing and boating facilities. The foreshore reserve consists of carparks and amenities blocks in two locations, and there are viewing platforms regularly used for bird watching, fishing and other associated activities.

There is no present indication that the current use of the foreshore for 24-hour dog off-leash access and for other recreational activities and tourist access, is in conflict and as such, there is no proposed changes to the off-leash arrangements for this site.

# 8 Impact mitigation

Mitigation hierarchy provides a multi-step approach to limit the amount of harm an action will have. Avoidance is the primary and preferential level of the hierarchy, resulting in no harm. This is followed by minimisation measures that aim to reduce the duration, intensity and/or extent of the impacts that are unable to be completely avoided. Offsetting is typically the final level of the hierarchy whereby unavoidable harm is compensated for elsewhere.

An adaptive management framework has been established for the subject site for the proposed activity. The implementation of management actions can be adjusted based on monitoring to ensure required outcomes are met.

Following the detailed assessment of environmental factors relating to the proposed activity in Section 5, consultation outcomes in Section 6 and the assessment of potential impact in Section 7, the following safeguards are required to mitigate potential impacts of the proposed activity on the community and environment (Table 4; Figure 4).

*Table 4 Environmental safeguard and mitigation measures for potential impacts on the community and the environment in response to the proposed activity.*

| Category | Type of Impact | Safeguard/Mitigation Measure |
|---|---|---|
| Flora and Fauna | Loss of threatened species and associated habitats | A dog-prohibited buffer area between the off-leash area and the prohibited area at Shoalhaven Heads Inlet of 250 metres will be maintained |
| | | Signage clearly detailing the dog off-leash area and dog prohibited areas will ensure dog owners and dog walkers and dog owners are aware of these. |
| | | Educational signage regarding the presence of and threat of dogs on threatened shorebirds will be updated at priority access points. |
| | | Council's Environmental Services Department will liaise with National Parks and Wildlife Service (NPWS) South Coast Shorebird Recovery Program Coordinator on a regular basis, including key breeding season times. This will enable the provision of further subject matter expertise and a regulatory influence from NPWS, to inform adaptive management of controls. |
| | | Mitigation measures will be revised, as required, to ensure threatened and migratory shorebirds are adequately protected. Council will collaborate with NPWS South Coast Shorebird Recovery Program Coordinator regarding any revised mitigation measures. Additional measures to be considered will include boundary changes of the access areas in response to seasonal shorebird nesting sites, increased presence of Council Rangers at key times, and fencing nest sites to clearly demarcate the presence of nesting shorebirds. |
| | | If a nest or nesting birds are detected within or immediately adjacent to the subject site, mitigation measures will be adapted in consultation with the NPWS Shorebird Recovery Coordinator (or similar expert), to minimise risk of disturbance to the birds and ensure their protection. |
| | Vegetation clearing for signage installation | Signage installation will utilise existing posts where possible. No vegetation clearing will be necessary for the installation of additional signage / maintenance of access tracks. Where new posts may be required this will be positioned to avoid the need to remove native vegetation. Council's Land Management Unit will advise on timing of installation and locations of new posts to ensure threatened shorebird nesting and foraging habitat is not impacted on. |

| Category | Type of Impact | Safeguard/Mitigation Measure |
|---|---|---|
| | Trail proliferation and trampling | Only existing access tracks will be utilised to ensure surrounding vegetation remains undisturbed. If the vegetation surrounding the access tracks become disturbed or degraded, fencing will be installed to confine beach users to the access tracks only. |
| | Invasive plant species | Equipment used for signage installation and ancillary works will be washed prior to entering and leaving the subject site to ensure invasive plant species are not introduced or transported.<br>The vegetated section the subject site foreshore is a local Bushcare site, who monitor for weeds and rehabilitate with appropriate local species, offsetting recreational impacts by improving the condition of the vegetation community over time. |
| Water | Water pollution – dog waste | Dog owners/walkers are required to clean up dog faeces under the CA Act. The provision of bins as well as compliance activities will help to facilitate appropriate waste disposal and enforce this obligation as required. |
| Heritage items | Aboriginal heritage – unexpected finds of heritage items | If Aboriginal heritage items are uncovered during signage installation and ancillary works, all works will cease and the steps under the NSW Department of Climate Change, Energy, the Environment and Water's Due Diligence Code of Practice for the Protection of Aboriginal Objects will be followed. |
| | Non-indigenous heritage – unexpected finds of heritage items | If heritage items listed under the *Shoalhaven Local Environmental Plan 2014* or the State Heritage List are uncovered during signage installation and ancillary works, all works will cease, and a statement of heritage impact will be prepared. |
| Noise | Noise during dog off-leash hours and sign installation | Reports or complaints made to Council regarding noise will be monitored. |
| | | The works involved in signage installation will be very short term and the noise generated will occur during normal working hours. There are no sensitive receivers in the vicinity of the proposed activity. |
| Social | Impact on other beach users | Dog owners/walkers are required to always have control of their dogs and are responsible for waste disposal from dog faeces under the CA Act. Compliance activities will help to enforce this obligation. |
| | | Signage clearly detailing the off-leash area and dog-prohibited areas will ensure dog owners are aware of these as per the CA Act (Section 14(1)(d)). |

| Category | Type of Impact | Safeguard/Mitigation Measure |
|---|---|---|
| | | Regular monitoring by Council Rangers to enforce compliance, and to provide additional assurance especially to monitor for the presence of dogs in the prohibited area at Shoalhaven Inlet. The presence of Council Rangers will also enable the provision of education to the community. |
| | | A penalty infringement notice will be issued, following an initial caution, for any repeat offenders observed during regular inspections. |
| | | An adaptive management approach will be incorporated into the ongoing monitoring and maintenance of the subject site, which will respond to changes including threatened species distribution and resulting from ongoing and regular assurance activities with stakeholders. |
| Waste minimisation and management | Amenity and pollution | Garbage bins are located at main access points to the off-leash zone to promote compliance. |

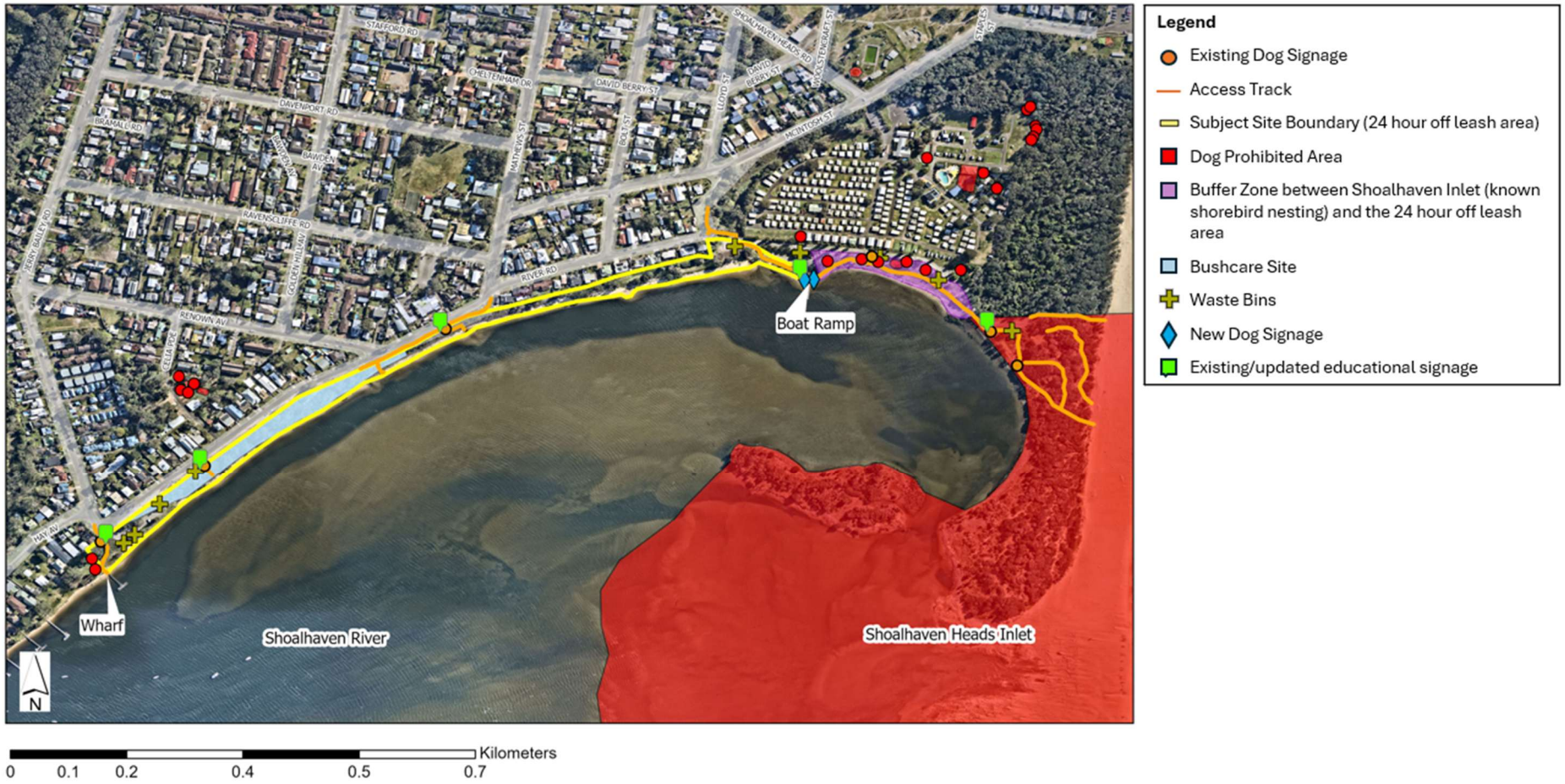


*Figure 4 Impact mitigation measures for River Road Reserve subject site (24-hour dog access area).*

# 9 Determination

This REF has assessed the likely environmental impacts, in the context of Part 5 of the EP&A Act of a proposed activity by Shoalhaven City Council to permit dogs off-leash on a stretch of River Road Reserve, including the associated signage installation.

Shoalhaven City Council has considered the potential environmental effects of the proposed activity and the effectiveness and feasibility of measures for reducing or preventing detrimental effects. It is determined that:

1. The proposed safeguards identified in the report (Section 8) shall be maintained/adopted and implemented.
2. It is unlikely that there will be any significant environmental impact from the proposed activity and an Environmental Impact Statement is not required for the proposed activity.
3. The proposed activity is not likely to significantly affect threatened species or ecological communities, or their habitats for the purposes of the NSW *Biodiversity Conservation Act 2016*, and entry into the Biodiversity Offset Scheme or preparation of a Species Impact Statement is not required.
4. The proposed activity is not likely to significantly affect the threatened species, populations, ecological communities or critical habitats, for the purposes of the NSW *Fisheries Management Act 1994*, and a Species Impact Statement is not required.
5. The proposed activity is not a 'controlled action' for the purposes of the Commonwealth *Environmental Protection and Biodiversity Conservation Act 1999* and referral to the Commonwealth Environment Minister is not required.

Michael Roberts

Dr Michael Roberts

**Manager, Environmental Services**

Shoalhaven City Council Date: 22/11/2024

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# Appendix 1 Photographs of the subject site


Plate 1: Signage located at southern end of River Road Reserve, the beginning of the current dog off-leash area.


Plate 2: Signage located along River Road Reserve.

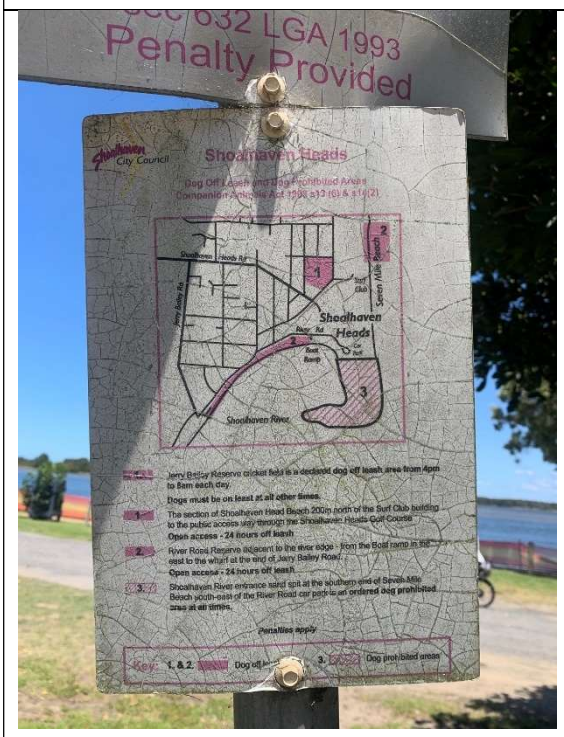


Plate 3: Signage located at River Road Reserve, at the northern end of the dog off-leash access area.

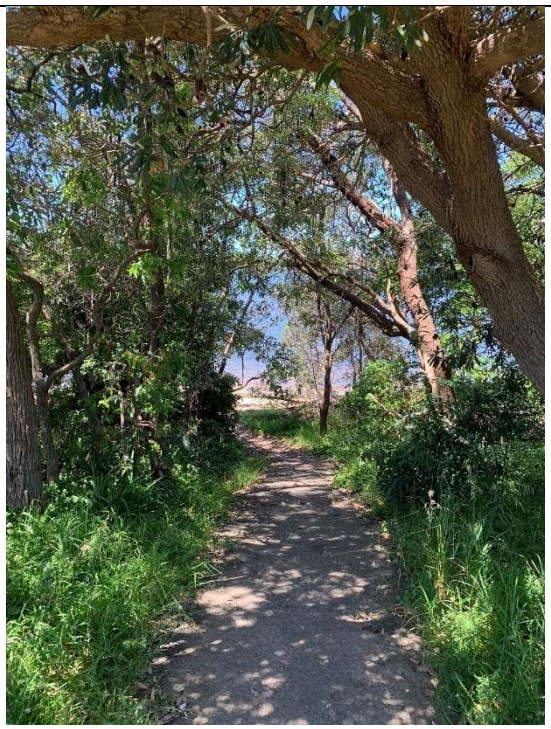

Plate 4: Access track to River Road Reserve foreshore towards the southern end of the dog off-leash access area.

Plate 5: Southern end of River Road Reserve. The dog off-leash access area ends at the wharf.

Plate 6: Amenities at southern carpark of dog off-leash access area and beginning of the River Road Bushcare Site

Plate 7: Southern end of River Road Reserve.

Plate 8: Middle portion of River Road Reserve. A rock revetment wall occurs along this section of the reserve.

Plate 9: Viewing platform and pathway which borders the mid-section of River Road Reserve.

Plate 10: Northern end of River Road Reserve. The off-leash area ends at this boat ramp.

Plate 11: Northern aspect of River Road Reserve at the dog off-leash access area.

Plate 12: River Road Reserve north-east of the boat ramp. Dogs must be on-leash in this area.


Plate 13: Signage located at end of River Road Reserve indicating the beginning of the prohibited zone from the west.


Plate 14: Signage located at access track to Shoalhaven Heads Beach indicating beginning of the prohibited zone from the north.


Plate 15: Signage located at access track leading to Shoalhaven Heads Inlet.

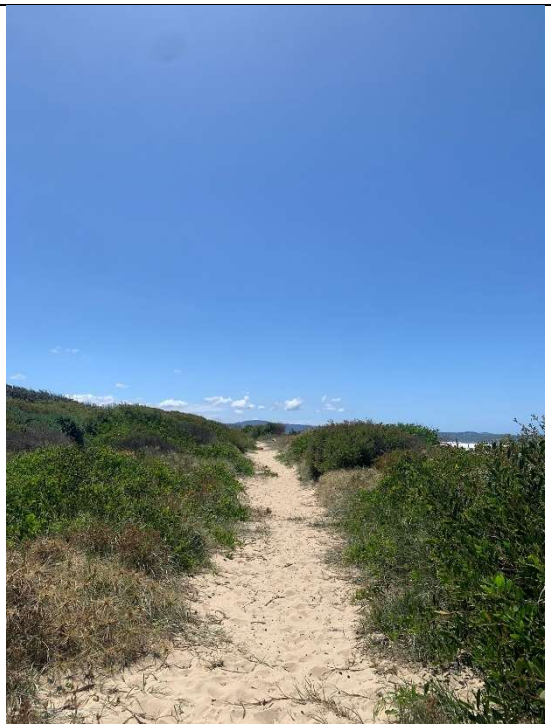

Plate 16: Sand dune track which runs along the foredune of Shoalhaven Heads Beach in the dog prohibited area.

Plate 17: Northern aspect of Shoalhaven Heads Inlet where the Shoalhaven River enters the ocean.

Plate 18: Dominant vegetation on Shoalhaven Heads Beach foredune in the prohibited area.

# Appendix 2 Likelihood of occurrence assessment

An assessment of likelihood of occurrence was made for threatened and migratory species identified from database searches (Council's GIS Enquiry, Birdata and BioNet) and site visits (section 1.4). Likelihood of occurrence was assessed for species listed under BC Act and EPBC Act that have been previously recorded within the locality.

The terms for likelihood of occurrence (Table 5) are defined as below:

- High – the species was or has been observed/recorded on the site, and/or the site provides important habitat known to the species.
- Medium – the species was or has been observed/recorded on the site, and/or suitable habitat is located on the site, and/or the species is known to occupy the site habitat occasionally.
- Low – the species was or has been observed/recorded near the site. However, the site's habitat is considered unsuitable or unlikely for species to occur to the extent their life cycle would be impacted.

For threatened species determined to have a medium or high likelihood of occurrence listed under the BC Act, a Test of Significance (ToS) pursuant to section 7.3 of the BC Act has been conducted (Appendix 3).

For those listed under the EPBC Act, a Significant Impact Assessment (SIA), in accordance with the Significant Impact Guidelines 1.1 – Matters of National Environmental Significance, has been conducted (Appendix 4).

The following abbreviations are used to indicate the State and Commonwealth Status of species:

- CE = Critically Endangered
- E = Endangered
- V = Vulnerable
- M = Migratory

*Table 5 Threatened species listed under BC Act, FM Act and EPBC Act, recorded in the subject site, study area, or within the locality or predicted to occur within the locality (within ten kilometres)*

| Common name | Scientific name | Legislation | | Habitat associations | Likelihood of occurrence | Significance assessment completed (Appendix 3 and/or 4) |
|---|---|---|---|---|---|---|
| | | BC (or FM) Act | EPBC Act | | | |
| **Birds** | | | | | | |
| Antipodean Albatross | *Diomedea antipodensis* | | V | This species regularly occurs in small numbers off the NSW Coast from Green Cape to Newcastle during winter where they feed on cuttlefish. Although representing a small proportion on its total foraging area, potential forage in NSW waters is nonetheless considered significant for the species. | Low | No – no suitable habitat present. |
| Arctic Jaeger | *Stercorarius parasiticus* | | M | Migratory, when not breeding found in open ocean. Occasionally found on the coast and by large rivers bordered by grassland and moorland. | Low | No – suitable habitat is absent from subject site and species records indicate species is an unlikely visitor of the subject site. |
| Asian Dowitcher | *Limnodromus semipalmatus* | | M | Occurs in sheltered coastal environments, such as embayments, coastal lagoons, estuaries and tidal creeks. They are known to frequent shallow water and exposed mudflats or sandflats. The species is commonly found in the round ponds and channels of saltworks | Low | No – species records indicate presence is unlikely at the subject site. May be associated with Shoalhaven Heads Spit – 250 metres to the east of the subject site. |

| Common name | Scientific name | Legislation | | Habitat associations | Likelihood of occurrence | Significance assessment completed (Appendix 3 and/or 4) |
|---|---|---|---|---|---|---|
| | | BC (or FM) Act | EPBC Act | | | |
| | | | | and sewage farms. It is also found at near-coastal swamps and lakes. | | |
| Australasian Bittern | *Botaurus poiciloptilus* | E | E | Favours permanent freshwater wetlands with tall, dense vegetation, particularly bullrushes (*Typha* spp.) and spike rushes (*Eleocharis* spp.). | Low | No – suitable habitat is absent from the subject site and species records indicate presence is unlikely at the subject site. May be associated with Shoalhaven Heads Spit 250 metres to the east of the subject site. |
| Australian Fairy Tern | *Sternula nereis nereis* | | V | The Fairy Tern (Australian) nests on sheltered sandy beaches, spits and banks above the high tide line and below vegetation. | Low | No – it is unknown if this species persists on the NSW Coast. |
| Australian Gull-billed Tern | *Gelochelidon macrotarsa* | | M | Found both coastally and inland in a variety of wetland habitats, including beaches, mudflats, freshwater marshes, and even wet fields. The species nests in a ground scrape and is an opportunistic feeder, known to forage in flight and in brushy areas. | High | **Yes** – (SIA, Appendix 4)<br>The species has been recorded at the subject site and suitable foraging and nesting habitat is located within the subject site. |
| Australian Painted Snipe | *Rostratula australis* | E | E | Prefers fringes of swamps, dams and nearby marshy areas where | Low | No – no suitable habitat. |

| Common name | Scientific name | Legislation | | Habitat associations | Likelihood of occurrence | Significance assessment completed (Appendix 3 and/or 4) |
|---|---|---|---|---|---|---|
| | | BC (or FM) Act | EPBC Act | | | |
| | | | | there is a cover of grasses, lignum, low scrub or open timber. | | |
| Australian Pied Oystercatcher | *Haematopus longirostris* | E | | Favours intertidal flats of inlets and bays, open beaches and sandbanks. Coastal of estuarine beaches. | High | **Yes** – (ToS, Appendix 3)<br>The species has been recorded at the subject site and suitable habitat is present. |
| Bar-tailed Godwit | *Limosa lapponica* | | V | Coastal habitats such as large intertidal sandflats, banks, mudflats, estuaries, inlets, harbours, coastal lagoons and bays. Less frequently, it occurs in salt lakes and brackish wetlands, sandy ocean beaches and rock platforms. | High | **Yes** – (SIA Appendix 4)<br>The species has been recorded at the subject site and suitable habitat is present. |
| Beach Stone-curlew | *Esacus magnirostris* | CE | | Forage in the intertidal zone of beaches and estuaries, on islands, flats, banks and spits of sand, mud, gravel or rock, and among mangroves. Beach Stone-curlews breed above the littoral zone, at the backs of beaches, or on sandbanks and islands, among low vegetation of grass, scattered shrubs or low trees; also among open mangroves. | Medium | **Yes** - (ToS, Appendix 3)<br>The species has been recorded at the subject site and suitable habitat is present. |

| Common name | Scientific name | Legislation | | Habitat associations | Likelihood of occurrence | Significance assessment completed (Appendix 3 and/or 4) |
|---|---|---|---|---|---|---|
| | | BC (or FM) Act | EPBC Act | | | |
| Black Bittern | *Ixobrychus flavicollis* | V | | Inhabits both terrestrial and estuarine wetlands, generally in areas of permanent water and dense vegetation. Where permanent water is present, the species may occur in flooded grassland, forest, woodland, rainforest and mangroves. | Low | No – species distribution is typically north of Sydney. Occurrence is rare at the subject site. |
| Black-browed Albatross | *Thalassarche melanophris* | | V | Marine and pelagic. | Low | No – not suitable habitat present. |
| Black-necked Stork | *Ephippiorhynchus asiaticus* | E | | Floodplain wetlands (swamps, billabongs, watercourses and dams) of the major coastal rivers are the key habitat in NSW. Secondary habitat includes minor floodplains, coastal sandplain wetlands and estuaries. | Low | No – species records indicate presence is unlikely at the subject site. |
| Black-tailed Godwit | *Limosa limosa* | V | M | Found in sheltered bays, estuaries, lagoons with large intertidal mudflats and/or sandflats. | Medium | **Yes** – (ToS, Appendix 3; SIA, Appendix 4)<br>The species has been recorded near the subject site and suitable habitat is present. |
| Blue-billed Duck | *Oxyura australis* | V | | Prefers deep water in large permanent wetlands and swamps with dense aquatic vegetation. The species is completely | Low | No – suitable habitat in the form of wetland areas is not located within the subject site. |

| Common name | Scientific name | Legislation | | Habitat associations | Likelihood of occurrence | Significance assessment completed (Appendix 3 and/or 4) |
|---|---|---|---|---|---|---|
| | | BC (or FM) Act | EPBC Act | | | |
| | | | | aquatic, swimming low in the water along the edge of dense cover. It will fly if disturbed, but prefers to dive if approached. | | |
| Blue-winged Parrot | *Neophema chrysostoma* | | V | Inhabits a range of habitats from coastal, sub-coastal and inland areas, right through to semi-arid zones. Throughout their range, they favour grasslands and grassy woodlands. They are often found near wetlands both near the coast and in semi-arid zones. | Low | No – not suitable habitat present. |
| Broad-billed Sandpiper | *Limicola falcinellus* | V | M | Found in sheltered parts of the coast such as estuarine sandflats and mudflats, harbours, embayments, lagoons, saltmarshes and reefs. Occasionally, individuals may be recorded within shallow freshwater lagoons. | Medium | **Yes** – (ToS, Appendix 3; SIA, Appendix 4)<br>The species has been recorded near the subject site and suitable habitat is present. |
| Brown Treecreeper | *Climacteris picumnus victoriae* | | V | Occurs in eucalypt forests and woodlands of inland plains and slopes of the Great Dividing Range. It is less commonly found on coastal plains and ranges. | Low | No – suitable habitat is not present. |

| Common name | Scientific name | Legislation | | Habitat associations | Likelihood of occurrence | Significance assessment completed (Appendix 3 and/or 4) |
|---|---|---|---|---|---|---|
| | | BC (or FM) Act | EPBC Act | | | |
| Buller's Albatross | *Thalassarche bulleri* | | V | Marine and pelagic. | Low | No – suitable habitat is not present. |
| Bush Stone-curlew | *Burhinus grallarius* | E | | Inhabits open forests and woodlands with a sparse grassy ground layer and fallen timber. | Low | No – species records indicate presence is unlikely at the subject site. |
| Campbell Albatross | *Thalassarche impavida* | | V | Marine and pelagic. | Low | No – suitable habitat is absent. |
| Caspian Tern | *Hydroprogne caspia* | | M | Sheltered coastal habitats including harbours, lagoons, inlets, bays, estuaries, and rivers with sandy or muddy margins. | High | **Yes** – (SIA, Appendix 4)<br>The species has been recorded near subject site and suitable habitat is present. |
| Chatham Albatross | *Thalassarche eremita* | | E,M | This species nests only in the Chatham Islands. Foraging occurs at sea. | Low | No – suitable habitat is not present. |
| Common Greenshank | *Tringa nebularia* | | M | Found both on the coast and inland, in estuaries and mudflats, mangrove swamps and lagoons, and in billabongs, swamps, sewage farms and flooded crops. | Low | No – species records indicate presence is unlikely at the subject site. May be associated with Shoalhaven Heads Spit – 250 metres to the east of the subject site. |
| Common Sandpiper | *Actitis hypoleucos* | | M | Utilises a wide range of coastal wetlands and some inland wetlands, with varying levels of salinity, and is mostly found | Low | No – species distribution is typically in northern and western Australia; species presence is rare. |

| Common name | Scientific name | Legislation | | Habitat associations | Likelihood of occurrence | Significance assessment completed (Appendix 3 and/or 4) |
|---|---|---|---|---|---|---|
| | | BC (or FM) Act | EPBC Act | | | |
| | | | | around muddy margins or rocky shores and rarely on mudflats. | | |
| Common Tern | *Sterna hirundo* | | M | Commonly observed in near-coastal waters, both on ocean beaches, platforms and headlands and in sheltered waters, such as bays, harbours and estuaries with muddy, sandy or rocky shores. Occasionally recorded in coastal and near-coastal wetlands, either saline or freshwater, including lagoons, rivers, lakes, swamps and saltworks. | Medium | **Yes** – (SIA, Appendix 4)<br>The species has been recorded near the subject site and suitable habitat is present. |
| Curlew Sandpiper | *Calidris ferruginea* | E | CE, M | Coastal areas on low beaches of firm sand, near reefs and inlets, along tidal mudflats and bare open coastal lagoons; individuals are rarely recorded in near-coastal wetlands. | Low | No – species records indicate presence is unlikely at the subject site. More commonly associated with Shoalhaven Heads Spit 250 metres to the east of the subject site. |
| Diamond Firetail | *Stagonopleura guttata* | | V | It is widely distributed in NSW, with a concentration of records from the Northern, Central and Southern Tablelands, the Northern, Central and South Western Slopes and the North West Plains and Riverina. Not | Low | No – no suitable habitat is present. |

| Common name | Scientific name | Legislation | | Habitat associations | Likelihood of occurrence | Significance assessment completed (Appendix 3 and/or 4) |
|---|---|---|---|---|---|---|
| | | BC (or FM) Act | EPBC Act | | | |
| | | | | commonly found in coastal districts, though there are records from near Sydney, the Hunter Valley and the Bega Valley. Found in grassy eucalypt woodlands, including Box-Gum Woodlands and Snow Gum Eucalyptus pauciflora Woodlands | | |
| Double Banded Plover | *Charadrius bicinctus* | | M | Occurs within sheltered, coastal habitats containing large, intertidal mudflats or sandflats, including inlets, bays, harbours, estuaries and lagoons. | High | **Yes** – (SIA, Appendix 4)<br>The species has been recorded at subject site and suitable habitat is present. |
| Dusky Woodswallow | *Artamus cyanopterus* | V | | Primarily inhabit dry, open eucalypt forests and woodlands, including mallee associations, with an open or sparse understorey of eucalypt saplings, acacias and other shrubs, and groundcover of grasses or sedges and fallen woody debris. It has also been recorded in shrublands, heathlands and very occasionally in moist forest or rainforest. Also found in farmland, usually at the edges of forest or woodland. | Low | No – species records indicate presence is unlikely at the subject site. |

| Common name | Scientific name | Legislation | | Habitat associations | Likelihood of occurrence | Significance assessment completed (Appendix 3 and/or 4) |
|---|---|---|---|---|---|---|
| | | BC (or FM) Act | EPBC Act | | | |
| Eastern Bristlebird | *Dasyornis brachypterus* | | E | Dense, low vegetation including heath and open woodland with a heath understorey. There are three main populations: Northern - southern Queensland/northern NSW, Central - Barren Ground NR, Budderoo NR, Woronora Plateau, Jervis Bay NP, Booderee NP and Beecroft Peninsula and Southern - Nadgee NR and Croajingalong NP in the vicinity of the NSW/Victorian border. | Low | No – suitable habitat is not present. |
| Eastern Curlew | *Numenius madagascariensis* | | CE, M | Generally occupies coastal lakes, inlets, bays, estuarine habitats including intertidal mudflats and saltmarsh of sheltered coasts. Has been recorded on open beaches (often near estuaries, and coral reefs and rocky platforms. | High | **Yes** – (SIA, Appendix 4)<br>The species has been recorded at the subject site and suitable habitat is present. |
| Eastern Ground Parrot | *Pezoporus wallicus wallicus* | V | | The Ground Parrot occurs in high rainfall coastal and near coastal low heathlands and sedgelands, generally below one metre in height and very dense (up to 90% projected foliage cover). These habitats provide a high | Low | No - suitable habitat is not present. |

| Common name | Scientific name | Legislation | | Habitat associations | Likelihood of occurrence | Significance assessment completed (Appendix 3 and/or 4) |
|---|---|---|---|---|---|---|
| | | BC (or FM) Act | EPBC Act | | | |
| | | | | abundance and diversity of food, adequate cover and suitable roosting and nesting opportunities for the Ground Parrot, which spends most of its time on or near the ground. When flushed, birds fly strongly and rapidly for up to several hundred metres, at a metre or less above the ground. | | |
| Eastern Hooded Dotterel | *Thinornis cucullatus cucullatus* | CE | V | Sandy ocean beaches, especially those that are broad and flat, with a wide wave-wash zone for feeding, much beach cast seaweed, and backed by sparsely vegetated sand-dunes for shelter and nesting. Occasionally found on tidal bays, estuaries, rock platforms and sandy/rocky covered reefs near sandy beaches. | Low | No – species distribution typically occurs south of Jervis Bay. Records of species within the locality is a rare occurrence and the subject site is not used as a breeding location. |
| Eastern Osprey | *Pandion cristatus* | V | | Favour coastal areas, especially the mouths of large rivers, lagoons and lakes. | Medium | **Yes** – (ToS, Appendix 3)<br>The species has been recorded near the subject site and suitable habitat is present. |

| Common name | Scientific name | Legislation | | Habitat associations | Likelihood of occurrence | Significance assessment completed (Appendix 3 and/or 4) |
|---|---|---|---|---|---|---|
| | | BC (or FM) Act | EPBC Act | | | |
| Fairy Prion | *Pachyptila turtur subantarctica* | | V | The species as a whole has a circumpolar distribution, and probably frequents subtropical waters during the non-breeding period. Breeding occurs on Macquarie Island and a number of other subantarctic islands outside of Australia. | Low | No - suitable habitat is not present. |
| Flame Robin | *Petroica phoenicea* | V | | In NSW, it breeds in upland areas and in winter, many birds move to the inland slopes and plains. Prefers clearings or areas with open understoreys. It is likely that there are two separate populations in NSW, one in the Northern Tablelands, and another ranging from the Central to Southern Tablelands. | Low | No - suitable habitat is not present. |
| Fork-tailed Swift | *Apus pacificus* | | M | In Australia, they mostly occur over inland plains but sometimes above foothills or in coastal areas. They often occur over cliffs and beaches and also over islands and sometimes well out to sea. They also occur over settled areas, including towns, urban areas and cities. They mostly occur over dry or open habitats, including riparian woodland and tea-tree swamps, low scrub, heathland or saltmarsh. | Medium | **Yes** – (SIA, Appendix 4)<br>The species has been recorded near the subject site and suitable habitat is present. |

| Common name | Scientific name | Legislation | | Habitat associations | Likelihood of occurrence | Significance assessment completed (Appendix 3 and/or 4) |
|---|---|---|---|---|---|---|
| | | BC (or FM) Act | EPBC Act | | | |
| Gang-gang Cockatoo | *Callocephalon fimbriatum* | V | E | In spring and summer, generally found in tall mountain forests and woodlands, particularly in heavily timbered and mature wet sclerophyll forests. In autumn and winter, the species often moves to lower altitudes in drier more open eucalypt forests and woodlands, particularly box-gum and box-ironbark assemblages, or in dry forest in coastal areas and often found in urban areas. | Low | No – suitable habitat is absent from the subject site. |
| Gibson's Albatross | *Diomedea antipodensis gibsoni* | | V | This species regularly occurs in small numbers off the NSW south coast from Green Cape to Newcastle during winter where they feed on cuttlefish. | Low | No – suitable habitat is absent from the subject site. |
| South-eastern Glossy Black-Cockatoo | *Calyptorhynchus lathami* | V | V | Inhabits open forest and woodlands of the coast and the Great Dividing Range where stands of sheoak occur. Black Sheoak (*Allocasuarina littoralis*) and Forest Sheoak (*A. torulosa*) are important foods. | Low | No – suitable habitat is absent from the subject site. |
| Gould's Petrel | *Pterodroma leucoptera leucoptera* | | E | Breeds on Cabbage Tree Island. Range and feeding areas unknown. | Low | No – suitable habitat is absent from the subject site. |

| Common name | Scientific name | Legislation | | Habitat associations | Likelihood of occurrence | Significance assessment completed (Appendix 3 and/or 4) |
|---|---|---|---|---|---|---|
| | | BC (or FM) Act | EPBC Act | | | |
| Eastern Great Egret | *Ardea alba modesta* | | M | This species forages in shallow freshwater wetlands and swamps. Nests in trees of up to 20 metres in height, often located in mangrove areas. | Medium | **Yes** – (SIA, Appendix 4)<br>The species has been recorded near the subject site and suitable habitat is present. |
| Great Knot | *Calidris tenuirostris* | V | CE, M | Found in sheltered inlets, bays, lagoons and estuaries with intertidal mudflats, often near spits, islets and banks and, sometimes, on protected sandy or coralline shores. | Medium | **Yes** – (ToS, Appendix 3; SIA, Appendix 4)<br>The species has been recorded near the subject site and suitable habitat is present. |
| Greater Crested Tern | *Thalasseus bergii* | | M | Coastal areas including open shores, low lying sandy, rocky, or coral island, low-lying sandy, rocky or coral islands and sometimes shrubland. | High | **Yes** – (SIA, Appendix 4)<br>The species has been recorded near the subject site and suitable habitat is present. |
| Greater Sand Plover | *Charadrius leschenaultii* | | V, M | Entirely within coastal areas. Occupies sheltered sandy, shelly or muddy beaches or estuaries with large intertidal mudflats or sandbanks. | Medium | **Yes** – (SIA, Appendix 4)<br>The species has been recorded near subject site and suitable habitat is present. |
| Grey Falcon | *Falco hypoleucos* | | V | Usually restricted to shrubland, grassland and wooded watercourses of arid and semi-arid regions, although it is occasionally found in open woodlands near the coast. Also | Low | No - suitable habitat is not present. |

| Common name | Scientific name | Legislation | | Habitat associations | Likelihood of occurrence | Significance assessment completed (Appendix 3 and/or 4) |
|---|---|---|---|---|---|---|
| | | BC (or FM) Act | EPBC Act | | | |
| | | | | occurs near wetlands where surface water attracts prey. The Grey Falcon is sparsely distributed in NSW, chiefly throughout the Murray-Darling Basin, with the occasional vagrant east of the Great Dividing Range. | | |
| Grey Plover | *Pluvialis squatarola* | | M | Almost entirely in coastal areas, where they usually inhabit sheltered embayment's, estuaries and lagoons with mudflats and sandflats, and occasionally on rocky coasts with wave-cut platforms or reef-flats, or on reefs within muddy lagoons. Forage on expose mudflats and beaches of sheltered coastal shores. | Medium | **Yes** – (SIA, Appendix 4)<br>The species has been recorded near the subject site and suitable habitat is present. |
| Grey-tailed Tattler | *Tringa brevipes* | | M | Found on sheltered coasts with reefs and rock platforms or with intertidal mudflats. Also be found at intertidal rocky, coral or stony reefs as well as platforms and islets that are exposed at low tide. | Medium | **Yes** – (SIA, Appendix 4)<br>The species has been recorded near the subject site and suitable habitat is present. |

| Common name | Scientific name | Legislation | | Habitat associations | Likelihood of occurrence | Significance assessment completed (Appendix 3 and/or 4) |
|---|---|---|---|---|---|---|
| | | BC (or FM) Act | EPBC Act | | | |
| Gull-billed Tern | *Gelochelidon nilotica* | | M | Found in freshwater swamps, brackish and salt lakes, beaches and estuarine mudflats. | Low | No – species records indicate presence is unlikely at the subject site. |
| Indian Yellow-nosed Albatross | *Thalassarche carteri* | | V | The Indian Yellow-nosed Albatross is a marine bird, located in subtropical and warmer subantarctic waters. The Indian Yellow-nosed Albatross breeds on islands of the southern Indian Ocean. | Low | No - suitable habitat is not present. |
| Kermadec Petrel (western) | *Pterodroma neglecta neglecta* | | V | Marine. Nests in a crevice amongst rocks. | Low | No – suitable habitat is not present. |
| Latham's Snipe | *Gallinago hardwickii* | | M | Occur in open, freshwater wetlands that have some form of shelter (usually low and dense vegetation) nearby, or saline or brackish water, such as saltmarsh, mangrove creeks, around bays and beaches, and at tidal rivers. | Low | No – species records indicate presence is unlikely at the subject site. |
| Lesser Sand-Plover | *Charadrius mongolus* | V | E | Favours beaches of sheltered bays, harbours and estuaries with large intertidal sandflats and mudflats. Occasionally found on sandy beaches, coral reefs or rock platforms. | Medium | **Yes** – (ToS, Appendix 3; SIA, Appendix 4)<br>The species has been recorded near the subject site and suitable habitat is present. |

| Common name | Scientific name | Legislation | | Habitat associations | Likelihood of occurrence | Significance assessment completed (Appendix 3 and/or 4) |
|---|---|---|---|---|---|---|
| | | BC (or FM) Act | EPBC Act | | | |
| Little Curlew | *Numenius minutus* | | M | Forages in short, dry grassland and sedgeland, including dry floodplains and black soil plains, which have scattered, shallow freshwater pools or areas seasonally inundated. | Low | No – species records indicate presence is unlikely at the subject site. |
| Little Eagle | *Hieraaetus morphnoides* | V | | Occupies open eucalypt forest, woodland or open woodland. Sheoak or Acacia woodlands and riparian woodlands of interior NSW are also used. Nests in tall living trees within a remnant patch, where pairs build a large stick nest in winter. | Low | No – suitable habitat is absent from the subject site. |
| Little Lorikeet | *Glossopsitta pusilla* | V | | Forages primarily in the canopy of open *Eucalyptus* forest and woodland, yet also finds food in *Angophora, Melaleuca* and other tree species. Riparian habitats are particularly used, due to higher soil fertility and hence greater productivity. | Low | No – suitable habitat is absent from the subject site. |
| Little Tern | *Sternula albifrons* | E | | Coastal sheltered environments. However, may occur several kilometres from the sea in harbours, inlets and rivers (with | High | **Yes** – (ToS, Appendix 3)<br>The species has been recorded at the subject site and suitable habitat is present. |

| Common name | Scientific name | Legislation | | Habitat associations | Likelihood of occurrence | Significance assessment completed (Appendix 3 and/or 4) |
|---|---|---|---|---|---|---|
| | | BC (or FM) Act | EPBC Act | | | |
| | | | | occasional offshore islands or coral cay records). | | |
| Marsh Sandpiper | *Tringa stagnatilis* | | M | Commonly seen singly, or in small to large flocks in fresh or brackish (slightly salty) wetlands such as rivers, water meadows, sewage farms, drains, lagoons and swamps. | Low | No – species records indicate species has not been present at or near the subject site for over a decade. The subject site does not provide the required habitat. |
| Masked Owl | *Tyto novaehollandiae* | V | | Dry eucalypt forests and woodlands from sea level to 1100 m. | Low | No – suitable habitat is absent from the subject site. |
| Northern Buller's Albatross | *Thalassarche bulleri platei* | | E | This species is listed as a migratory marine bird | Low | No – suitable habitat is not present. |
| Northern Giant-Petrel | *Macronectes halli* | V | V, M | Predominately along NSW south-east coast in winter and autumn, where they occupy coastal habitats as they mainly feed off the sea. | Low | No – pelagic species which spend the majority of time at sea. |
| Northern Royal Albatross | *Diomedea sanfordi* | | E | The Northern Royal Albatross primarily forages in inshore and offshore waters over the continental shelf to the shelf edge. | Low | No – suitable habitat is not present. |
| Bar-tailed Godwit | *Limosa lapponica baueri* | | V | It is found mainly in coastal habitats such as large intertidal sandflats, banks, mudflats, | High | **Yes** – (SIA, Appendix 4) |

| Common name | Scientific name | Legislation | | Habitat associations | Likelihood of occurrence | Significance assessment completed (Appendix 3 and/or 4) |
|---|---|---|---|---|---|---|
| | | BC (or FM) Act | EPBC Act | | | |
| | | | | estuaries, inlets, harbours, coastal lagoons and bays. Less frequently it occurs in salt lakes and brackish wetlands, sandy ocean beaches and rock platforms. | | Suitable habitat is located within subject site. |
| Olive Whistler | *Pachycephala olivacea* | V | | The Olive Whistler inhabits the wet forests on the ranges of the east coast. It has a disjunct distribution in NSW chiefly occupying the beech forests around Barrington Tops and the MacPherson Ranges in the north and wet forests from Illawarra south to Victoria. | Low | No - species records indicate presence is unlikely at the subject site. |
| Orange-bellied Parrot | *Neophema chrysogaster* | CE | CE | Spends winter mostly within 3 kilometres of the coast in sheltered coastal habitats including bays, lagoons, estuaries, coastal dunes and saltmarshes. The species also inhabits small islands and peninsulas and occasionally saltworks and golf courses. Birds forage in low samphire herbland or taller coastal shrubland. | Low | No – suitable habitat is absent from the subject site. |

| Common name | Scientific name | Legislation | | Habitat associations | Likelihood of occurrence | Significance assessment completed (Appendix 3 and/or 4) |
|---|---|---|---|---|---|---|
| | | BC (or FM) Act | EPBC Act | | | |
| Oriental Plover | *Charadrius veredus* | | M | After migrating, the species spends a few weeks in coastal habitats such as estuarine mudflats and sandbanks, on sandy and rocky ocean beaches and nearby reefs, then migrate further inland where they inhabit flat, open, semi-arid and arid grasslands. | Low | No – species records indicate presence is unlikely at the subject site. More commonly associated with Shoalhaven Heads Spit 250 metres to the east of the subject site. |
| Pacific Golden Plover | *Pluvialis fulva* | | M | Found on muddy, rocky and sandy wetlands, shores, paddocks, saltmarsh, coastal golf courses, estuaries and lagoons. | High | **Yes** – (SIA, Appendix 4)<br>The species has been recorded at subject site and suitable habitat is located within subject site. |
| Painted Honeyeater | *Granitella picta* | | V | Inhabits Boree/ Weeping Myall (Acacia pendula), Brigalow (A. harpophylla) and Box-Gum Woodlands and Box-Ironbark Forests. | Low | No - no suitable habitat present. |
| Pectoral Sandpiper | *Calidris melanotos* | | M | Found at coastal lagoons, estuaries, bays, swamps, lakes, inundated grasslands, saltmarshes, river pools, creeks, floodplains and artificial wetlands. | Low | No – species records indicate presence is unlikely at the subject site. |

| Common name | Scientific name | Legislation | | Habitat associations | Likelihood of occurrence | Significance assessment completed (Appendix 3 and/or 4) |
|---|---|---|---|---|---|---|
| | | BC (or FM) Act | EPBC Act | | | |
| Pilotbird | *Pycnoptilus floccosus* | | V | Pilotbirds live on the ground in dense forests with heavy undergrowth where they forage for insects and occasionally eat seeds and fruits. The species appear to be largely sedentary, occupying small territories all year round. | Low | No - species records indicate presence is unlikely at the subject site. |
| Pink Robin | *Petroica rodinogaster* | V | | Inhabits rainforest and tall, open eucalypt forest, particularly in densely vegetated gullies. The Pink Robin is found in Tasmania and the uplands of eastern Victoria and far south-eastern NSW, almost as far north as Bombala. | Low | No – suitable habitat not present. |
| Pomarine Jaeger | *Stercorarius pomarinus* | | M | Migratory, mostly occurring in open sea. When it comes to land, it stays in low-lying coastal areas. Can be found at the junction of ocean currents and upwellings that bring fish close to the surface. | Low | No – pelagic species which spend the majority of time at sea. |

| Common name | Scientific name | Legislation | | Habitat associations | Likelihood of occurrence | Significance assessment completed (Appendix 3 and/or 4) |
|---|---|---|---|---|---|---|
| | | BC (or FM) Act | EPBC Act | | | |
| Powerful Owl | *Ninox strenua* | V | | Inhabits a range of vegetation types, from woodland and open sclerophyll forest to tall open wet forest and rainforest. Requires large tracts of forest or woodland habitat but can occur in fragmented landscapes as well. | Low | No – suitable habitat is absent from the subject site. |
| Providence Petrel | *Pterodroma solandri* | V | | Spend the majority of their time at sea. | Low | No – pelagic species which spend the majority of time at sea. |
| Red Knot | *Calidris canutus* | | E | Occurs on intertidal mudflats, estuaries, bays, inlets, lagoons, harbours and sandflats and sandy beaches of sheltered coasts. It is occasionally found on sandy ocean beaches or shallow pools on exposed wave-cut rock platforms and is a rare visitor to terrestrial saline wetlands and freshwater swamps. | High | **Yes** – (SIA, Appendix 4)<br>The species has been recorded at the subject site and suitable habitat is present. |
| Red-necked Stint | *Calidris ruficollis* | | M | Littoral and estuarine habitats such as intertidal mudflats of sheltered coasts. Occasionally found in non-tidal swamps, lakes | High | **Yes** – (SIA, Appendix 4)<br>The species has been recorded at subject site and suitable habitat is present. |

| Common name | Scientific name | Legislation | | Habitat associations | Likelihood of occurrence | Significance assessment completed (Appendix 3 and/or 4) |
|---|---|---|---|---|---|---|
| | | BC (or FM) Act | EPBC Act | | | |
| | | | | and lagoons on the coast and sometimes inland. | | |
| Regent Honeyeater | *Anthochaera phrygia* | CE | CE,M | This species occupies eucalypt forests and woodlands and forages in flowering trees, sometimes in orchards and urban gardens. Associated most closely with box-ironbark forests and coastal forest dominated by Swamp Mahogany or Spotted Gum. They are strongly nomadic. | Medium | **Yes** – (ToS, Appendix 3; SIA, Appendix 4)<br>The species has been recorded near the study area and suitable foraging habitat is present. |
| Ruddy Turnstone | *Arenaria interpres* | | M | It often occurs around beds of seagrass, and sometimes in nearby saltmarsh or the outer margins of mangrove area. | High | **Yes** – (SIA, Appendix 4)<br>The species has been recorded at subject site and suitable habitat is present. |
| Salvin's Albatross | *Thalassarche salvini* | | V | Occasional individuals are encountered both in inshore and offshore over the continental shelf and in pelagic waters off the shelf break. In NSW waters it is an uncommon visitor principally occurring between June and October, with the majority of sightings from waters south of Sydney. | Low | No - suitable habitat is not present. |

| Common name | Scientific name | Legislation | | Habitat associations | Likelihood of occurrence | Significance assessment completed (Appendix 3 and/or 4) |
|---|---|---|---|---|---|---|
| | | BC (or FM) Act | EPBC Act | | | |
| Sanderling | *Calidris alba* | V | M | Found along the coastline and occasionally inland on exposed rocks and reefs with shallow pools and on sandy beaches. | Medium | **Yes** – (ToS, Appendix 3; SIA, Appendix 4)<br>The species has been recorded near the subject site and suitable habitat is present. |
| Scarlet Robin | *Petroica boodang* | V | | Lives in dry eucalypt forests and woodlands. The understorey is usually open and grassy with few scattered shrubs. This species lives in both mature and regrowth vegetation. It occasionally occurs in mallee or wet forest communities, or in wetlands and tea-tree swamps.<br>The habitat usually contains abundant logs and fallen timber: these are important components of its habitat. | Low | No – suitable habitat is absent from the subject site. |
| Sharp-tailed Sandpiper | *Calidris acuminata* | | M | Prefers muddy edges of shallow fresh or brackish wetlands, with inundated or emergent sedges, grass, saltmarsh or other low vegetation. This includes lagoons, swamps, lakes and pools near the coast, and dams, waterholes, soaks, bore drains and bore swamps, saltpans and hypersaline salt lakes inland. | Medium | **Yes** – (SIA, Appendix 4)<br>The species has been recorded near the subject site and suitable habitat is present. |

| Common name | Scientific name | Legislation | | Habitat associations | Likelihood of occurrence | Significance assessment completed (Appendix 3 and/or 4) |
|---|---|---|---|---|---|---|
| | | BC (or FM) Act | EPBC Act | | | |
| Short-tailed Shearwater | *Ardenna tenuirostris* | | M | Pelagic species. Coastal areas including open shores, low lying sandy, rocky, or coral island, low-lying sandy, rocky or coral islands and sometimes shrubland. | Low | No - relies on offshore islands for breeding and typically forages at sea. This species is not reliant on the habitats located within the subject site. |
| Shy Albatross | *Thalassarche cauta* | V | E, M | Mostly at sea. Occasionally occurs in continental shelf waters, in bays or harbours. | Low | No – a marine species, and no habitat is present within the subject site. |
| Sooty Albatross | *Phoebetria fusca* | | V | Mostly at sea. Occasionally occurs in continental shelf waters, in bays or harbours. | Low | No – suitable habitat is not present. |
| Sooty Oystercatcher | *Haematopus fuliginosus* | V | | Favours rocky headlands, rocky shelves, exposed reefs with rock pools, beaches and muddy estuaries. | Medium | **Yes** – (ToS, Appendix 3)<br>The species has been recorded near the subject site and suitable habitat is located nearby. |
| Sooty Shearwater | *Ardenna grisea* | | M | Forages in pelagic (open ocean) sub-tropical, sub-Antarctic and Antarctic waters. The species migrates and forages in the North Pacific and Atlantic Oceans during the non-breeding season. Sooty Shearwaters may forage inshore occasionally, especially during rough weather. | Low | No - relies on offshore islands for breeding and typically forages at sea. Species is not reliant on the habitats located within the subject site. |
| Southern Giant-Petrel | *Macronectes giganteus* | | E | Over summer, the species nests in small colonies amongst open | Low | No – suitable habitat not present. |

| Common name | Scientific name | Legislation | | Habitat associations | Likelihood of occurrence | Significance assessment completed (Appendix 3 and/or 4) |
|---|---|---|---|---|---|---|
| | | BC (or FM) Act | EPBC Act | | | |
| | | | | vegetation on Antarctic and subantarctic islands, including Macquarie and Heard Islands and in Australian Antarctic territory. Is a common visitor off the coast of NSW. | | |
| Southern Royal Albatross | *Diomedea epomorphora* | | V | This species is listed as a migratory marine bird. | Low | No – suitable habitat is not present. |
| Spotted Harrier | *Circus assimilis* | V | | Occurs in grassy open woodland including Acacia and mallee remnants, inland riparian woodland, grassland and shrub steppe. It is found most commonly in native grassland, but also occurs in agricultural land, foraging over open habitats including edges of inland wetlands. | Low | No – suitable habitat is not present. |
| Square-tailed Kite | *Lophoictinia isura* | V | | Found in a variety of timbered habitats including dry woodlands and open forests. Shows a particular preference for timbered watercourses. | Low | No - suitable habitat is not present. |
| Swift Parrot | *Lathamus discolor* | E | CE | Occur in areas where eucalypts are flowering profusely or where there are abundant lerp (from sap-sucking bugs) infestations. | Low | No – suitable habitat is absent from the subject site. |

| Common name | Scientific name | Legislation | | Habitat associations | Likelihood of occurrence | Significance assessment completed (Appendix 3 and/or 4) |
|---|---|---|---|---|---|---|
| | | BC (or FM) Act | EPBC Act | | | |
| | | | | Favoured feed trees include winter flowering species such as Swamp Mahogany *Eucalyptus robusta*, Spotted Gum *Corymbia maculata*, Red Bloodwood *C. gummifera*, Forest Red Gum *E. tereticornis,* Mugga Ironbark *E. sideroxylon,* and White Box *E. albens*.<br>Commonly used lerp infested trees include Inland Grey Box *E. microcarpa,* Grey Box *E. moluccana,* Blackbutt *E. pilularis*, and Yellow Box *E. melliodora.* | | |
| Terek Sandpiper | *Xenus cinereus* | V | M | Found in coastal mudflats, lagoons, creeks and estuaries. Favours mudbanks and sandbanks located near mangroves, but also occupy rocky pools and reefs. | Medium | **Yes** – (ToS, Appendix 3; SIA, Appendix 4)<br>The species has been recorded near subject site and suitable habitat is present. |
| Turquoise Parrot | *Neophema pulchella* | V | | Lives on the edges of eucalypt woodland adjoining clearings, timbered ridges and creeks in farmland. | Low | No – suitable habitat is not present. |
| Varied Sittella | *Daphoenositta chrysoptera* | V | | Inhabits eucalypt forests and woodlands, especially those containing rough-barked species | Low | No – suitable habitat is absent from the subject site. |

| Common name | Scientific name | Legislation | | Habitat associations | Likelihood of occurrence | Significance assessment completed (Appendix 3 and/or 4) |
|---|---|---|---|---|---|---|
| | | BC (or FM) Act | EPBC Act | | | |
| | | | | and mature smooth-barked gums with dead branches, mallee and Acacia woodland. | | |
| Wandering Albatross | *Diomedea exulans* | | V | The Wandering Albatross is marine, pelagic and aerial. In the Australasian region, it occurs inshore, offshore and in pelagic waters. | Low | No - suitable habitat is not present. |
| Wedge-tailed Shearwater | *Ardenna pacifica* | | M | Mostly a pelagic, marine species. Found along inshore and offshore water masses. | Low | No - relies on offshore islands for breeding and typically forages at sea. This species is not reliant on the habitats located within the subject site. |
| Whimbrel | *Numenius phaeophus* | | M | Intertidal mudflats, along muddy banks of estuaries and in coastal lagoons, either in open unvegetated areas or mangroves. Occasionally in harbours, lagoons, estuaries, rivers or sandy and rocky beaches, platforms or reefs. | High | **Yes** – (SIA, Appendix 4)<br>The species has been recorded near the subject site and suitable habitat is present. |
| White-bellied Sea-Eagle | *Haliaeetus leucogaster* | V | | Occurs at large areas of open water including larger rivers, swamps, lakes, and the sea. Occurs at sites near the sea or seashore, such as around bays and inlets, beaches, reefs, | Medium | **Yes** – (ToS, Appendix 3)<br>The species has been recorded near the subject site and suitable habitat is located within the subject site. |

| Common name | Scientific name | Legislation | | Habitat associations | Likelihood of occurrence | Significance assessment completed (Appendix 3 and/or 4) |
|---|---|---|---|---|---|---|
| | | BC (or FM) Act | EPBC Act | | | |
| | | | | lagoons, estuaries and mangroves; and at, or in the vicinity of freshwater swamps, lakes, reservoirs, billabongs and saltmarsh. Terrestrial habitats include coastal dunes, tidal flats, grassland, heathland, woodland, and forest (including rainforest | | |
| White-bellied Storm-Petrel | *Fregetta grallaria grallaria* | | V | Occurs at large areas of open water including larger rivers, swamps, lakes, and the sea. Occurs at sites near the sea or seashore, such as around bays and inlets, beaches, reefs, lagoons, estuaries and mangroves; and at, or in the vicinity of freshwater swamps, lakes, reservoirs, billabongs and saltmarsh. Terrestrial habitats include coastal dunes, tidal flats, grassland, heathland, woodland, and forest (including rainforest. | Low | No – suitable habitat is not present. |
| White-capped Albatross | *Thalassarche steadi* | | V | Mostly observed in inshore and offshore waters over the continental shelf and less frequently in pelagic waters off | Low | No - suitable habitat is not present. |

| Common name | Scientific name | Legislation | | Habitat associations | Likelihood of occurrence | Significance assessment completed (Appendix 3 and/or 4) |
|---|---|---|---|---|---|---|
| | | BC (or FM) Act | EPBC Act | | | |
| | | | | the shelf break. May occasionally enter larger bays. | | |
| White-fronted Chat | *Epthianura albifrons* | V | | Usually found foraging on bare or grassy ground in wetland areas. | Medium | **Yes** – (ToS, Appendix 3)<br>The species has been recorded near the subject site and suitable habitat is located nearby. |
| White-throated Needletail | *Hirundapus caudacutus* | | V, M | Mostly found in coastal areas, in most vegetation and habitat types including forested wetlands, freshwater wetlands, grasslands, saline wetlands, and coastal beaches and estuaries. | Medium | **Yes** – (SIA, Appendix 4)<br>The species has been recorded at subject site and suitable habitat is located within subject site. |
| White-winged Black Tern | *Chlidonias leucopterus* | | M | Mostly inhabits fresh, brackish or saline, and coastal or subcoastal wetlands. Frequent tidal wetlands, such as harbours, bays, estuaries and lagoons, and their associated tidal sandflats and mudflats. | Low | No – species records indicate presence is unlikely at subject site. |
| **Frogs** | | | | | | |
| Green and Golden Bell Frog | *Litoria aurea* | E | V | Inhabits marshes, dams and stream-sides, particularly those containing bullrushes (*Typha* spp.) or spike rushes (*Eleocharis* spp.).<br>Optimum habitat includes waterbodies that are unshaded, free of predatory fish such as Plague Minnow (*Gambusia* | Low | No – species records indicate presence is unlikely at the subject site. |

| Common name | Scientific name | Legislation | | Habitat associations | Likelihood of occurrence | Significance assessment completed (Appendix 3 and/or 4) |
|---|---|---|---|---|---|---|
| | | BC (or FM) Act | EPBC Act | | | |
| | | | | *holbrooki*), have a grassy area nearby and diurnal sheltering sites available. | | |
| Giant Burrowing Frog | *Heleioporus australiacus* | | V | Found in heath, woodland and open dry sclerophyll forest on a variety of soil types except those that are clay. Spends more than 95% of its time in non-breeding habitat in areas up to 300 m from breeding sites. Whilst in non-breeding habitat it burrows below the soil surface or in the leaf litter. Individual frogs occupy a series of burrow sites, some of which are used repeatedly. The home ranges of both sexes appear to be non-overlapping suggesting exclusivity of non-breeding habitat. Home ranges are approximately 0.04 ha in size. When breeding, frogs will call from open spaces, under vegetation or rocks or from within burrows in the creek bank. | Low | No - suitable habitat is not present. |
| Stuttering Frog | *Mixophyes balbus* | | V | Found in rainforest and wet, tall open forest in the foothills and escarpment on the eastern side of the Great Dividing Range. Outside the breeding season adults live in deep leaf litter and | Low | No - suitable habitat is not present. |

| Common name | Scientific name | Legislation | | Habitat associations | Likelihood of occurrence | Significance assessment completed (Appendix 3 and/or 4) |
|---|---|---|---|---|---|---|
| | | BC (or FM) Act | EPBC Act | | | |
| | | | | thick understorey vegetation on the forest floor. | | |
| Watson's Tree Frog | *Litoria watsoni* | | E | Forest-dependent species, recorded from wet and dry forest, woodland, bushland, and heathland at low to high elevations. Watson's Tree Frog prefers moister areas, with most records from wet forest, followed by damp forest, and warm temperate rainforest. | Low | No – suitable habitat is not present. |
| **Fish** | | | | | | |
| Australian Grayling | *Prototroctes maraena* | E<br><br>(FM Act only) | V | Diadromous species, occupying marine water in its larval stage and mainly freshwater as adults. Juveniles spend time sheltering in brackish water and have been recorded in the Shoalhaven River. | Medium | **Yes** – (AoS, Appendix 5; SIA, Appendix 4)<br><br>The species has been recorded near subject site and suitable habitat is located within the study area. |
| Black Rockcod | *Epinephelus daemelii* | V | V | As adults this species occupies caves and crevices up to 50-metre depths offshore, mostly in northern NSW and tropical waters. Juveniles are found inshore, often in coastal rockpools and estuaries and intertidal areas. | Low | No – species is not reliant on the habitats located within the subject site. |

| Common name | Scientific name | Legislation | | Habitat associations | Likelihood of occurrence | Significance assessment completed (Appendix 3 and/or 4) |
|---|---|---|---|---|---|---|
| | | BC (or FM) Act | EPBC Act | | | |
| Blue Warehou | *Seriolella brama* | | CD | Bentho-pelagic species that inhabits continental shelf and slope waters. Juveniles sometimes school close to the surface in estuaries, predominantly off western Victoria and Tasmania. | Low | No – species is not reliant on the habitats located within the subject site. |
| Great White Shark | *Carcharodon carcharias* | V | V,M | Ocean-dwelling species, most commonly found over the continental shelf and often close inshore of southern Australia. | Low | No – suitable habitat is not present. |
| Grey Nurse Shark | *Carcharias taurus* | E | CE | Ocean-dwelling species, most commonly found over the continental shelf and often close inshore of southern Australia. | Low | No – suitable habitat is not present. |
| Macquarie Perch | *Macquaria australasica* | E | E | This species is an upland river species that relies on the presence of deep rocky pools, clear water interspersed with riffles, slow and fast flowing water, ample cover from rocks, overhanging banks and aquatic vegetation. | Low | No – suitable habitat is not present. |
| Whale Shark | *Rhincodon typus* | | V,M | Ocean-dwelling species that only occasionally traverses NSW open coastal waters. Critical habitat is identified in Ningaloo Reef and Christmas Island on the west coast of Australia. | Low | No – suitable habitat is not present. |

| Common name | Scientific name | Legislation | | Habitat associations | Likelihood of occurrence | Significance assessment completed (Appendix 3 and/or 4) |
|---|---|---|---|---|---|---|
| | | BC (or FM) Act | EPBC Act | | | |
| White's Seahorse | *Hippocampus whitei* | E<br><br>(FM Act only) | E | This species occurs in coastal estuaries and prefers sponge gardens, seagrass meadows and soft corals, but has been known to use artificial habitats such as jetty pylons and beneath wharves. | Medium | **Yes** – (AoS Appendix 5, SIA, Appendix 4)<br>The species has been recorded in the Shoalhaven but not within this estuary. There is potential natural and artificial habitat located with the study area. |
| **Reptiles** | | | | | | |
| Flatback Turtle | *Natator depressus* | | V,M | This species feeds and nests in the northern coastal regions of Australia and preference shallow soft bottomed seabed habitats. | Low | No – while there are species records within the Shoalhaven, species habitat preferences and records indicate presence is unlikely at the subject site. |
| Green Turtle | *Chelonia mydas* | V | V,M | This species prefers tropical waters and to nest on coral cays that are highly vegetated (shady) and sheltered. | Medium | **Yes** – (ToS, Appendix 3; SIA, Appendix 4)<br>The species has been recorded in the study area and broader estuary. Predation by dogs is listed as a known threat in NSW. |
| Hawksbill Turtle | *Eretmochelys imbricata* | | V | Ocean-dwelling species spending most of its life at sea. | Low | No – a marine reptile that does not breed on Shoalhaven beaches. This species is unlikely to be reliant on the vegetation communities or habitats located within the subject site. |

| Common name | Scientific name | Legislation | | Habitat associations | Likelihood of occurrence | Significance assessment completed (Appendix 3 and/or 4) |
|---|---|---|---|---|---|---|
| | | BC (or FM) Act | EPBC Act | | | |
| Leatherback Turtle | *Dermochelys coriacea* | E | E,M | Prefers tropical and temperate waters, commonly observed feeding in open coastal waters. Most migrate to breed in neighbouring countries, but scattered nests have been recorded in NSW. | Low | No – while there are species records within the Shoalhaven, species habitat preferences and records indicate presence is unlikely at the subject site. |
| Loggerhead Turtle | *Caretta caretta* | E | E | Ocean-dwellers, foraging in deeper water for fish, jellyfish and bottom-dwelling animals. | Low | No – species records indicate presence is unlikely at the subject site. |
| Rosenberg's Goanna | *Varanus rosenbergi* | V | | Species found in heath, open forest and woodland. Associated with termite mounds and requires large areas of habitat and log and rock crevices for shelter. | Low | No – suitable habitat is not present. |
| **Mammals** | | | | | | |
| Australian Fur-seal | *Arctocephalus pusillus doriferus* | V | | Occurs in inshore and offshore marine waters. | Low | No – species is not reliant on the habitats located within the subject site. |
| Blue Whale | *Balaenoptera musculus* | | E | Breeds in warm water at low latitudes, preferring open seas rather than coastal waters. | Low | No – suitable habitat is not present. |
| Brush-tailed Rock-wallaby | *Petrogale penicillate* | | V | Habitats containing numerous ledges, caves and crevices are favoured by this species. | Low | No – suitable habitat is not present. |

| Common name | Scientific name | Legislation | | Habitat associations | Likelihood of occurrence | Significance assessment completed (Appendix 3 and/or 4) |
|---|---|---|---|---|---|---|
| | | BC (or FM) Act | EPBC Act | | | |
| Dugong | *Dugong dugon* | E | | Major concentrations of Dugongs occur in wide shallow protected bays, wide shallow mangrove channels and in the lee of large inshore islands. | Low | No – suitable habitat is not present. |
| Eastern Coastal Free-tailed Bat | *Micronomus norfolkensis* | V | | Occur in dry sclerophyll forest, woodland, swamp forests and mangrove forests. | Low | No – suitable habitat is not present. |
| Eastern False Pipistrelle | *Falsistrellus tasmaniensis* | V | | Prefers moist habitats, with trees taller than 20 metres. Generally, roosts in eucalypt hollows, but has also been found under loose bark on trees or in buildings. | Low | No – suitable habitat is not present. |
| Greater Broad-nosed Bat | *Scoteanax rueppellii* | V | | Utilises a variety of habitats from woodland through to moist and dry eucalypt forest and rainforest, though it is most commonly found in tall wet forest. | Low | No – suitable habitat is not present. |
| Grey-headed Flying-fox | *Pteropus poliocephalus* | V | V | Occur in subtropical and temperate rainforests, tall sclerophyll forests and woodlands, heaths and swamps as well as urban gardens and cultivated fruit crops. | Low | No – suitable habitat is not present. |
| Humpback Whale | *Megaptera novaeangliae* | V | V | The population of Australia's east coast migrates from summer | Low | No – ocean-going species. |

| Common name | Scientific name | Legislation | | Habitat associations | Likelihood of occurrence | Significance assessment completed (Appendix 3 and/or 4) |
|---|---|---|---|---|---|---|
| | | BC (or FM) Act | EPBC Act | | | |
| | | | | cold-water feeding grounds in Subantarctic waters to warm-water winter breeding grounds in the central Great Barrier Reef. | | |
| Koala | *Phascolarctos cinereus* | E | E | Inhabit eucalypt woodlands and forests. | Low | No – suitable habitat is not present. |
| Large Bent-winged Bat | *Miniopterus orianae oceanensis* | V | V | Caves are the primary roosting habitat, but also use derelict mines, storm-water tunnels, buildings and other man-made structures. | Low | No – suitable habitat is not present within the subject site. |
| Large-eared Pied Bat | *Chalinolobus dwyeri* | V | V | Roosts in caves (near their entrances), crevices in cliffs, old mine workings and in the disused, bottle-shaped mud nests of the Fairy Martin (Petrochelidon ariel), frequenting low to mid-elevation dry open forest and woodland close to these features. Females have been recorded raising young in maternity roosts (c. 20-40 females) from November through to January in roof domes in sandstone caves and overhangs. They remain loyal to the same cave over many years. | Low | No – suitable habitat is not present within the subject site. |

| Common name | Scientific name | Legislation | | Habitat associations | Likelihood of occurrence | Significance assessment completed (Appendix 3 and/or 4) |
|---|---|---|---|---|---|---|
| | | BC (or FM) Act | EPBC Act | | | |
| Long-nosed Potoroo | *Potorous tridactylus* | | V | Inhabits coastal heath and dry and wet sclerophyll forests with dense cover which provides diurnal sheltering sites and protection from predators, whilst foraging in adjacent, open areas. | Low | No – suitable habitat is not present. |
| New Holland Mouse | *Pseudomys novaehollandiae* | | V | Open heathland, open woodland with a heathland understorey and vegetated sand dunes. The species is now largely restricted to the coast of central and northern NSW. | Low | No – suitable habitat is not present within the subject site. |
| New Zealand Fur-seal | *Arctocephalus forsteri* | V | | Prefers rocky parts of islands with jumbled terrain and boulders. | Low | No – the species is not reliant on the habitats located within the subject site and the activity is restricted to the shoreline. |
| Parma Wallaby | *Notamacropus parma* | | V | Preferred habitat is moist eucalypt forest with thick, shrubby understorey, often with nearby grassy areas, rainforest margins and occasionally drier eucalypt forest. | Low | No – suitable habitat is not present. |
| Southern Brown Bandicoot | *Isoodon obesulus obesulus* | E | E | Generally only found in heath or open forest with a heathy understorey on sandy or friable soils. | Low | No – suitable habitat is not present. |

| Common name | Scientific name | Legislation | | Habitat associations | Likelihood of occurrence | Significance assessment completed (Appendix 3 and/or 4) |
|---|---|---|---|---|---|---|
| | | BC (or FM) Act | EPBC Act | | | |
| Southern Greater Glider | *Petauroides volans* | | E | Can be found in dry or wet sclerophyll forests, heathlands and temperate rainforests. | Low | No – suitable habitat is not present within the subject site. |
| Southern Greater Glider population in the Seven Mile Beach National Park area | *Petauroides volans* | E | | Feeds almost exclusively on the young leaves and flower buds of select eucalypt species. Shelter during the day in tree hollows and will use up to 18 hollows in their home range. | Low | No – suitable habitat is not present within the subject site. |
| Southern Myotis | *Myotis Macropus* | V | | Typically roosts close to water in caves, mine shafts, hollow-bearing trees, storm water channels, buildings, under bridges and in dense foliage. | Low | No – suitable habitat is not present. |
| Southern Right Whale | *Eubalaena australis* | E | E | Migrate between summer feeding grounds in Antarctica and winter breeding grounds around the coasts of southern Australia, New Zealand, South Africa and South America. | Low | No – suitable habitat is not present. |
| Spotted-tailed Quoll | *Dasyurus maculatus maculatus* | V | E | Range of habitat types, including rainforest, open forest, woodland, coastal heath and inland riparian forest, from the sub-alpine zone to the coastline. Use hollow-bearing trees, fallen logs, other | Low | No – suitable habitat is not present within the subject site. |

| Common name | Scientific name | Legislation | | Habitat associations | Likelihood of occurrence | Significance assessment completed (Appendix 3 and/or 4) |
|---|---|---|---|---|---|---|
| | | BC (or FM) Act | EPBC Act | | | |
| | | | | animal burrows, small caves and rock outcrops as den sites. | | |
| Squirrel Glider | *Petaurus norfolcensis* | V | | Inhabits mature or old growth Box, Box-Ironbark woodlands and River Red Gum forest west of the Great Dividing Range and Blackbutt-Bloodwood forest with heath understorey in coastal areas. Prefers mixed species stands with a shrub or Acacia midstorey. | Low | No – suitable habitat is not present. |
| Yellow-bellied Glider | *Petaurus australis australis* | V | V | Occur in tall mature eucalypt forest generally in areas with high rainfall and nutrient rich soils. Forest type preferences vary with latitude and elevation; mixed coastal forests to dry escarpment forests in the north; moist coastal gullies and creek flats to tall montane forests in the south. | Low | No – suitable habitat is not present. |
| Yellow-bellied Sheathtail-bat | *Saccolaimus flaviventris* | V | | Roosts singly or in groups of up to six, in tree hollows and buildings; in treeless areas they are known to utilise mammal burrows. | Low | No – suitable habitat is not present within the subject site. |

| Common name | Scientific name | Legislation | | Habitat associations | Likelihood of occurrence | Significance assessment completed (Appendix 3 and/or 4) |
|---|---|---|---|---|---|---|
| | | BC (or FM) Act | EPBC Act | | | |
| **Plants** | | | | | | |
| Bynoe's Wattle | *Acacia bynoeana* | V | | Occurs in heath or dry sclerophyll forest on sandy soils. | Low | No – species not recorded within the study area. Habitat is not suitable. |
| Thick-lipped Spider-orchid | *Caladenia tessellata* | V | | Generally found in grassy sclerophyll woodland on clay loam or sandy soils, though the population near Braidwood is in low woodland with stony soil. | Low | No – species not recorded within the study area. Habitat is not suitable. |
| Pretty Beard Orchid | *Calochilus pulchellus* | E | | At Vincentia, the species grows in low Scribbly Gum dominated woodland with a low wet heath understorey. The soil is a sandy loam overlying sandstone. In Booderee National Park it grows in a tall heathy association. In Morton National Park on the Little Forest Plateau, it occurs in low heath among scattered clumps of emergent eucalypts and Banksia in shallow coarse white sand over sandstone, in a near-escarpment area subject to strong orographic precipitation. | Low | No – species not recorded within the study area. Habitat is not suitable. |

| Common name | Scientific name | Legislation | | Habitat associations | Likelihood of occurrence | Significance assessment completed (Appendix 3 and/or 4) |
|---|---|---|---|---|---|---|
| | | BC (or FM) Act | EPBC Act | | | |
| East Lynne Midge Orchid | *Corunastylis vernalis* | V | | The East Lynne Midge Orchid grows in dry sclerophyll woodland and forest extending from close to the coast to the adjoining coastal ranges. | Low | No – species not recorded within the study area. Habitat is not suitable. |
| Leafless Tongue Orchid | *Cryptostylis hunteriana* | V | | Does not appear to have well defined habitat preferences and is known from a range of communities, including swamp-heath and woodland. | Low | No – species not recorded within the study area. Habitat is not suitable. |
| White-flowered Wax Plant | *Cynanchum elegans* | E | | The White-flowered Wax Plant usually occurs on the edge of dry rainforest vegetation. Other associated vegetation types include littoral rainforest; Coastal Tea-tree *Leptospermum laevigatum* – Coastal Banksia *Banksia integrifolia subsp. integrifolia* coastal scrub; Forest Red Gum *Eucalyptus tereticornis* aligned open forest and woodland; Spotted Gum *Corymbia maculata* aligned open forest and woodland; and Bracelet Honeymyrtle *Melaleuca armillaris* scrub to open scrub. | Low | No – species not recorded within the study area. Habitat is not suitable. |

| Common name | Scientific name | Legislation | | Habitat associations | Likelihood of occurrence | Significance assessment completed (Appendix 3 and/or 4) |
|---|---|---|---|---|---|---|
| | | BC (or FM) Act | EPBC Act | | | |
| Illawarra Socketwood | *Daphnandra johnsonii* | V | | Occupies the rocky hillsides and gullies of the Illawarra lowlands, occasionally extending onto the upper escarpment slopes. | Low | No – species not recorded within the study area. Habitat is not suitable. |
| Yellow Gnat-Orchid | *Genoplesium baueri* | E | | Grows in dry sclerophyll forest and moss gardens over sandstone. | Low | No – species not recorded within the study area. Habitat is not suitable. |
| Wingless Raspwort | *Haloragis exalata subsp. Exalata* | V | | Square Raspwort appears to require protected and shaded damp situations in riparian habitats. | Low | No – species not recorded within the study area. |
| Bristly Shield Fern | *Lastreopsis hispida* | E | | Grows in moist humus-rich soils in wet forest and rainforest gullies. | Low | No – species not recorded within the study area. Habitat is not suitable. |
| Biconvex Paperbark | *Melaleuca biconvexa* | V | | Generally grows in damp places, often near streams or low-lying areas on alluvial soils of low slopes or sheltered aspects. | Low | No – species not recorded within the study area. |
| Knotweed | *Persicaria elatior* | V | | This species normally grows in damp places, especially beside streams and lakes. Occasionally in swamp forest or associated with disturbance. | Low | No – species not recorded within the study area. |

| Common name | Scientific name | Legislation | | Habitat associations | Likelihood of occurrence | Significance assessment completed (Appendix 3 and/or 4) |
|---|---|---|---|---|---|---|
| | | BC (or FM) Act | EPBC Act | | | |
| Spiked Rice-Flower | *Pimelea spicata* | E | | In the coastal Illawarra it occurs commonly in Coast Banksia open woodland with a better developed shrub and grass understorey. Coastal headlands and hilltops are the favoured sites. | Low | No – species not recorded within the study area. Habitat is not suitable. |
| Rufous Pomaderris | *Pomaderris brunnea* | V | | Brown Pomaderris grows in moist woodland or forest on clay and alluvial soils of flood plains and creek lines. | Low | No – species not recorded within the study area. |
| Jervis Bay Leek Orchid | *Prasophyllum affine* | E | | Grows on poorly drained grey clay soils that support low heathland and sedgeland communities. | Low | No – species not recorded within the study area. Habitat is not suitable. |
| Villous Mintbush | *Prostanthera densa* | V | | Generally grows in sclerophyll forest and shrubland on coastal headlands and near coastal ranges, chiefly on sandstone, and rocky slopes near the sea. | Low | No – species not recorded within the study area. Habitat is not suitable. |
| Illawarra Greenhood | *Pterostylis gibbosa* | E | | All known populations grow in open forest or woodland, on flat or gently sloping land with poor drainage. In the Illawarra region, the species grows in woodland dominated by Forest Red Gum *Eucalyptus tereticornis*, Woollybutt *E. longifolia* and White | Low | No – species not recorded within the study area. Habitat is not suitable. |

| Common name | Scientific name | Legislation | | Habitat associations | Likelihood of occurrence | Significance assessment completed (Appendix 3 and/or 4) |
|---|---|---|---|---|---|---|
| | | BC (or FM) Act | EPBC Act | | | |
| | | | | Feather Honey-myrtle *Melaleuca decora*. Near Nowra, the species grows in an open forest of Spotted Gum *Corymbia maculata*, Forest Red Gum and Grey Ironbark *E. paniculata*. In the Hunter region, the species grows in open woodland dominated by Narrow-leaved Ironbark *E. crebra*, Forest Red Gum and Black Cypress Pine *Callitris endlicheri*. | | |
| Halbury Rustyhood | *Pterostylis vernalis* | E | | *Pterostylis vernalis* is only known from the Nowra area on the NSW south coast. *Pterostylis vernalis* grows in open sites around moss gardens in shallow soil over sandstone sheets or moss gardens on heavy laterite associated soils, in heath and dry heathy forest/woodland. The distribution of the plants throughout its range is naturally patchy as the species is often restricted to sections of rock shelf where there is only a thin layer of soil over the rock shelf and where these sites are subject to | Low | No – species not recorded within the study area. Habitat is not suitable. |

| Common name | Scientific name | Legislation | | Habitat associations | Likelihood of occurrence | Significance assessment completed (Appendix 3 and/or 4) |
|---|---|---|---|---|---|---|
| | | BC (or FM) Act | EPBC Act | | | |
| | | | | particular hydrological conditions. Habitat generally contains moss gardens on various substrates. | | |
| Eastern Underground Orchid | *Rhizanthella slateri* | E | | Habitat requirements are poorly understood and no particular vegetation type has been associated with the species, although it is known to occur in sclerophyll forest. | Low | No – species not recorded within the study area. |
| Sand Spurge | *Chamaesyce psammogeton* | E | CE | Uncommon on sand dunes near the sea. | Low | No – species records and site visits indicate that presence is unlikely at the subject site. |
| Scrub Turpentine | *Rhodamnia rubescens* | E | CE | Found in littoral, warm temperate and subtropical rainforest and wet sclerophyll forest usually on volcanic and sedimentary soils. | Low | No – habitat preferences not available within the subject site. |
| Native Guava | *Rhodomyrtus psidioides* | | CE | Grows in warmer rainforests and on rainforest margins | Low | No – habitat preferences not available within the subject site. |
| Magenta Lilly Pilly | *Syzygium paniculatum* | E | V | Occurs on grey soils over sandstone, restricted mainly to remnant stands of littoral (coastal) rainforest. | Low | No – habitat preferences not available within the subject site. |
| Round-leafed Wilsonia | *Wilsonia rotundifolia* | E | | Grows in mud in coastal saltmarsh and inland saline or brackish lake beds. | Low | No – species not recorded within the study area. |

| Common name | Scientific name | Legislation | | Habitat associations | Likelihood of occurrence | Significance assessment completed (Appendix 3 and/or 4) |
|---|---|---|---|---|---|---|
| | | BC (or FM) Act | EPBC Act | | | |
| Hill Zieria | *Zieria granulata* | V | | The typical habitat is dry ridge tops and rocky outcrops on shallow volcanic soils, usually on Bumbo Latite. Less frequently found on the moist slopes of the Illawarra escarpment and in low-lying areas on Quaternary sediments. | Low | No – species not recorded within the study area. |
| Nightshade | *Solanum celatum* | E | | Grows in rainforest clearings, or in wet sclerophyll forests. | Low | No – species not recorded within the study area. Habitat is not suitable. |
| Austral Toadflax | *Thesium australe* | V | V | Grows in grassland or woodland, often in damp sites, parasitic plant on *Themeda australis*. | Low | No – species co-occurs with Kangaroo Grass but this species was not recorded on site and habitat does not provide this species' requirements. |
| **Estuarine Macrophytes** | | | | | | |
| Eelgrass | *Zostera capricorni* | Threatened species habitat protected under the FM Act. | | Occurs on tidal flats in most rivers and lagoons in NSW. | High | **Yes** – (AoS, Appendix 5)<br>Species is recorded within the study area. |

| Common name | Scientific name | Legislation | | Habitat associations | Likelihood of occurrence | Significance assessment completed (Appendix 3 and/or 4) |
|---|---|---|---|---|---|---|
| | | BC (or FM) Act | EPBC Act | | | |
| Grey Mangrove | *Avicennia marina* | Threatened species habitat protected under the FM Act. | | Occurs in the intermediate tidal zone. Associated with the vegetation communities located in the study area. | Medium | **Yes** – (AoS, Appendix 5)<br>Species not recorded within the study area. However, they are recorded nearby and habitat on site supports this species. |

# Appendix 3 Test of Significance (BC Act)

Following the analysis of likelihood of occurrence (Appendix 2), the BC Act Test of Significance was applied to:

Threatened Fauna:

- Australian Pied Oystercatcher *Haematopus longirostris,* listed as Endangered
- Beach Stone-curlew *Esacus magnirostris,* listed as Critically Endangered
- Black-tailed Godwit *Limosa limosa,* listed as Vulnerable
- Broad-billed Sandpiper *Limicola falcinellus,* listed as Vulnerable
- Eastern Osprey *Pandion cristatus*, listed as Vulnerable
- Great Knot *Calidris tenuirostris,* listed as Vulnerable
- Green Turtle *Chelonia mydas*, listed as Vulnerable
- Lesser Sand Plover *Charadrius mongolus,* listed as Vulnerable
- Little Tern *Sternula albifrons,* listed as Endangered
- Regent Honeyeater *Anthochaera Phrygia,* listed as Critically Endangered
- Sanderling *Calidris alba,* listed as Vulnerable
- Sooty Oystercatcher *Haematopus fuliginosus,* listed as Vulnerable
- Terek Sandpiper *Xenus cinereus,* listed as Vulnerable
- White-bellied Sea Eagle *Haliaeetus leucogaster*, listed as Vulnerable
- White-fronted Chat *Epthianura albifrons,* listed as Vulnerable

Threatened Ecological Community

- Bangalay Sand Forest in the Sydney and South East Corner Bioregions

**a) In the case of a threatened species, where the action proposed is likely to have an adverse effect on the life cycle of the species such that a viable local population of the species is to be placed at risk of extinction.**

Threatened Shorebirds: Beach Stone-curlew, Black-tailed Godwit, Broad-billed Sandpiper, Great Knot, Lesser Sand Plover, Little Tern, Australian Pied Oystercatcher, Sanderling, Sooty Oystercatcher, Terek Sandpiper

Threatened shorebirds are known to occur/nest at Shoalhaven Heads Inlet.

Beach Stone-curlew are found exclusively along the coast, on a wide range of beaches, islands, reefs and in estuaries, and may often be seen at the edges of or near mangroves. They forage in the intertidal zone of beaches and estuaries, on islands, flats, banks and spits of sand, mud, gravel or rock, and among mangroves. Beach Stone-curlew breed above the littoral zone, at the backs of beaches, or on sandbanks and islands, among low vegetation of grass, scattered shrubs or low trees, and among open mangroves. The subject site contains very limited habitat for the Beach Stone-curlew, and mangroves are not present along the foreshore reserve. Although foraging may occur

along River Road Reserve, the species is more typically recorded at Shoalhaven Heads Inlet, which will remain dog prohibited.

Black-tailed Godwit is a migratory bird species that arrives in Australia around August and leaves in March. Foraging habitat includes sheltered bays, estuaries and lagoons with large intertidal mudflats and sandflats. River Road Reserve is a sandy beach and more suitable habitat is found at the nearby Shoalhaven Heads Inlet and Comerong Island.

Broad-billed Sandpiper occur in sheltered parts of the coast, favouring estuarine mudflats but also occasionally occur on saltmarshes, shallow freshwater lagoons, saltworks and sewage farms, and in areas with large soft intertidal mudflats, which may have shell or sandbanks nearby. Occasionally, they occur on reefs or rocky platforms. They have also been recorded in creeks, swamps and lakes near the coast, particularly those with bare mudflats or sand exposed by receding water. Important habitat for the species is limited within the subject site, and the species is more likely to forage within the adjacent dog prohibited areas.

Great Knot migrate to Australia from late August to early September, although juveniles may not arrive until October-November. Great Knot favour sheltered coastal habitats that contain large intertidal mudflats or sandflats and have been recorded at Shoalhaven Heads Inlet. River Road Reserve does provide suitable foraging and nesting habitat for the species. However, more suitable habitat is located at Shoalhaven Heads Inlet that is dog prohibited.

Lesser Sand Plover favour beaches of sheltered bays, harbours and estuaries with large intertidal sandflats or mudflats. Lesser Sand Plover occasionally occurs on sandy beaches, coral reefs and rock platforms. Suitable habitat is located along River Road Reserve. However, the species typically occurs at Shoalhaven Heads Inlet that is dog prohibited.

Little Tern prefer sheltered environments. However, these birds may occur several kilometres from the sea in harbours, inlets and rivers (with occasional offshore islands or coral cay records). Little Tern nest in small, scattered colonies in low dunes or on sandy beaches just above the high tide mark, near estuary mouths or adjacent to coastal lakes and islands. Little Tern have been recorded nesting at Shoalhaven Heads Inlet, and this area is a priority site for the threatened species. Little Tern have not been observed nesting along River Road Reserve, likely due to the Shoalhaven Heads Inlet being preferred habitat.

Australian Pied Oystercatcher frequently nest at Shoalhaven Heads Inlet during their breeding season, which typically occurs between August and January. They favour sandy beaches and intertidal flats, and forage on exposed sand, mud and rock at low tide. Whilst River Road Reserve does provide suitable habitat for nesting, Shoalhaven Heads Inlet and Comerong Island is currently preferred by this species. The important habitat for Australian Pied Oystercatcher at Shoalhaven Heads Inlet will remain protected, and therefore provides an alternative location for breeding and foraging behaviour.

Sanderling breed in Siberia and Artic grounds, then migrate to the Australian coastline from September. Sanderling are often found in coastal areas on low beaches with firm sand, near reefs and inlets, along tidal mudflats, and bare open coastal lagoons. Suitable foraging habitat for Sanderling is limited along River Road Reserve, and although the species has been recorded within the subject site, presence is more commonly associated with Shoalhaven Heads Inlet.

Sooty Oystercatcher tend to breed on offshore islands, and occasionally on isolated promontories. They tend to favour rocky headlands, rocky shelves, exposed reefs with rock pools, beaches and muddy estuaries. River Road Reserve does not provide suitable habitat for nesting behaviour. The presence of dogs may reduce the foraging habitat for this species. However, suitable foraging habitat is found in the wider locality where off-leash dog access is restricted. Therefore, the disturbance to the species via dog presence is unlikely to have a significant impact on the survival of the species.

Terek Sandpiper mostly forage in the open, on soft wet intertidal mudflats or in sheltered estuaries, embayments, harbours or lagoons. The species has also been recorded on islets, mudbanks, sandbanks and spits, and near mangroves and occasionally in samphire (*Halosarcia* spp.). Birds are seldom near the edge of water, although, birds may wade into the water. The stretch of River Road Reserve which is used for dog off-leash access does not provide adequate habitat for the foraging behaviour of the Terek Sandpiper. The species roosts among mangroves, which are absent from the subject site.

Maguire *et al*. (2018) note the positive impact of diverting dog walkers to specific areas, as dogs are then less likely to be present in more sensitive, prohibited areas.

Foraging habitat for shorebirds along River Road Reserve will be reduced by the presence of dogs within the entire off-leash portion of the river. However, more optimal areas of foraging habitat to north and south along Seven Mile Beach, Comerong Island Nature Reserve and at Shoalhaven Heads Inlet will be unaffected. Mitigation measures detailed in Section 8 are expected to avoid impacts to these optimal areas of foraging and breeding habitat.

In relation to signage:

- locations will be selected to avoid disturbance.
- a Council officer or other suitably qualified person will survey the area prior to works commencing and if any of these species are detected in the vicinity, works will stop immediately and not resume until the bird species has vacated the site of its own accord.
- If a nest or nesting birds are detected, works will cease, and mitigation measures will be adapted in consultation with the NPWS Shorebird Recovery Coordinator (or similar expert to minimise the risk of disturbance to the birds and ensure their protection. This may include but not be limited to, delaying the works until the cessation of the breeding season.

As such, the proposed activity is unlikely to have an adverse effect on the life cycle of these species such that a viable local population of the species is to be placed at risk of extinction. A species impact statement (SIS) or entry into the BOS is not required.

Threatened birds – Eastern Osprey, Regent Honeyeater, White-bellied Sea Eagle, White-fronted Chat

Eastern Osprey is considered uncommon to rare or absent from many closely settled parts of south-eastern Australia, but has been recorded within the subject site and the Shoalhaven Heads locality. Eastern Osprey favour coastal areas, especially the mouths of large rivers, lagoons and lakes. When nesting, Eastern Osprey create nests in high dead trees within one kilometre from the sea. Suitable habitat for nesting does not occur along River Road Reserve. It is unlikely that the proposed activity will have a significant impact on the survival of the species, due to the nature and location of nests, occurring high in trees. Eastern Osprey feed on fish over clear, open water, so foraging behaviour will remain unaffected.

Regent Honeyeater mainly inhabit temperate woodlands and open forests of the inland slopes of south-east Australia. This species forage in flowering trees, in particular box-ironbark forests and coastal forest dominated by Swamp Mahogany or Spotted Gum. The nectar species most associated with this species do not occur within the subject site, although they are a nomadic generalist forager and known to utilise orchards and urban gardens. It is unlikely that any habitat on the subject site would be critical to the survival of the species. There is no vegetation clearing associated with the proposed activity and as such, any foraging habitat at the subject site and study area for the Regent Honeyeater remains intact and unharmed.

River Road Reserve and surrounding vegetation provides suitable habitat for White-bellied Sea Eagle, and this species was observed by ecologists from Lodge Environmental during field survey on 29 September 2023. Terrestrial habitats include coastal dunes, tidal flats, grassland, heathland,

woodland, and forest (including rainforest). Breeding habitat consists of mature tall open forest, tall woodland, and swamp sclerophyll forest close to foraging habitat. Nest trees are typically large emergent eucalypts and often have emergent dead branches or large dead trees nearby which are used as 'guard roosts'. This species has also been recorded to construct nests on a cliff edge, on a telegraph pole, and in some cases, on the ground or on rocks (where there are no suitable 30 metre of greater elevations). Suitable breeding habitat is not located at River Road Reserve.

Foraging habitat is also critical in the life cycle of White-bellied Sea Eagle. White-bellied Sea-eagles predominately feed on fish, birds and aquatic reptiles. The species is considered a scavenger, and forage over freshwater and marine landscapes where they hunt prey from a perch or whilst in flight. Prey is often consumed in flight or taken to a feeding platform, but some items are consumed on the ground. Foraging habitat along River Road Reserve will be reduced by the presence of dogs. However, more optimal areas of foraging habitat occur at Seven Mile Beach and Shoalhaven Heads Inlet. Mitigation measures detailed in Section 8 are expected to avoid impacts on these optimal areas of foraging habitat.

White-fronted Chat are usually found foraging on bare or grassy ground in wetland areas, singly or in pairs. Although this species has been previously recorded in the vicinity, River Road Reserve does not provide important habitat for the White-fronted Chat.

It is therefore considered unlikely Eastern Osprey, Regent Honeyeater, White-fronted Chat and White-bellied Sea Eagle would be impacted on by the proposed works, and the proposed activity is unlikely to have an adverse effect on the lifecycle of these species such that a viable local population of any of these species is likely to be placed at risk of extinction.

Marine Species – Green Turtle

Green Turtle is an ocean dwelling species spending most of its life at sea. This species prefers tropical waters and to nest on coral cays that are highly vegetated (shady) and sheltered. The species has been recorded in the study area and broader estuary; no known nesting sites have occurred within the Shoalhaven region, but one has been recorded less than 50 kilometres north in the Illawarra Region. Predation by dogs is listed as a known threat to the species in NSW. However, as there is no known local population of this species, it is unlikely that it will be placed at risk of extinction. If a nesting Green Turtle or young are detected within or immediately adjacent to the subject site, mitigation measures will be adopted in line with the adaptive management approach of the SCC Access Areas for Dogs Policy. In consultation with the NPWS Sea Turtle Coordinator (or similar expert), temporary or partial closures can be designated to minimise risk of disturbance to the turtles and ensure their protection.

**b) In the case of an endangered ecological community or critically endangered ecological community, whether the proposed development or activity:**

**(i) is likely to have an adverse effect on the extent of the ecological community such that its local occurrence is likely to be placed at risk of extinction, or**

**(ii) is likely to substantially and adversely modify the composition of the ecological community such that its local occurrence is likely to be placed at risk of extinction.**

The Bangalay Sand Forest TEC occurs as a small patch of vegetation on the foredune south of the break wall. The works associated with the proposed activity within this community, such as signage installation, will not have an adverse effect on the extent of the TEC or substantially and adversely modify the composition of the ecological community such that its local occurrence is likely to be placed at risk of extinction.

**c) In relation to the habitat of a threatened species or ecological community:**

**(i) The extent to which habitat is likely to be removed or modified as a result of the proposed development or activity, and**

**(ii) Whether an area of habitat is likely to become fragmented or isolated from other areas of habitat as a result of the proposed development or activity, and**

**(iii) The importance of the habitat to be removed, modified, fragmented or isolated to the long-term survival of the species, population or ecological community in the locality.**

No habitat of a threatened species or ecological community is likely to be removed/modified or become fragmented or isolated from other areas of habitat as a result of the proposed activity.

**d) Whether the proposed development or activity is likely to have an adverse effect on any declared area of outstanding biodiversity value (either directly or indirectly).**

No areas of outstanding biodiversity value have been declared in the City of Shoalhaven.

**e) Whether the proposed development or activity is or is part of a key threatening process or is likely to increase the impact of a key threatening process.**

The proposal will not contribute to any key threatening process listed under the BC Act.

**Conclusion**

The Test of Significance concludes that the proposed activity will not have a significant impact on threatened species or ecological communities. As such, a Species Impact Statement or entry into the Biodiversity Offset Scheme is not required.

# Appendix 4 Significant Impact Criteria Assessment (EPBC Act)

The Commonwealth *Significant Impact Guidelines 1.1 – Matters of National Environmental Significance* details criteria to assess whether the proposed activity is likely to have a significant impact to matters of national environmental significance (MNES), and whether referral to the Commonwealth Department for further assessment and approval is required.

The Significant Impact Guidelines provide varying criteria depending on the conservation status. The relevant criteria for threatened species as per their commonwealth status is outlined in Appendix 4.

The following terminology is used throughout the Significant Impact Criteria Assessment and is defined below:

**Population of a species:** an occurrence of the species in a particular area. In relation to critically endangered, endangered or vulnerable threatened species, occurrences include but are not limited to:

- a geographically distinct regional population, or collection of local populations, or
- a population, or collection of local populations, that occurs within a particular bioregion

- **Important population of a species:** a population that is necessary for a species' long-term survival and recovery. This may include populations identified as such in recovery plans, and/or that are:
  - key source populations either for breeding or dispersal
  - populations that are necessary for maintaining genetic diversity, and/or
  - populations that are near the limit of the species range.
- **Invasive species:** an introduced species, including an introduced (translocated) native species, which out-competes native species for space and resources or which is a predator of native species.
- **Habitat critical for the survival of a species** refers to areas that are necessary:
  - for activities such as foraging, breeding, roosting, or dispersal
  - for the long-term maintenance of the species or ecological community (including the maintenance of species essential to the survival of the species or ecological community, such as pollinators)
  - to maintain genetic diversity and long-term evolutionary development, or
  - for the reintroduction of populations or recovery of the species or ecological community
- **Important habitat for migratory species:**
  - habitat utilised by a migratory species occasionally or periodically within a region that supports an ecologically significant proportion of the population of the species, and/or
  - habitat that is of critical importance to the species at particular life-cycle stages, and/or
  - habitat utilised by a migratory species which is at the limit of the species range, and/or
  - habitat within an area where the species is declining.

Following the analysis of Likelihood of Occurrence (Appendix 2), the EPBC Act SIC were applied for the following taxa:

Critically Endangered

- Eastern Curlew
- Great Knot
- Regent Honeyeater

Endangered

- Lesser Sand Plover
- Red Knot
- White's Seahorse

Vulnerable

- Australian Grayling
- Greater Sand Plover
- Green Turtle
- Bar-tailed Godwit

Migratory

- Australian Gull-billed Tern
- Bar-tailed Godwit
- Black-tailed Godwit
- Broad-billed Sandpiper
- Caspian Tern
- Common Tern
- Double Banded Plover
- Eastern Curlew
- Eastern Great Egret
- Fork-tailed Swift
- Great Knot
- Greater Crested Tern
- Greater Sand Plover
- Green Turtle
- Grey Plover
- Grey-tailed Tattler
- Pacific Golden Plover
- Red-necked Stint
- Regent Honeyeater
- Ruddy Turnstone
- Sanderling
- Sharp-tailed Sandpiper
- Terek Sandpiper
- Whimbrel
- White-throated Needletail

## Critically endangered

- **Eastern Curlew Numenius madagascariensis**
- **Great Knot *Calidris tenuirostris***
- **Regent Honeyeater *Anthochaera phrygia***

Each significant impact criterion is addressed below:

***Lead to a long-term decrease in the size of a population***

The site does not support key source populations for breeding or dispersal, populations necessary for maintaining genetic diversity, or populations near the limit of the species range.

***Reduce the area of occupancy of the species***

The Eastern Curlew and Great Knot are known to occupy a nearby site at Shoalhaven Heads Inlet. There is a 250-metre buffer between the dog off-leash access area and dog prohibited area, which will minimise disturbance to those species which occupy Shoalhaven Heads Inlet for foraging and breeding purposes. The proposed activity will not reduce the area of occupancy for Eastern Curlew and Great Knot.

The Regent Honeyeater mainly inhabits temperate woodlands and open forests of the inland slopes of south-east Australia. Due to the species nomadic nature and generalist foraging, the proposed activity will not reduce the area of occupancy.

***Fragment an existing population into two or more populations***

No important populations of Eastern Curlew, Great Knot or Regent Honeyeater occupy the subject site.

***Adversely affect habitat critical to the survival of a species***

Eastern Curlew generally occupy coastal lakes, inlets, bays and estuarine habitats, and in New South Wales are mainly found in intertidal mudflats and sometimes saltmarsh of sheltered coasts. Occasionally, the species occurs on ocean beaches (often near estuaries), and coral reefs, rock platforms, or rocky islets. Critical habitat is located within the dog prohibited area at Shoalhaven Heads Inlet and will not be affected by the proposed activity.

Great Knot typically prefers sheltered coastal habitats, with large intertidal mudflats or sandflats. This includes inlets, bays, harbours, estuaries and lagoons. River Road Reserve dog off-leash access area does not provide critical habitat for the species.

Regent Honeyeater mainly inhabit temperate woodlands and open forests of the inland slopes of south-east Australia. This species forage in flowering trees, in particular box-ironbark forests and coastal forest dominated by Swamp Mahogany or Spotted Gum. The nectar species most associated with this species do not occur on the site. River Road Reserve dog off-leash access area does not provide critical habitat for the species.

***Disrupt the breeding cycle of a population***

The Eastern Curlew breeds in Russia and north-eastern China and migrates to Australia over spring-summer. Great Knot breed in Russia and arrive in Australia in late August to forage. There are several known key breeding areas for the Regent Honeyeater in NSW – Capertee Valley, Lower Hunter Valley, Mudgee/Wollar, and Bundarra-Barraba regions – none of which occur in the Shoalhaven. The Regent Honeyeater usually nests in branches of tall mature eucalypts and sheoaks, which are lacking on the site. The proposed activity will not disrupt the breeding cycle of the population of these species.

***Modify, destroy, remove, isolate or decrease the availability or quality of habitat to the extent that the species is likely to decline***

No critical habitat is located within subject site for these species. The proposed activity will not destroy, remove, isolate, or decrease the availability or quality of habitat for the species, as dogs must remain on leash and on access tracks when outside River Road Reserve, and more suitable habitat at Shoalhaven Heads Inlet for the shorebirds will remain protected from dog disturbance.

***Result in invasive species that are harmful to a critically endangered or endangered species becoming established in the endangered or critically endangered species' habitat***

The proposed activity will not result in the establishment of an invasive species that is harmful to the Eastern Curlew, Great Knot or Regent Honeyeater.

***Introduce disease that may cause the species to decline, or***

The proposal will not result in the introduction of a disease that is harmful to the Eastern Curlew, Great Knot or Regent Honeyeater.

***Interfere with the recovery of the species.***

Considering the above factors, the proposed activity will not interfere substantially with the recovery of these species.

**Conclusion**

The proposal is not considered to constitute a significant impact on the Eastern Curlew, Great Knot or Regent Honeyeater and therefore a referral to the Commonwealth is not recommended.

## Endangered species

- **Lesser Sand Plover *Charadrius mongolus***
- **Red Knot *Calidris canutus***
- **White's Seahorse *Hippocampus whitei***

Each significant impact criterion has been assessed below:

***Lead to a long-term decrease in the size of a population***

No important populations have been recorded within the subject site. The subject site does not support key source populations for breeding or dispersal, populations necessary for maintaining genetic diversity, or populations near the limit of the species range.

***Reduce the area of occupancy of the species***

The Red Knot is not known to occupy the subject site. The species may use subject site for foraging purposes. However, more optimal foraging habitat is located within the dog prohibited area at Shoalhaven Heads Inlet and will remain unaffected.

Lesser Sand Plover has been recorded within the study area. The species may use the subject site for foraging purposes. However, more optimal foraging habitat is located within the dog prohibited area at Shoalhaven Heads Inlet and will remain unaffected.

White's Seahorse is endemic to the south coast of NSW, occurs in coastal estuaries and prefers sponge gardens, seagrass meadows and soft corals, but has been known to use artificial habitats such as jetty pylons and beneath wharves. There are jetty pylons and wharves located within the subject site and study area. However, no known populations of White's Seahorse are located within this area. It is unlikely that the proposed activity will affect any populations in the broader Shoalhaven.

***Fragment an existing population into two or more populations***

There are no existing populations for these species that occur at the subject site. Individual species may occur periodically within the subject site. However, the proposed activity will not result in fragmentation of the population.

***Adversely affect habitat critical to the survival of a species***

Lesser Sand Plover mainly occurs on sheltered sandy, shelly or muddy beaches or estuaries with large intertidal mudflats or sandbanks. Red Knot mainly occurs in small numbers on intertidal mudflats, estuaries, bays, inlets, lagoons, harbours and sandflats and sandy beaches of sheltered coasts. It can occasionally be found on sandy ocean beaches or shallow pools on exposed wave-cut rock platforms. White's Seahorse preferred and most important habitat is coastal estuaries, prefering sponge gardens, seagrass meadows and soft corals. Critical habitat for these species is not located within the subject site to the extent that would adversely affect the survival of the species, and a 250-metre buffer occurs between the dog off-leash access area and dog prohibited area, which provides protected habitat for the species.

***Disrupt the breeding cycle of a population***

The Lesser Sand-plover breeds in central and north eastern Asia and migrating to Australia for winter. Red Knot breed in the Arctic regions of Siberia and arrives in Australia between September and October. White's Seahorse breeds several times a season and is dependent on several factors including temperature. The breeding cycle of these species will not be disrupted.

***Modify, destroy, remove, isolate or decrease the availability or quality of habitat to the extent that the species is likely to decline***

No critical habitat is located within the subject site for these species. The proposed activity will not destroy, remove, isolate, or decrease the availability or quality of habitat for the shorebird species, as dogs must remain on leash and on access tracks when traversing to the river foreshore areas, and more suitable habitat at Shoalhaven Heads Inlet will remain protected from dog disturbance. While there is potential artificial habitat within the subject site for White's Seahorse, it has never been recorded there and unlikely to be important habitat for the species. The proposed activity does not involve changes to the potential artificial habitat and therefore the species is unlikely to decline for this reason.

***Result in invasive species that are harmful to a critically endangered or endangered species becoming established in the endangered or critically endangered species' habitat***

The proposed activity will not result in the establishment of an invasive species that is harmful to the Lesser Sand Plover, Red Knot or White's Seahorse.

***Introduce disease that may cause the species to decline, or***

The proposed activity will not result in the introduction of a disease that is harmful to Lesser Sand Plover, Red Knot or White's Seahorse.

***Interfere with the recovery of the species.***

Considering the above factors, the proposal will not interfere substantially with the recovery of these species.

**Conclusion**

The proposal is not considered to constitute a significant impact on the Lesser Sand Plover, Red Knot or White's Seahorse and therefore a referral to the Commonwealth is not recommended.

## Vulnerable species

- **Australian Grayling *Prototroctes maraena***
- **Greater Sand Plover *Charadrius leschenaultii***

- **Green Turtle *Chelonia mydas***
- **Bar-tailed Godwit *Limosa lapponica***

Each significant impact criterion is addressed below:

***Lead to a long-term decrease in the size of an important population of a species***

No important populations have been recorded within the subject site. The subject site does not provide habitat that would support key source populations for breeding or dispersal or populations necessary for maintaining genetic diversity.

***Reduce the area of occupancy of an important population***

There are historical records of the Australian Grayling occurring in the Shoalhaven River. However, a population of this species is not currently known in this river system.

The Greater Sand Plover has been recorded in the study area and may use the subject site for foraging purposes. However, more optimal foraging area is located within the dog prohibited area at Shoalhaven Heads Inlet and this will remain unaffected by the proposed activity.

Green Turtle is an ocean dwelling species spending most of its life at sea, frequenting coastlines and islands. This species prefers tropical waters and to nest on coral cays that are highly vegetated (shady) and sheltered. The species has been recorded in the study area and broader estuary; no known any nesting sites have occurred within the Shoalhaven region but have been recorded nesting less than 50 kilometres north in the Illawarra region. Important regional populations are all located in northern Australia.

There are many Bar-tailed Godwit records throughout the subject site and study area and nearby Shoalhaven Heads Inlet. This species is strongly migratory and frequents the NSW coast mostly in non-breeding months of the year. This species may use the subject site for foraging purposes. However, more optimal foraging area is located within the dog prohibited area at Shoalhaven Heads Inlet and Comerong Island and will remain unaffected.

***Fragment an existing important population into two or more populations***

There is no existing population that occurs at subject site. Individual species may occur periodically within the subject site. However, the proposed activity will not result in fragmentation of any population.

***Adversely affect habitat critical to the survival of a species***

Critical habitat is not located within the subject site to the extent that will adversely affect species survival.

***Disrupt the breeding cycle of an important population***

Australian Grayling is a migratory species that spawn in freshwater reaches of coastal rivers, and hatched larvae wash out to sea. Juveniles return to the freshwater river, spending time sheltering in brackish water, before spending the rest of their lives in the river habitat. No population of this species is currently known to occur in the Shoalhaven River system.

Both Greater Sand Plover and Bar-tailed Godwit are northern hemisphere breeding species and migrate to Australia to forage, therefore the breeding cycle of the species will not be disrupted.

The Green Turtle has been recorded in the study area and broader estuary. No known nesting sites have occurred within the Shoalhaven region, but have been recorded nesting less than 50 kilometres north in the Illawarra region. However, important regional populations are all located in northern Australia.

***Modify, destroy, remove or isolate or decrease the availability or quality of habitat to the extent that the species is likely to decline***

No critical habitat located within subject site for any species. The proposed activity will not destroy, remove, isolate, or decrease the availability or quality of habitat for the species, as dogs must remain on leash and on access tracks when entering river areas, and more suitable habitat for shorebirds at Shoalhaven Heads Inlet will remain protected from dog disturbance.

***Result in invasive species that are harmful to a vulnerable species becoming established in the vulnerable species' habitat***

The proposed activity will not result in the establishment of an invasive species that is harmful to Greater Sand Plover, Bar-tailed Godwit, Australian Grayling or Green Turtle.

***Introduce disease that may cause the species to decline, or***

The proposed activity will not result in the introduction of a disease that is harmful to Greater Sand Plover, Bar-tailed Godwit, Australian Grayling or Green Turtle

***Interfere substantially with the recovery of the species.***

Considering the above factors, the proposal will not interfere substantially with the recovery of these species.

**Conclusion**

The proposal is not considered to constitute a significant impact on the Greater Sand Plover, Bar-tailed Godwit, Australian Grayling or Green Turtle and therefore a referral to the Commonwealth is not recommended.

## Migratory Species

- **Australian Gull-Billed Tern *Gelochelidon macrotarsa***
- **Bar-tailed Godwit *Limosa lapponica***
- **Black-tailed Godwit *Limosa limosa***
- **Broad-billed Sandpiper *Limicola falcinellus***
- **Caspian Tern *Hydroprogne caspia***
- **Common Tern *Sterna hirundo***
- **Double Banded Plover *Charadrius bicinctus***
- **Eastern Curlew *Numenius madagascariensis***
- **Eastern Great Egret *Ardea alba modesta***
- **Fork-tailed Swift *Apus pacificus***
- **Great Knot *Calidris tenuirostris***
- **Greater Crested Tern *Thalasseus bergii***
- **Greater Sand Plover *Charadrius leschenaultia***
- **Green Turtle *Chelonia mydas***
- **Grey Plover *Pluvialis squatarola***
- **Grey-tailed Tattler *Tringa brevipes***
- **Pacific Golden Plover *Pluvialis fulva***
- **Red-necked Stint *Calidris ruficollis***

- **Regent Honeyeater *Anthochaera phrygia***
- **Ruddy turnstone *Arenaria interpres***
- **Sanderling *Calidris alba***
- **Sharp-tailed Sandpiper *Calidris acuminata***
- **Terek Sandpiper *Xenus cinereus***
- **Whimbrel *Numenius phaeophus***
- **White-throated Needletail *Hirundapus caudacutu***

Each significant impact criterion has been assessed below:

***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***

Australian Gull-Billed Tern is found both coastally and inland in a variety of wetland habitats, including beaches, mudflats, freshwater marshes, and even wet fields. The species utilises ponds and marshes for foraging.

Bar-tailed Godwit is mostly found in coastal habitats such as large intertidal sandflats, banks, mudflats, estuaries, inlets, coastal lagoons and bays. It occurs less frequently in salt lakes and brackish wetlands, sandy ocean beaches and rock platforms.

Black-tailed Godwit is commonly found in sheltered bays, estuaries and lagoons with large intertidal mudflats or sandflats, or spits and banks of mud, sand or shell-grit; occasionally recorded on rocky coasts or coral islets. The use of habitat often depends on the stage of the tide.

Broad-billed Sandpiper occurs in sheltered parts of the coast, favouring estuarine mudflats but also occasionally occur on saltmarshes, shallow freshwater lagoons, saltworks and sewage farms, and in areas with large soft intertidal mudflats, which may have shell or sandbanks nearby. Occasionally, they occur on reefs or rocky platforms. They have also been recorded in creeks, swamps and lakes near the coast, particularly those with bare mudflats or sand exposed by receding water. They often favour mud among, or fringed by, mangroves, particularly on the seaward side, and they sometimes occur in estuaries edged by saltmarsh.

Caspian Tern is mostly found in sheltered coastal embayments (harbours, lagoons, inlets, bays, estuaries and river deltas) and those with sandy or muddy margins are preferred. They also occur on near-coastal or inland terrestrial wetlands that are either fresh or saline, especially lakes (including ephemeral lakes), waterholes, reservoirs, rivers and creeks.

Common Terns are marine, pelagic and coastal. In Australia, they are recorded in all marine zones, but are commonly observed in near-coastal waters, both on ocean beaches, platforms and headlands and in sheltered waters, such as bays, harbours and estuaries with muddy, sandy or rocky shores.

Greater Crested Tern are found in a variety of coastal environments, including open shores, low-lying sandy, rocky or coral islands, estuaries, and sometimes shrubland.

The Double-banded Plover is found on littoral, estuarine and fresh or saline terrestrial wetlands and also saltmarsh, grasslands and pasture. It occurs on muddy, sandy, shingled or sometimes rocky beaches, bays and inlets, harbours and margins of fresh or saline terrestrial wetlands such as lakes, lagoons and swamps, shallow estuaries and rivers.

Eastern Curlew generally occupies coastal lakes, inlets, bays and estuarine habitats, and in New South Wales is mainly found in intertidal mudflats and sometimes saltmarsh of sheltered coasts. Occasionally, the species occurs on ocean beaches (often near estuaries), and coral reefs, rock platforms, or rocky islet.

Eastern Great Egret occurs throughout most of the world, common throughout Australia apart from most arid areas. The species prefers shallow water, particularly when flowing, but may be seen on any watered area, including damp grasslands. Great Egrets can be seen alone or in small flocks, often with other egret species, and roost at night in groups.

Fork-tailed Swift mostly occur over inland plains but sometimes above foothills or in coastal areas. They often occur over cliffs and beaches and over islands and sometimes well out to sea. Habitat for White-throated Needletail varies from woodlands to coastal habitats.

Great Knot typically prefers sheltered coastal habitats, with large intertidal mudflats or sandflats. This includes inlets, bays, harbours, estuaries and lagoons. They are occasionally found on exposed reefs or rock platforms, shorelines with mangrove vegetation, ponds in saltworks, at swamps near the coast, salt lakes and non-tidal lagoons.

Greater Sand Plover is almost entirely coastal, inhabiting littoral and estuarine habitats. They mainly occur on sheltered sandy, shelly or muddy beaches with large intertidal mudflats or sandbanks, as well as sandy estuarine lagoons and inshore reefs, rock platforms, small rocky islands or sand cays on coral reefs.

Green Turtle is an ocean dwelling species spending most of its life at sea, frequenting coastlines and islands. This species prefers tropical waters and to nest on coral cays that are highly vegetated (shady) and sheltered.

Grey Plovers occur almost entirely in coastal areas, where they usually inhabit sheltered embayments, estuaries and lagoons with mudflats and sandflats, and occasionally on rocky coasts with wave-cut platforms or reef-flats, or on reefs within muddy lagoons. They also occur around terrestrial wetlands such as near-coastal lakes and swamps, or salt-lakes.

Grey-tailed Tattler is often found on sheltered coasts with reefs and rock platforms or with intertidal mudflats. It can also be found at intertidal rocky, coral or stony reefs as well as platforms and islets that are exposed at low tide. It has been found around shores of rock, shingle, gravel or shells and also on intertidal mudflats in embayments, estuaries and coastal lagoons, especially fringed with mangroves. Occasionally, the species is recorded on sandy beaches.

Pacific Golden Plover usually inhabits coastal habitats, though it occasionally occurs around inland wetlands. Pacific Golden Plovers usually occur on beaches, mudflats and sandflats in sheltered areas including harbours, estuaries and lagoons, and also in evaporation ponds in saltworks. The species is also sometimes recorded on islands, sand and coral cays and exposed reefs and rocks.

Red-necked Stint is mostly found in sheltered inlets, bays, lagoons and estuaries with intertidal mudflats, often near spits, islets and banks and, sometimes, on protected sandy or coralline shores. Occasionally they have been recorded on exposed or ocean beaches, and sometimes on stony or rocky shores, reefs or shoals, but this is uncommon.

Regent Honeyeater mainly inhabits temperate woodlands and open forests of the inland slopes of south-east Australia. This species forage in flowering trees, in particular box-ironbark forests and coastal forest dominated by Swamp Mahogany or Spotted Gum. The nectar species most associated with this species do not occur on the site.

Ruddy Turnstone is mainly found on coastal regions with exposed rock coast lines or coral reefs. It also lives near platforms and shelves, often with shallow tidal pools and rocky, shingle or gravel beaches. It can be found on sand, coral or shell beaches, shoals, cays and dry ridges of sand or coral. No important habitat will be destroyed or isolated due to proposed activity. The species is unlikely to rely on the habitat within the subject site.

Sanderling is almost always found on the coast, mostly on open sandy beaches exposed to open sea-swell, and also on exposed sandbars and spits, and shingle banks, where they forage in the

wave-wash zone and amongst rotting seaweed. Sanderlings also occur on beaches that may contain wave-washed rocky outcrops. Less often the species occurs on more sheltered sandy shorelines of estuaries, inlets and harbours.

Sharp-tailed Sandpiper prefers muddy edges of shallow fresh or brackish wetlands, with inundated or emergent sedges, grass, saltmarsh or other low vegetation. This includes lagoons, swamps, lakes and pools near the coast, and dams, waterholes, soaks, bore drains and bore swamps, saltpans and hypersaline saltlakes inland. They also occur in saltworks and sewage farms. They use flooded paddocks, sedgelands and other ephemeral wetlands, but leave when they dry. They use intertidal mudflats in sheltered bays, inlets, estuaries or seashores, and also swamps and creeks lined with mangroves.

Terek Sandpiper is found in coastal mudflats, lagoons, creeks and estuaries. The species favours mudbanks and sandbanks located near mangroves, but also occupy rocky pools and reefs.

Whimbrel is often found on the intertidal mudflats of sheltered coasts. It is also found in harbours, lagoons, estuaries and river deltas, often those with mangroves, but also open, unvegetated mudflats. It is occasionally found on sandy or rocky beaches, on coral or rocky islets, or on intertidal reefs and platforms.

White-throated Needletail are almost exclusively aerial, flying from less than 1 m to at least 300 m above ground, with the White-throated Needletail not exceeding 1000 m. Habitat for White-throated Needletail varies from woodlands to coastal habitats.

The proposed activity is unlikely to modify important habitat for migratory species along the dog off-leash access area at River Road Reserve, and important habitat at Shoalhaven Heads Inlet, will remain unaffected by the proposed activity. No important habitat will be destroyed or isolated due to proposed activity.

***Result in an invasive species that is harmful to the migratory species becoming established in an area of important habitat for the migratory species, or***

The proposed activity will not result in the establishment of an invasive species that is harmful to migratory species that visit or forage within the subject site.

***Seriously disrupt the lifecycle (breeding, feeding, migration or resting behaviour) of an ecologically significant proportion of the population of a migratory species.***

Australian Gull-Billed Terns breed in Australia and New Guinea in colonies on lakes, marshes and coast lines, nesting in ground scrapes. The species mostly feeds on insects in flight and often hunts over wet fields and bushy areas to take amphibians and small mammals. Suitable foraging and roosting habitat is restricted within the subject site, and is more likely to occur within the dog prohibited area at Shoalhaven Heads Inlet.

Bar-tailed Godwit breed in the northern hemisphere. The species usually forages near the edge of water or in shallow water, mainly in tidal estuaries and harbours. They appear not to forage at high tide and prefer exposed sandy substrates on intertidal flats, banks and beaches. Occasionally, they have been known to forage among mangroves, or on coral reefs or rock platforms among rubble, crevices and holes. The Bar-tailed Godwit usually roosts on sandy beaches, sandbars, spits and also in near-coastal saltmarsh. There is suitable foraging and roosting habitat located in nearby locations where dog off-leash access is not permitted.

Black-tailed Godwit breed in the northern hemisphere. The species forages on wide intertidal mudflats or sandflats, in soft mud or shallow water and occasionally in shallow estuaries. They use similar habitats on shores of inland lakes and other wetlands. They are found in muddy areas often open and unvegetated, and sometimes they forage among mangroves. They roost and loaf on low banks of mud, sand or shell, bars, islets and beaches in sheltered areas; also, on saltflats behind mangroves. They may occur in non-vegetated areas, or among low vegetation, such as samphire. Suitable

foraging and roosting habitat is restricted within the subject site, and is more likely to occur within the dog prohibited area at Shoalhaven Heads Inlet.

Broad-billed Sandpiper breed in the northern hemisphere. Foraging occurs on exposed flats of soft mud or wet sand at edges of coastal and near-coastal wetlands, often around channels on mudflats or in accumulated mud in swales between shell banks. They roost on the banks of sheltered sandy, shelly or shingly beaches. Foraging habitat is not located within the subject site, and roosting habitat is located within the dog prohibited area at Shoalhaven Heads Inlet.

Caspian Tern do not migrate from Australia, and breed in large colonies both inland, along the coast or on offshore islands. There are no known breeding locations in the locality. The species forage in open wetlands, including lakes and rivers. They often prefer sheltered shallow water near the margins, but can also be found in open coastal waters. Suitable feeding and resting habitat is located in nearby locations which do not allow dog off-leash access.

Greater Crested Terns are classified as migratory because they breed on offshore islands in large colonies. Common Terns do not breed in Australia, as they are northern hemisphere breeders. Both species are oceanic forages, and dive for small fish. Common Tern occasionally will forage in near-coastal terrestrial wetlands, including estuaries, rivers and swamps. During calm weather, Greater Crested Tern may rest on the surface of the ocean. However, during more extreme weather, they will shelter within sand dunes, rocks or vegetation. River Road Reserve does provide suitable habitat for such resting behaviour, but occurrence is unlikely to coincide with the proposed activity as it typically takes place during bad weather.

Double Banded Plover forages on vegetated shingle beds, closely cropped pasture, tilled grounds and mudflats. Suitable habitat for this species is not located within subject site to the extent that would provide significant food and restoration for Double Banded Plover. Additionally, no significant proportions of the migratory species are known to occupy the subject site. The proposed activity will not have an impact on breeding, feeding, migration or resting behaviour to the extent that would seriously disrupt the lifecycle of the migratory species**.**

Eastern Curlew breed in the northern hemisphere. The species forages in or at the edge of shallow water, occasionally on exposed algal mats or waterweed, or on banks of beach-cast seagrass or seaweed. Eastern Curlew roost on sandy spits and islets, especially on dry beach sand near the high-water mark, and among coastal vegetation including low saltmarsh or mangroves. Suitable habitat for feeding or resting is not located within the subject site to the extent that the species lifecycle will be disrupted.

Eastern Great Egret breed in colonies between October and December in southern Australia, and often in association with cormorants, ibises and other egrets. Both sexes construct the nest, which is a large platform of sticks, placed in a tree over the water. The previous years' nest may often be re-used. The species usually feeds alone. It feeds on molluscs, amphibians, aquatic insects, small reptiles, crustaceans and occasionally other small animals, but fish make up the bulk of its diet. The species usually hunts in water, wading through the shallows, or standing motionless before stabbing at prey. Birds have also been seen taking prey while in flight. Great Egrets prefer shallow water, particularly when flowing, but may be seen on any watered area, including damp grasslands. Great Egrets can be seen alone or in small flocks, often with other egret species, and roost at night in groups.

Fork-tailed Swift leaves its breeding grounds in Siberia from August-September. White-throated Needletail breeds in Siberia, north-easter China and Japan, the species leaves the breeding grounds between late August and October.

Great Knot breed in alpine and sub-alpine vegetation in north-east Siberia and the far north-east of Russia. Great Knot forages in sheltered coastal habitats, with large intertidal mudflats or sandflats. This includes inlets, bays, harbours, estuaries and lagoons. The species roosts in large groups in open areas, often at the water’s edge or in shallow water close to feeding grounds. Important habitat is not located within the subject site.

Greater Sand Plover breed in the northern hemisphere. These birds usually feed from the surface of wet sand or mud on open intertidal flats of sheltered embayments, lagoons or estuaries, more often on firm sandy flats than on soft, muddy ones. They usually roost on sand-spits and banks on beaches or in tidal lagoons, and occasionally on rocky points, or in adjacent areas of saltmarsh or claypans. Greater Sand Plover tend to roost further up the beach than other waders, sometimes well above high-tide mark. Suitable habitat for feeding or resting is not located within the subject site, and important habitat at Shoalhaven Heads Inlet will remain protected.

The Green Turtle has been recorded in the study area and broader estuary; no known nesting sites have occurred within the Shoalhaven region but have been recorded nesting less than 50 kilometres north in the Illawarra region. However, important regional populations are all located in northern Australia. Adult green turtles feed mostly on seagrasses and algae and the Great Barrier Reef is considered one of the most important feeding areas for the species.

Grey Plover breeds in the northern hemisphere. Grey Plovers usually forage on large areas of exposed mudflats and beaches of sheltered coastal shores such as inlets, estuaries and lagoons. They also occasionally feed in pasture and at the muddy margins of inland wetlands such as lakes, swamps and bores. They usually roost in sandy areas, such as on unvegetated sandbanks or sand-spits on sheltered beaches or other sheltered environments such as estuaries or lagoons. Foraging and roosting habitat along River Road Reserve will be reduced by the presence of dogs. However, Shoalhaven Heads Inlet provides significant protected habitat for the species.

Grey-tailed Tattler breeds in the Siberia from late May to August. Grey-tailed Tattler forage in shallow water, on hard intertidal substrates, such as reefs and rock platforms, in rock pools and among rocks and coral rubble, over which water may surge. Grey-tailed Tattler have also been recorded foraging on exposed intertidal mudflats, especially with mangroves and possibly seagrass nearby. Occasionally, it forages on intertidal sandflats, around banks of seaweed or protruding rocks or lumps of coral. Grey-tailed Tattler usually roost in the branches of mangroves or, rarely, in dense stands of other shrubs, or on snags or driftwood. Where mangroves are not present, these birds roost on rocks that are sometimes partly submerged, and on beaches and reefs. However, it is rarely reported roosting on bare sandy beaches or river sandbanks. It has been recorded on sand-dunes. However, this is rare for the species.

Pacific Golden Plover breed in the northern hemisphere. The species usually forages on sandy or muddy shores (including mudflats and sandflats) or margins of sheltered areas such as estuaries and lagoons, though it also feeds on rocky shores, islands or reefs. In addition, Pacific Golden Plover occasionally forage among vegetation, such as saltmarsh, mangroves or in pasture or crops. They usually roost near foraging areas, on sandy beaches and spits or rocky points, islets or exposed reefs, occasionally among or beneath vegetation including mangroves or low saltmarsh, or among beach cast seaweed. They sometimes also roost on levee banks and islands in evaporation ponds in saltworks. The subject site is river with a sand back foreshore reserve with limited area for foraging and roosting. Shoalhaven Heads Inlet is dog prohibited and provides an alternative location for Pacific Golden Plover.

Red-necked Stint breed in Siberia and west Alaska, laying its eggs in June. Red-necked Stint mostly forage on bare wet mud on intertidal mudflats or sandflats, or in very shallow water, mostly in areas with a film of surface water and mostly close to edge of water. During high tides they sometimes forage in non-tidal wetlands. Red-necked Stint roost on sheltered beaches, spits, banks or islets, of sand, mud, coral or shingle, sometimes in saltmarsh or other vegetation. They occasionally roost on exposed reefs or shoals. No suitable feeding or resting habitat is located within the subject site.

The Regent Honeyeater has several known key breeding areas in NSW – Capertee Valley, Lower Hunter Valley, Mudgee/Wollar, and Bundarra-Barraba regions – none of which occur in the Shoalhaven. The Regent Honeyeater usually nests in branches of tall mature eucalypts and sheoaks, which are lacking on the site. Minimal preferred feeding or resting habitat is located within the subject site.

Ruddy Turnstone breed in the northern hemisphere. Ruddy Turnstone forage among banks of stranded seaweed or tide wrack, between the lower superlittoral and lower littoral zones of foreshores. They are also known to occupy exposed rocky platforms, coral reefs and mudflats. The Ruddy Turnstone roosts on beaches, above the tideline, among rocks, shells, beach cast seaweed or other debris. They have also been observed roosting on rocky islets among grassy tussocks, and on mudflats and sandflats. Foraging and roosting habitat for the species will be impacted within the subject site. However, more optimal foraging habitat at Shoalhaven Heads Inlet will remain unaffected.

Sanderling breed in the Arctic tundra of Greenland, Canada and Siberia. Sanderling is almost always found on the coast, mostly on open sandy beaches exposed to open sea-swell, and on exposed sandbars and spits, and shingle banks, where they forage in the wave-wash zone and amongst rotting seaweed. Sanderlings also occur on beaches that may contain wave-washed rocky outcrops. Less often, the species occurs on more sheltered sandy shorelines of estuaries, inlets and harbours. They roost on/behind bare sand high on the beach, clumps of washed-up kelp, coastal dunes or rocky reefs and ledges. Suitable foraging and roosting habitat is located within the subject site. However, more optimal habitat for feeding and resting is located to the north and south, along Seven Mile Beach, and this area will be unaffected by the proposed activity as it is a dog on-leash area.

Sharp-tailed Sandpiper breed in the northern hemisphere. The species forage at the edge of the water of wetlands or intertidal mudflats, either on bare wet mud or sand, or in shallow water. They also forage among inundated vegetation of saltmarsh, grass or sedges. They forage in sewage ponds, and often in hypersaline environments. After rain, they may forage in paddocks of short grass, well away from water. They may forage on coastal mudflats at low tide, and move to freshwater wetlands near the coast to feed at high tide. Roosting occurs at the edges of wetlands, on wet open mud or sand, in shallow water, or in short sparse vegetation, such as grass or saltmarsh. Occasionally, they roost on sandy beaches, stony shores or on rocks in water. Suitable habitat is not located within the subject site to the extent that the survival of the species would be significantly affected.

Terek Sandpiper breed in Eurasia. Terek Sandpiper mostly forages in the open, on soft wet intertidal mudflats or in sheltered estuaries, embayments, harbours or lagoon. Occasionally, on sandy beaches, among seaweed and other debris and in rocky areas, Terek Sandpipers will use the supralittoral or upper littoral zone, where a film of water covers the sand. However, on exposed rock platforms, the species forages in the lower littoral zone and not the supralittoral or upper littoral zone. Preferring to roost in or among mangroves, birds may perch in branches or roots up to 2 metres from the ground, or beneath them in the shade on hot days. Occasionally, they roost in dead trees or among tangled driftwood. Elsewhere, they may roost with other waders on flat shores, on muddy spits, islets or banks, and sometimes on sandy and pebbly beaches. Suitable habitat is not located within the subject site to the extent that the survival of the species would be significantly affected.

Whimbrel breeds in the northern hemisphere. The species generally forages on intertidal mudflats, along the muddy banks of estuaries and in coastal lagoons, either in open unvegetated areas or among mangroves. They sometimes forage on sandy beaches or among rocks. Whimbrel have occasionally been sighted feeding on exposed coral or rocky reefs and rock platforms. Available feeding habitat within the subject site may be reduced by the proposed activity. However, more suitable feeding habitat within the locality, such as Shoalhaven Heads Inlet, will remain dog prohibited. Whimbrel is one of a small group of shorebird species that regularly roost in mangroves and other structures flooded at high tide. They often roost in the branches of mangroves around mudflats and in estuaries and occasionally in tall coastal trees. They have also been observed to roost on the ground (sometimes under mangroves or in shallow water), on muddy, sandy or rocky beaches, rocky islets and coral cays. Suitable resting habitat is not located within the subject site.

White-throated Needletail breeds in Siberia, north-eastern China and Japan, the species leaves the breeding grounds between late August and October. The species are aerial eaters, flying anywhere from 1 to 300 metres above the ground to forage. The species forage along the edge of low-pressure systems as it helps to lift prey, such as insects, from the ground and assists in flight. Roosting habitat

for the White-throated Needletail includes trees in forests and woodlands, both among dense foliage in the canopy or in hollows. Occasionally they roost aerially.

All migratory shorebird species listed above occupy a similar habitat consisting of intertidal mudflats or sand flats, located near estuaries, lakes, lagoons, or harbours. Species have occasionally been recorded on open-coast sandy beaches. Regent Honeyeater predominantly occupies forested areas and Green Turtle is ocean dwelling. However, no significant proportions of a migratory species are known to occupy the subject site. The proposed activity will not have an impact on breeding, feeding, migration or resting behaviour to the extent that would seriously disrupt the lifecycle of the migratory species**.**

**Conclusion**

The proposed activity is not considered to constitute a significant impact on the above migratory species and therefore a referral to the Commonwealth is not recommended.

# Appendix 5 Assessment of Significance (FM Act)

Following the analysis of likelihood of occurrence (Appendix 2), the FM Act Assessment of Significance was applied to:

**Fish**

- Australian Grayling *Prototroctes maraena,* listed as Endangered
- White's Seahorse *Hippocampus whitei*, listed as Endangered

**Estuarine Macrophytes**

- Seagrass *Zostera capricorni*
- Grey Mangrove *Avicennia marina*

***s221ZV Determination of whether proposed development or activity likely to significantly affect threatened species, population or ecological community***

**(a) in the case of a threatened species, whether the proposed development or activity is likely to have an adverse effect on the life cycle of the species such that a viable local population of the species is likely to be placed at risk of extinction,**

Australian Grayling is a migratory species that spawn in freshwater reaches of coastal rivers, and hatched larvae wash out to sea. Juveniles return to the freshwater river, spending time sheltering in brackish water, before spending the rest of their lives in the river habitat. There are historical records of the species occurring in the Shoalhaven River. However, no population of this species is currently known to occur in the Lower Shoalhaven River system. The proposed activity is unlikely to have an adverse impact on the lifecycle of these species such that a viable local population of any of these species is likely to be placed at risk of extinction.

White's Seahorse is endemic to the south coast of NSW, occurs in coastal estuaries and prefers sponge gardens, seagrass meadows and soft corals, but has been known to use artificial habitats such as jetty pylons and beneath wharves. There are jetty pylons and wharves located within the subject site and study area. However, no known populations of White's Seahorse are located within this area. It is unlikely that the proposed activity will affect any populations in the broader Shoalhaven. However, if White's Seahorse is discovered to occupy the study area, mitigation measures will be adopted in line with the adaptive management approach of the SCC Access Areas for Dogs Policy. In consultation with the DPIRD (or similar expert), temporary or partial closures can be designated to minimise risk of disturbance to the White's Seahorse and ensure their protection.

**(b) in the case of an endangered population, whether the proposed development or activity is likely to have an adverse effect on the life cycle of the species that constitutes the endangered population such that a viable local population of the species is likely to be placed at risk of extinction,**

No endangered populations are known to occur in or adjacent to the study area and so no impacts are expected as a result of the proposed activity.

**(c) in the case of an endangered ecological community or critically endangered ecological community, whether the proposed development or activity—**

> **(i) is likely to have an adverse effect on the extent of the ecological community such that its local occurrence is likely to be placed at risk of extinction, or**

**(ii) is likely to substantially and adversely modify the composition of the ecological community such that its local occurrence is likely to be placed at risk of extinction,**

No endangered or critically endangered ecological communities are known to occur in or adjacent to the study area and so no impacts are expected as a result of the proposed activity.

**(d) in relation to the habitat of a threatened species, population or ecological community—**

**(i) the extent to which habitat is likely to be removed or modified as a result of the proposed development or activity, and**

**(ii) whether an area of habitat is likely to become fragmented or isolated from other areas of habitat as a result of the proposed development or activity, and**

**(iii) the importance of the habitat to be removed, modified, fragmented or isolated to the long-term survival of the threatened species, population or ecological community in the locality,**

No habitat of a threatened species, population or ecological community is likely to be removed/modified or become fragmented or isolated from other areas of habitat as a result of the proposed activity.

**(e) whether the proposed development or activity is likely to have an adverse effect on any critical habitat (either directly or indirectly),**

No critical habitat is known to occur in or adjacent to the study area and so no impacts are expected as a result of the proposed activity.

**(f) whether the proposed development or activity is consistent with a Priorities Action Statement (PAS),**

The proposed activity is not expected to contradict any actions identified within the Australian Grayling PAS. The potential habitat for the species located within the subject site and study area is not expected to be impacted by the proposed activity and no contemporary records exist of the species within this vicinity. The adaptive management approach of the SCC Access Areas for Dogs Policy allows for consistency with the Australian Grayling PAS should this species be identified as occurring within the study area in the future with the implementation of appropriate mitigation measures to reduce the potential impact of the proposed activity

The proposed activity is not expected to contradict any actions identified within the White's Seahorse PAS. The potential habitat for the species located within the subject site and study area is not expected to be impacted by the proposed activity and no known records exist of the species within this vicinity. However, if White's Seahorse is discovered to occupy the study area, mitigation measures will be adopted in line with the adaptive management approach of the SCC Access Areas for Dogs Policy. In consultation with the DPIRD (or similar expert), temporary or partial closures can be designated to minimise risk of disturbance to the White's Seahorse and ensure their protection.

**(g) whether the proposed development constitutes or is part of a key threatening process or is likely to result in the operation of, or increase the impact of, a key threatening process.**

The only relevant key threatening process (KTP) to the proposed activity is '*Degradation of native riparian vegetation along NSW water courses'* because two estuarine macrophyte vegetation communities – seagrasses and mangroves – occur within and adjacent to the study area.

Seagrasses occur within the study area but are not likely to be exposed at low tide. The proposed activity takes place on the foreshore and not within the waterbody at the subject site to the extent of physical impact (or degradation) of the seagrasses.

Mangroves are not located within the study area but are located within and adjacent to the dog prohibited zone to the south of the subject site, at the nearby Shoalhaven Inlet. There are no physical impacts expected on this vegetation from the proposed activity.

Therefore, the proposed activity is not likely to result in the operation or increase the impact of this (or any other) KTP.

# Appendix 6 Field survey - observed species list

*Table 6 List of flora and fauna observed during the September 2023 field survey (Lodge Environmental)*

| Common Name | Scientific Name | Exotic | Native (local) |
|---|---|---|---|
| **Flora** | | | |
| Coral Tree | *Erythrina crista-galli* | X | |
| Spiny-head Mat-rush | *Lomandra longifolia* | | X |
| Swamp Mahogany | *Eucalyptus robusta* | | X |
| Coast Banksia | *Banksia integrifolia* | | X |
| - | *Acacia sp. (planted)* | | X |
| Pig Face | *Carpobrotus glaucescens* | | X |
| - | *Agave sp.* | X | |
| Agapanthus | *Agapanthus sp.* | X | |
| Coastal Tea Tree | *Leptospermum laevigatum* | | X |
| Chickweed | *Stellaria media* | | X |
| - | *Pinus sp.* | X | |
| Ribwort Plantain | *Plantago lanceolata* | X | |
| Panic Veldt Grass | *Ehrharta erecta* | X | |
| Largeleaf Pennywort | *Hydrocotyle bonariensis* | X | |
| Long-leaved Wattle | *Acacia longifolia* | | X |
| Cape Ivy | *Delairea odorata* | X | |
| Perennial Ryegrass | *Lolium perenne* | X | |
| Knotted Club-rush | *Ficinia nodosa* | | X |
| Coast Beard-heath | *Leucopogon parviflorus* | | X |
| - | *Trifolium sp.* | X | |
| Norfolk Island Hibiscus | *Lagunaria patersonia* | X | |
| Sow Thistle | *Sonchus oleraceus* | X | |
| Native Geranium | *Geranium solanderi* | | X |
| Cobbler's Pegs | *Bidens pilosa* | X | |
| Morning Glory | *Ipomoea cairica* | X | |
| Turkey Rhubarb | *Rumex sagittatus* | X | |
| Hooked Dock | *Rumex brownii* | | X |

| Common Name | Scientific Name | Exotic | Native (local) |
|---|---|---|---|
| Trad | *Tradescantia fluminensis* | X | |
| Sweet Vernal Grass | *Anthoxanthum odoratum* | X | |
| Creeping Juniper | *Juniperus horizontalis* | X | |
| Cape Daisy | *Dimorphotheca pluvialis* | X | |
| Bird's Nest Fern | *Asplenium australasicum* | | X |
| - | *Callistemon sp. (planted)* | | |
| Blue Flax-lily | *Dianella caerulea* | | X |
| Ground Asparagus | *Asparagus aethiopicus* | X | |
| Wall Fumitory | *Fumaria muralis* | X | |
| Bangalay | *Eucalyptus botryoides* | | X |
| Coastal Rosemary | *Westringia fruticosa* | | X |
| New Zealand Spinach | *Tetragonia tretragonioides* | X | |
| Native Sarsaparilla | *Hardenbergia violacea* | | X |
| Hill Fireweed | *Senecio hispadulus* | | X |
| Cheese Tree | *Glochidion ferdinandi* | X | |
| Climbing Saltbush | *Einadia nutans* | | X |
| White Correa | *Correa alba* | | X |
| Broad-leaved Drumsticks | *Isopogon anemonifolius* | | X |
| Burrawang | *Macrozamia communis* | | X |
| Sweet Pittosporum | *Pittosporum undulatum* | | X |
| Common Lilly Pilly | *Syzygium smithii* | | X |
| Coastal Boobialla | *Myoporum boninense* | | X |
| Old Man Banksia | *Banksia serrata* | | X |
| Gossamer Wattle | *Acacia floribunda* | | X |
| Flame Bottletree | *Brachychiton acerifolius* | | X |
| Bracken Fern | *Pteridium esculentum* | | X |
| White Cedar | *Melia azedarach* | | X |
| Blueberry Ash | *Elaeocarpus reticulatus* | | X |
| Yellow Pittosporum | *Pittosporum revolutum* | | X |
| Dandelion | *Taraxacum officinale* | X | |
| Red Flowered Mallow | *Modiola caroliniana* | X | |

| Common Name | Scientific Name | Exotic | Native (local) |
|---|---|---|---|
| Kikuyu | *Pennisetum clandestinum* | X | |
| Purple Top | *Verbena bonariensis* | X | |
| Norfolk Island Pine | *Araucaria heterophylla* | X | |
| Dusky Coral Pea | *Kennedia rubicunda* | | X |
| Sickle Fern | *Pellaea falcata* | | X |
| Prairie Grass | *Bromus carharticus* | X | |
| Hairy Pink | *Petrorhagia dubia* | X | |
| Swamp Paperbark | *Melaleuca ericifolia* | | X |
| Quaking Grass | *Briza maxima* | X | |
| Great Brome | *Bromus diandrus* | X | |
| Green Cestrum | *Cestrum parqui* | X | |
| Bracelet Honey Myrtle | *Melaleuca armillaris* | | X |
| Bony-tip Fleabane | *Erigeron karvinskianus* | X | |
| American Searocket | *Cakile edentula* | X | |
| Lions Ear | *Leonotis leonurus* | X | |
| **Fauna** | | | |
| Noisy Miner | *Manorina melanchephala* | | X |
| Australian Magpie | *Gymnorhina tibicen* | | X |
| Australian Pelican | *Pelecanus conspicillatus* | | X |
| Silver Gull | *Chroicocephalus novaehollandiae* | | X |
| Pied Currarong | *Strepera graculina* | | X |
| Little Cormorant | *Microcarbo niger* | | x |
| Australian Raven | *Corvus coronoides* | | X |
| Rainbow Lorikeet | *Trichoglossus moluccanus* | | X |
| White-bellied Sea-eagle | *Haliaeetus leucogaster* | | X |
| Pied Cormorant | *Phalacrocorax varius* | | X |
| Magpie Lark | *Gaellina cyanoleuca* | | X |
| Yellow-tailed Black-cockatoo | *Calyptorhynchus funereus* | | X |
| Eastern Water Skink | *Eulamprus quoyii* | | X |
| Galah | *Eolophus roseicapilla* | | X |

# Appendix 7 Birddata survey data for subject site and study area

*Table 7 Birdata survey data for the subject site and study area.*

| **Threatened/Migratory Species** | **Subject Site** (off-leash area) | **Study Area** (50-metre buffer) |
|---|---|---|
| Australian Gull-billed Tern | 2019 | 2019 |
| Australian Pied Oystercatcher | 2016, 2017, 2018, 2019, 2023 | 2005, 2011, 2012, 2019 |
| Bar-tailed Godwit | 2016, 2017, 2019, 2024 | 2005, 2012, 2015, 2016, 2019, 2021, 2022 |
| Caspian Tern | 2016, 2019 | 2005, 2012, 2017, 2019 |
| Double-banded Plover | | 2017 |
| Eastern Curlew | 2016, 2017, 2019, 2023 | 2016, 2017, 2019 |
| Eastern Great Egret | 2018, 2019 | 2012, 2015, 2017, 2019, 2021 |
| Greater Crested Tern | 2017, 2018, 2019 | 2005, 2012, 2016, 2019 |
| Grey-tailed Tattler | | 2005 |
| Lesser Sand Plover | | 2005 |
| Little Tern | 2019 | |
| Pacific Golden Plover | | 2005, 2016 |
| Red-necked Stint | | 2005 |
| Whimbrel | 2019 | 2012, 2019 |
| White-bellied Sea-Eagle | 2019 | 2019, 2021 |
| White-throated Needletail | | 2019 |