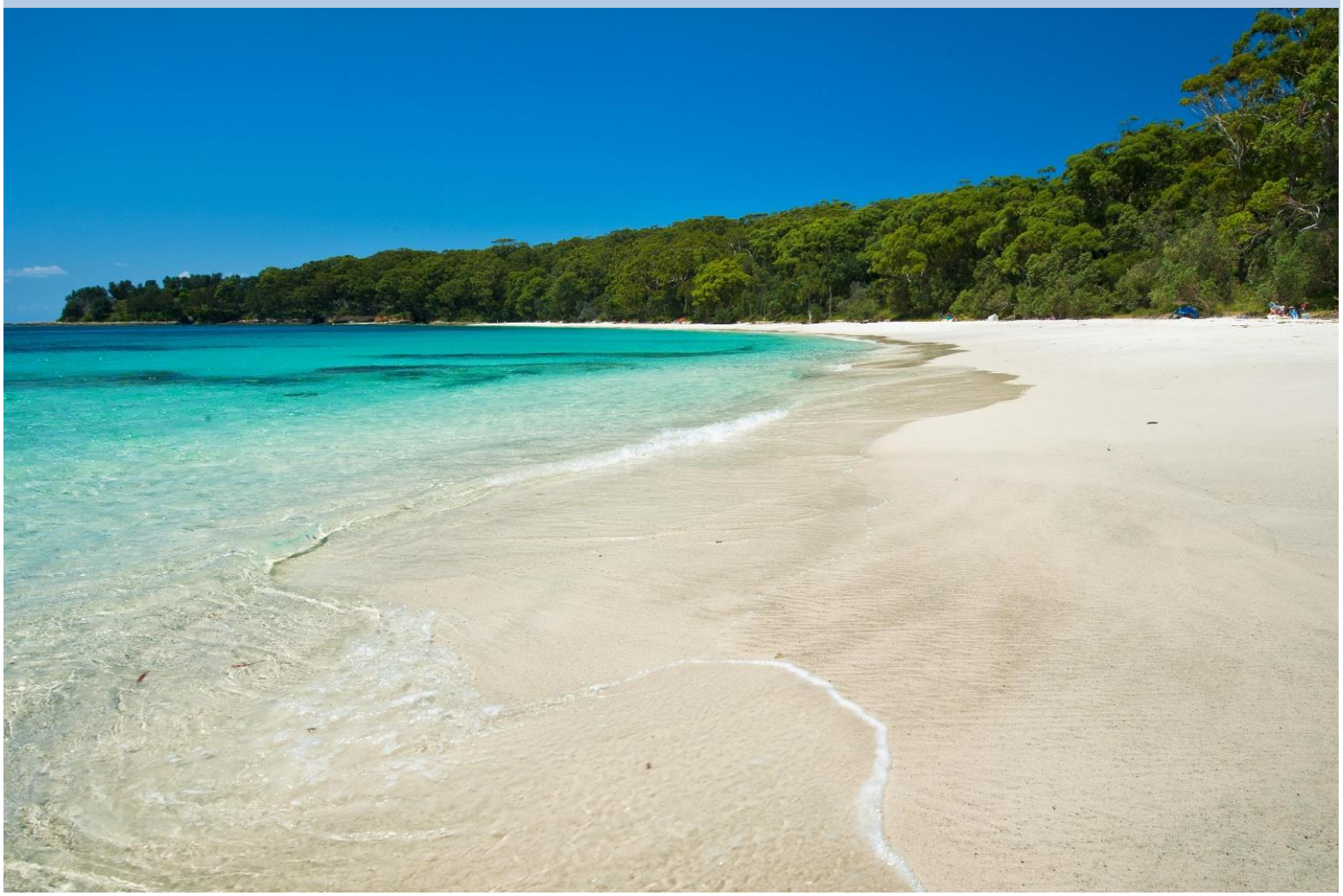
Review of Environmental Factors (REF) - Dog off-leash access

Huskisson Beach, Huskisson



Assessment and approvals overview

Item	Details
Assessment Type	Division 5.1 *Environmental Planning and Assessment Act 1979* (NSW) - REF
Proponent	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).

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1 Introduction

This document provides the environmental assessment for a dog off-leash area and associated ancillary works at Huskisson Beach, in line with requirements for such activities under Part 5 of the *Environmental Planning and Assessment Act 1979* (NSW) (EP&A Act). The 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).

Shoalhaven City Council has recently amended the Shoalhaven Off-Leash Exercise Areas for Dogs Policy and created a new draft Policy, being renamed the Access Areas for Dogs Policy. This REF is one of several REFs that assess the viability and suitability of each dog off-leash area throughout the Shoalhaven local government area (LGA).

This document will provide general details of the proposed activity, legislative context, and potential impacts on the community and the environment to satisfy the due diligence and legislative requirements and obligations of Shoalhaven City Council (Council).

Information obtained through stakeholder engagement, including with the NSW National Parks and Wildlife Service (NPWS) and broader community, was considered in the preparation of this assessment.

Section 9 of this REF includes the mitigation measures required to be implemented by Council in relation to the ongoing use of the Huskisson Beach dog off-leash exercise area.

1.1 Proposed activity

The use of parts of Huskisson Beach for dog off-leash access constitutes an ‘activity’ under Part 5 of the EP&A Act. The dog off-leash area, referred to as the subject site herein, includes the portion of Huskisson Beach where direct impacts on the community and the environment from dog off-leash access may occur and have been assessed (Figure 1). 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 as the study area.

The subject site is designated as a dog off-leash area under the Access Areas for Dogs Policy and has been used as a dog off-leash access area since 2005. The subject site is located directly adjacent to, and appropriately delineated from, a dog prohibited area at Moona Moona Creek and Shark Net Beach, which has been taken into consideration in the preparation of this REF.

The proposed activity includes:

- Provision of a dog off-leash area with restricted times, where dogs can be off-leash during off-peak times (1 October to 30 April from 4 pm to 8 am; 1 May to 30 September from 3 pm to 10 am) to limit impacts on other beach users and recreational activities.

Ancillary works associated with this activity will include the installation of Access Areas for Dogs Policy signage. Existing signposts will be utilised where possible.

Figure 1 Location of the dog off-leash access area at Huskisson Beach.

1.2 Sources of information

This REF has been informed by:

- Database searches:
  - NSW BioNet (accessed on 6 September 2022 and 13 June 2023)
  - Birdata (including Birdlife Australia's shorebird monitoring program survey data) (accessed on 6 September 2022)
  - Council's GIS Enquiry (various data layers from September 2022 to June 2023). This contains GIS layers with data sourced under licence, including sensitive data locations and records of threatened species.
  - Aboriginal Heritage Information Management System (AHIMS) (accessed on 10 November 2022).
  - Council records and archives (January 2023).
- Consultation with the NSW DPE agency NPWS, including consultation with the NPWS Shorebird Ranger and records sourced from the NSW Shorebird Recovery Program.
- 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.
- An on-site survey for the presence of Aboriginal objects on 22 November 2022.
- A site inspection on 22 November 2022 to assess the range of environmental 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) and *Environment Protection and Biodiversity Conservation Act 1999* (Cth) (EPBC Act) that have been recorded within 10 kilometres of the subject site (referred to hereafter 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 Location and context

2.1 Location

Huskisson Beach (Lot 7044 DP 1117433) is a sand-beach located at Huskisson, on the southwest side of Jervis Bay. The beach is approximately 750 metres long, extending south from the rocky point and rock flats located to the south of Shark Net Beach, to the rocks at the mouth of Moona Moona Creek (Figure 2).

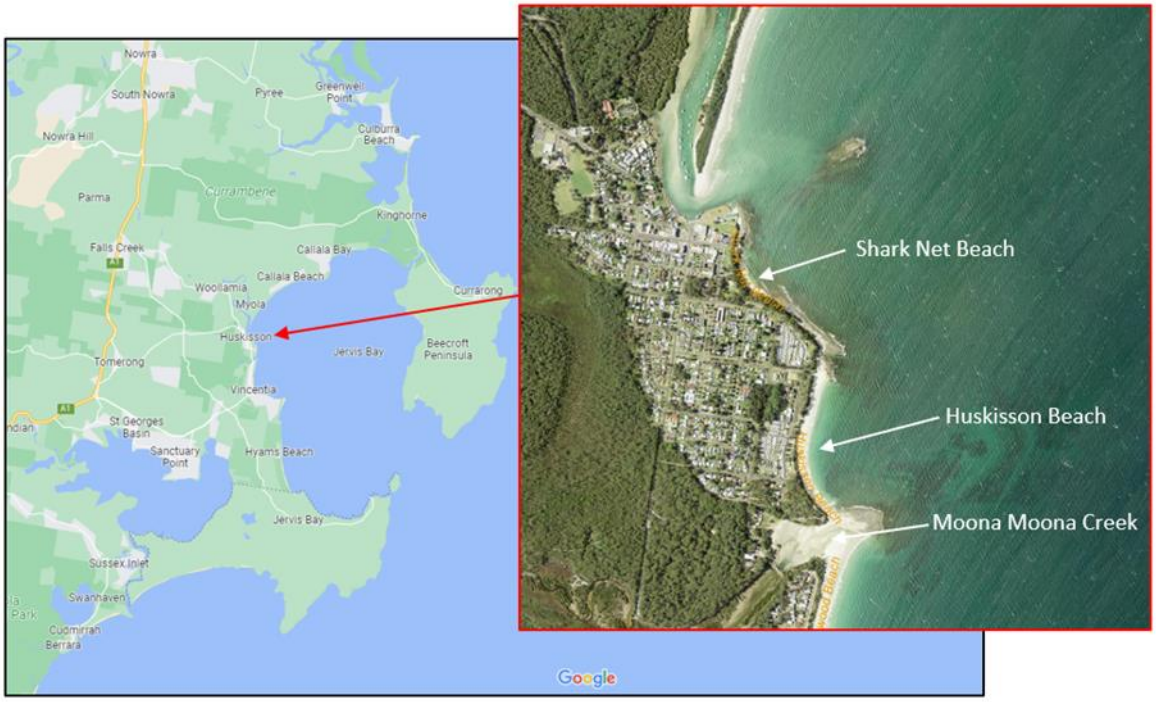

Figure 2 Location of Huskisson Beach, on the southeast coast of NSW.

Huskisson Beach and the adjacent foreshore is zoned as RE1 – Public recreation (*Shoalhaven Local Environmental Plan 2014* (SLEP)).

The subject site and study area are adjacent to Jervis Bay Marine Park, which is managed by NSW Department of Primary Industries.

2.2 Land ownership and management

The Huskisson Beach foreshore 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. 76552) was deemed to be 'for public recreation' and this was published in the NSW Government Gazette on 22 January 1954. An addition to the original reserve was made in December 1973 to provide the current extent.

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). Huskisson Beach foreshore was categorised as Community Land - Park in 2020. All land below the mean high-water mark was gazetted as part of the Jervis Bay Marine Park in January 1998.

3 Existing environment

3.1 Community values

Huskisson Beach is a shared-use area by the community for social and recreational purposes. The beach is actively used by residents and visitors for walking, swimming, paddle boarding, kayaking, snorkelling, and fishing.

Huskisson is a popular holiday destination, with two holiday parks located along the beach. Holiday Haven White Sands is adjacent to the northern rock platform that separates Huskisson Beach from Shark Net Beach, and Holiday Haven Huskisson Beach backs the southern portion of Huskisson Beach.

A shared user footpath and reserve area occurs to the east of the dune system extending along the length of the beach, with parkland at either end. There are multiple parking locations along the beach, including a large carpark at the southern end with access to Huskisson Beach and Moona Moona Creek. There is a children playground and amenities at this location. These areas are heavily used by the public and visitors for social and recreational activities, as well as community events. The peak in their usage typically occurs during the holiday seasons.

The public (including community members and visitors) utilise Huskisson Beach as a timed dog off-leash access area throughout the year.

Many people have a strong affinity to the coast. Huskisson Beach is 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).

3.2 Landscape features

Huskisson is located within the Interim Biogeographic Regionalisation for Australia (IBRA) Sydney Basin bioregion and subregion of Jervis (SYB14). Huskisson Beach is a sandy beach located on the south-west shore of Jervis Bay. Huskisson Beach extends for approximately 750 metres from the southern end of Shark Net Beach, known as Tapalla Point, to the mouth of Moona Moona Creek. Huskisson Beach is a reflective beach bordered by rocky points at both ends, and rocky reefs that extend one kilometre offshore. Moona Moona Creek is a riparian corridor.

Landscape features and significant vegetation is described in Section 6.1.

3.3 Biodiversity

Sandy beaches, such as Huskisson Beach, are key foraging and roosting sites for shorebirds and seabirds. The subject site contains records of threatened shorebirds including Sooty Oystercatcher, Pied Oystercatcher, and Eastern Curlew, and provides habitat for migratory shorebirds previously recorded within the locality. Optimal shorebird breeding and foraging habitat is located at Moona Moona Creek and Collingwood Beach, which are designated as dog-prohibited areas (Figure 1).

In the context of this REF, the subject site:

- is known to contain threatened species listed under the BC Act and the EPBC 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).

A detailed habitat and vegetation assessment is provided in Section 6.1 and a detailed assessment of threatened biodiversity is provided in Section 6.2.

3.4 Cultural heritage

An AHIMS search was conducted on 10 November 2022 and indicated that there were no recorded Aboriginal heritage sites within the subject site. There were two recorded Aboriginal heritage sites within the study area, approximately 40 and 42 metres from Huskisson Beach. However, the impact of the proposed activity on these sites is considered negligible.

Two items of local non-indigenous heritage listed in the SLEP are located within proximity to the subject site.

Further assessment of indigenous and non-indigenous heritage is provided in Section 6.3.

4 Permissibility

The proposed activity is permissible under all relevant legislation (refer to Table 1 below).

Table 1 Summary of legislation and permissibility

Relevant Legislation
NSW State Legislation
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: *'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*.' Designating a dog off-leash area constitutes an 'activity' (given activity applies to 'use of the land'). Section 2.73(3) of the *State Environmental Planning Policy (Transport and Infrastructure) 2021* (NSW) (Transport & Infrastructure SEPP) provides that: *'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—* *(ii) recreation areas and recreation facilities (outdoor), but not including grandstands'* Section 4.68(1) (Continuance of and limitations on other lawful uses) of the EP&A Act further states: *'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.'* The use of the land at Huskisson Beach for a dog off-leash area constitutes 'continuing use' under Section 4.68(1). The use of the beach and foreshore reserve at Huskisson Beach for the purpose of recreation commenced prior to the introduction of the requirement to obtain development consent for that use under relevant environmental planning instruments. The use of the land at Huskisson Beach for a dog off-leash area does not involve the enlargement, expansion or intensification for the purpose of a recreation area. Therefore, in accordance with Section 4.1 and Section 4.68 of the EP&A Act, the activity can be carried out by (or on behalf of) a public authority as development without consent. As with other Part 5 activities, Part 5.5(1) of the EP&A Act requires that *a determining authority in its consideration of an activity shall… examine and take into account to the fullest extent possible all matters affecting or likely to affect the environment by reason of that activity.* This document provides the Part 5.5(1) assessment in the form of a REF.
Crown Land Management Act 2016
Permissible ☑ Not permissible ☐
Council is the appointed Crown Land Manager (CLM) of Huskisson Beach (Crown Land Reserve: R76522, Lot 7044, DP 1117433)

Relevant Legislation

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.

The Core Objectives for management of community land categorised as Park that are set out in the Act and the PoM are:

- to encourage, promote and facilitate recreational, cultural, social, and educational pastimes and activities, and
- to provide for passive recreational activities or pastimes and for the casual playing of games, and
- to improve the land in such a way as to promote and facilitate its use to achieve the other core objectives for its management.

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).* *This plan states:*

> *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.*

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 (POL23/24), does not preclude the activity.

Coastal Management Act 2016

Permissible ☑ Not permissible ☐

The *Coastal Management Act 2016* establishes the framework and overarching objectives for coastal management in NSW. The Act provides for the preparation of Coastal Management Programs (CMP) which set the long-term strategy for coordinated management of the coast with a focus on achieving the objects of the Act.

The 2018 Coastal Zone Management Plan for the Shoalhaven Coastline, https://doc.shoalhaven.nsw.gov.au/DisplayDoc.aspx?record=D18/379377, which is likely to provide the basis for the CMP in preparation at the time of writing, addresses the need to manage the impacts of pest species and dogs on beaches, particularly for the protection of threatened shorebirds. The implementation of the NSW South Coast Shorebird Recovery Program is listed as high priority.

The proposed activity is considered consistent with these strategies, because dogs will continue to be prohibited from environmentally sensitive areas.

State Environmental Planning Policy (Resilience and Hazards) 2021 (Resilience and Hazards SEPP)

Permissible ☑ Not permissible ☐

The subject site is mapped under Division 3 Coastal Environment Area and Division 4 Coastal Use Area for the purpose of the SEPP (Coastal Zone). The development controls relevant to these mapped areas do not apply to development that can be carried out without consent.

Relevant Legislation
The subject site and study area are not mapped by this SEPP as Coastal Wetlands, Littoral Rainforests and Coastal Vulnerability Areas.
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 5 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 proposed activity does not constitute scheduled development work or scheduled activities as listed in Schedule 1 of the POEO Act. The proposed activity therefore does not require an environmental protection licence. The POEO Act regulates and controls pollution of land, air, water, and the emission of noise and provides for notices and offences pertaining to these. This Act also regulates waste management. Impacts associated with pollution or waste management are considered unlikely to result from the proposed activity.
National Parks and Wildlife Act 1974 (NPW Act)
Permissible ☑ Not permissible ☐
The NSW Department of Planning and Environment (DPE) administers the NPW Act, which manages: • Conservation of nature. • Conservation of objects, places and features of cultural value. • Public appreciation, understanding and enjoyment of nature and cultural heritage. • Land reserved under this Act. The NPW Act binds all activities and responsibilities of the Crown. DPE must consider the objectives listed above, the public interest and appropriate management of the subject site and study area. The NPW Act controls activities carried out in designated Parks, Reserves and Aboriginal areas. The NPW Act also requires consideration of impacts on all native birds, reptiles, amphibians and mammals protected under this Act. Additional consideration is required for potential impacts on Aboriginal cultural heritage. Such impacts are addressed in Section 6.3.
Biodiversity Conservation Act 2016 (BC Act)
Permissible ☑ Not permissible ☐
The proposed activity is: • Unlikely to have a significant impact on species and communities listed in the schedules of this Act (Section 6.2). • Not within an area declared to be of 'outstanding biodiversity value' as defined in this Act.

Relevant Legislation
• Unlikely to have a significant impact on threatened species and/or threatened ecological communities (TEC) listed in the schedules of this Act. • Not considered to have a serious and irreversible impact on biodiversity values. The proposed activity, therefore, 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) are not required.
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 6.3.
Local Land Services Act 2013
Permissible ☑ Not permissible ☐
No clearing of vegetation is proposed. No separate authorisation under this Act is required.
Water Management Act 2000
Permissible ☑ Not permissible ☐
Local councils are exempt from Section 91E(1) of this 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).* The proposed activity would not interfere with the aquifer and therefore an interference licence is not required (Section 91F).
Aboriginal Land Rights Act 1993
Permissible ☑ Not permissible ☐
There are unresolved land claims on the subject site. However, this Act does not preclude the activity taking place on the subject site and study area. The Crown Reserve has lawfully been used as a recreational area prior to the lodgement of the land claim. The activity would not affect or complicate the assessment of the land claim as it is does not permanently impact the land as the activity is ongoing and intermittent and would not diminish the size or nature of the land. Therefore, the land would remain as 'claimable land' as defined in this Act.
Marine Estate Management Act 2014
The Marine Estate Management Act provides for the management of the marine estate of NSW consistent with the principles of ecologically sustainable development. Jervis Bay Marine Park is managed in accordance with this Act and the *Marine Estate Management (Management Rules) Regulation 1999*. Accordingly, consultation occurred with DPI Fisheries (Marine Parks) during the preparation and exhibition of the Access Areas for Dogs Policy. The subject site and study area are not located in areas whereby domesticated/companion

Relevant Legislation
animals are prohibited. Thus, the proposed activity can proceed without further approvals being sought from DPI Fisheries, and the fulfillment of the objectives of the Act can be demonstrated.
Commonwealth legislation
Environment Protection and Biodiversity Conservation Act 1999 (EPBC Act)
Permissible ☑ Not permissible ☐
Matters of National Environmental Significance (MNES) are defined in Part 3 of the EPBC Act and include a range of environmental matters. These include world and national heritage, internationally important wetlands, nationally threatened species and communities, and migratory species, along with other matters. 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 (see Section 6.2 and Appendix 4). The proposed activity does not require Commonwealth referral.
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. 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: • the grant of a freehold estate. • the grant of a lease. • the conferral of a right of exclusive possession. • the excavation or clearing of any of the land or waters. • mining. • 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 • the disposal or storing, on the land or in the waters, of any garbage or any poisonous, toxic or hazardous substance. The non-extinguishment principle applies to this Act and no referral or request for comment to NTSCORP is required.

5 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.

Table 2 summarises the assessment of each of the Section 171(2) factors in relation to the proposed activity. The identification of key environmental factors relevant to the proposed activity is further described in Section 6 and the assessments of potential impact are summarised in Section 8.

Table 2 Assessment of Section 171 (EP&A Regulation) matters

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 is located within Community Land and is frequently used as a public reserve for social and recreational activities. The proposed activity would not impact on the community's access to, and amenity of Huskisson Beach. The proposed activity would not impact on views, community services and infrastructure such as water, waste management, educational, medical or social services.
b) the transformation of the locality	Negligible	The subject site is located adjacent to the Jervis Bay Marine Park and is an environment comprising beach and coastal foreshore reserve. The locality will remain a beach and coastal foreshore reserve.
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. However, analysis indicates the impact on these ecosystems is considered negligible given the assessments carried out and with the implementation of mitigative controls. Refer to Section 6.2 for details.

In accordance with Section 171(2) of the EP&A Regulation, Council has considered the following environmental factors:	Assessment of impact	Reason
d) reduction of the aesthetic, recreational, scientific or other environmental quality or value of the locality	Negligible/ Positive	There would be minimal impact on the aesthetic, recreational, scientific or other environmental qualities or value of the locality. The subject site will remain a public reserve and recreation opportunities would not be diminished. The proposed activity would enhance the recreational values of the subject site by providing a controlled dog off-leash area that allows shared and balanced use for the public. Time restrictions enable both dog owners and non-dog owners to utilise the beach intermittently without disruption. The beach will remain family friendly, and recreational activities can still be conducted without dog disturbance within on-leash times. Dog disturbance will be minimal during dog off-leash times as dogs are required, under the *Companion Animals Act 1998* (NSW) (CAA 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 website information. The proposed activity would not involve any direct impact on the natural attributes of the subject site. The beach and coastal foreshore reserve is regularly monitored for erosion and appropriate land management is implemented at the subject site. The establishment of a time restricted dog off-leash area may potentially result in an increase in noise (i.e., increased dogs barking) during the designated off-leash

In accordance with Section 171(2) of the EP&A Regulation, Council has considered the following environmental factors:	Assessment of impact	Reason
		times. The subject site is adjacent to existing public and recreational facilities, such as children's playgrounds and barbeque picnic areas, where noise is generated. The beach and foreshore reserve are heavily used by the public for a diversity of activities. Therefore, noise levels from the dog off-leash area are within a normal range conducive to the existing public use of the beach. As a result, noise would not be considered a disruptive level. Reports or complaints made to Council regarding noise will be monitored.
e) the effects on any locality, place or building that has – (i) aesthetic, anthropological, archaeological, architectural, cultural, historical, scientific or social significance, or (ii) other special value for present or future generations	Negligible	The subject site has no significant aesthetic, architectural, cultural, historical, scientific or social values likely to be impacted on by this activity. 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. The subject site is not within an Aboriginal Place declared under the NPW Act. In accordance with the NSW DPE's Due Diligence Code of Practice, the proposed activity does not require an Aboriginal Heritage Impact Permit as the activity is unlikely to harm an Aboriginal artefact or harm Aboriginal heritage sites. Refer to Section 6.3 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. No habitat will be removed or otherwise impacted on by the proposed activity. The Test of Significance (BC Act) detailed in Appendix 3 Test of Significance (BC Act) concludes that the proposed activity

In accordance with Section 171(2) of the EP&A Regulation, Council has considered the following environmental factors:	Assessment of impact	Reason
		would not have a significant impact on threatened fauna and flora. 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. Refer to Section 6.2 and Section 8.1 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 beach and coastal foreshore reserve that contains limited animal, plant, or other form of life habitat. There are no species likely to rely on the subject site to the extent that modification would result in further endangering of the species. The Tests of Significance (BC Act) provided in Appendix 3 Test of Significance (BC Act) concludes that the proposed activity would not have a significant impact upon threatened flora and fauna. 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 12, Part 7A), which is known as the 'Assessment of Significance' or '7 Part Test'. As the proposed activity is unlikely to have an impact on threatened species, populations or ecological communities, or their habitats listed under the FM Act, a 7 Part Test is not required.

In accordance with Section 171(2) of the EP&A Regulation, Council has considered the following environmental factors:	Assessment of impact	Reason
		Refer to Section 6.2 and Section 8.1 for details.
h) long-term effects on the environment	Negligible/ Positive	The use of the subject site for time restricted dog off-leash access will result in intermittent and ongoing use of the beach and foreshore reserve by the public. 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. Regular monitoring by Council Rangers will occur to enforce compliance and to monitor for the presence of dogs in the adjoining prohibited area at Moona Moona Creek. The presence of Council Rangers will also enable the provision of education to the community. Refer to Section 9 for details.
i) degradation of the quality of the environment	Negligible	The proposed activity involves ongoing and intermittent use of the beach and foreshore reserve by the public for the use of dog off-leash access. The mitigation measures (Section 9) to be implemented will minimise impacts on, and risks to the quality of, the environment. Dune stability will be managed in accordance with the NSW Coastal Dune Management Manual and the Jervis Bay Coastal Management Program (CMP) (currently under development). Access tracks are established to minimise impacts on surrounding dune vegetation. No additional access tracks are proposed. The proposed activity is unlikely to introduce priority weeds, vermin, or feral animals into the area or contaminate the soil. Long-term or long-lasting impact to aquatic ecosystems through the input of

In accordance with Section 171(2) of the EP&A Regulation, Council has considered the following environmental factors:	Assessment of impact	Reason
		sediment or nutrient into the ecosystem is unlikely. 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.
j) risk to the safety of the environment	Negligible / Positive	The subject site is a sensitive natural environment located on the shores of Jervis Bay Marine Park. The proposed activity would not increase the levels of risks 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 is used for social and beach related recreation opportunities, as well as access to them. The proposed activity would have no impact on this beneficial use. 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 area. Neighbouring beaches, including Shark Net Beach and Collingwood Beach, are dog-prohibited, providing dog-free beaches for residents who do not wish to access the beach with dogs.
l) pollution of the environment	Negligible	The proposed activity is not expected to result in pollution of the environment. It is unlikely that the activity (including mitigation measures) would result in water, noise (see item d above), or air pollution, spillages, dust, odours, vibration or radiation. There is no Acid Sulfate Soils located within the subject site. Part of the Huskisson township that backs the beach is classified as Acid Sulfate Soils Low Risk. The associated signage installation

In accordance with Section 171(2) of the EP&A Regulation, Council has considered the following environmental factors:	Assessment of impact	Reason
		may involve minor excavation that will not result in the oxidation of acid sulphate soils. 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 zone to promote compliance.
m) environmental problems associated with the disposal of waste	Negligible	The proposed activity involves time restricted dog off-leash access within the subject site. There would be no trackable waste, hazardous waste, liquid waste, or restricted solid waste as described in the POEO Act as a result of the proposed activity. 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.
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	The subject site 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.
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 processes or coastal hazards, including those projected under climate change conditions. The beach and coastal foreshore reserve is regularly monitored for coastal erosion and appropriate dune management will be

In accordance with Section 171(2) of the EP&A Regulation, Council has considered the following environmental factors:	Assessment of impact	Reason
		implemented at the subject site. Beach access tracks are established to minimise impact on the surrounding dunes and 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) or the *Illawarra Shoalhaven Regional Plan 2041* (NSW DPE, 2021)
r) other relevant environmental factors	Negligible	There are no other relevant environmental factors.

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.

6 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 on these are assessed in Section 8.

6.1 Habitat and vegetation assessment

The subject site was assessed by Council's Biodiversity Project Officer on 22 November 2022. Survey involved a vegetation and habitat assessment of the subject site and study area. Flora and fauna species within subject site and study area were documented as well as an investigation of habitat availability for threatened fauna species.

Within the study area, vegetation mapped as occurring in proximity to the subject site includes the BC Act listed TEC, *Bangalay Sand Forest in the Sydney Basin and South East Corner Bioregions*. Other Plant Community Types (PCT) mapped to occur within the subject site include PCT3273 *South Coast Lowland Shrub-Grass Forest* and PCT3410 *Spinifex Strandline Grassland* (Figure 3).

Within the subject site, the Huskisson Beach berm is largely devoid of living vegetation, although wrack (accumulation of seagrass) is common (Plates 5-6 Appendix).

Scattered vegetation along the incipient dune includes Spinifex (*Spinifex sericeus*), Dune Thistle (*Actites megalocarpus*), Pigface (*Carpobrotus glaucescens*) and Native Geranium (*Pelargonium australe*) (Plates 5, 8 and 9 Appendix).

Foredune species include Coast Teatree (*Leptospermum laevigatum*), Coastal Wattle Tree (*Acacia longifolia sophorae*) and Coastal Beard-heath (*Leucopogon parviflorus*), with Black She-oak (*Allocasuarina littoralis)* and Milk Vine (*Marsdenia rostrata*) scattered throughout (Plates 1-4, 8 and 9 Appendix). Ground-layer species include Spinifex (*Spinifex sericeus*), and Spiny-headed Mat-rush (*Lomandra longifolia*), Common Bracken (*Pteridium esculentum*) and Kidney Weed (*Dichondra repens*). This vegetation is representative of the TEC Bangalay Sand Forest. Planted trees on the foredune include Cooks Pine (*Araucaria columnaris*). Exotic species include Western Australian Golden Wattle (*Acacia saligna*).

Moving westward into the hind dune area, Bangalay (*Eucalyptus botryoides)*, and Coast Banksia (*Banksia integrifolia*) dominate (Plates 10 and 11 Appendix). Further west comprises grassed parkland areas, a paved footpath that extends the length of the beach, and scattered eucalypts including *E. botryoides* and *E. robusta*.

Figure 3 Plant Community Types and Threatened Ecological Communities recorded within and adjacent to the dog off-leash area.

6.2 Threatened species and ecological communities.

This section has been informed by desktop analysis (including databases searches of BioNet, Birdlife Australia's *Birdata*, the EPBC Protected Matters Search Tool and Council's GIS Enquiry), consultation with relevant agencies including NPWS (detailed in Section 7), and a site inspection conducted on 22 November 2022 by Council's Biodiversity Project Officer.

The likelihood of occurrence for threatened fauna and flora listed under the BC Act and/or EPBC Act recorded within the locality (10 kilometres of the subject site) were identified from a database search and site visit. The likelihood of occurrence was assessed as high, medium or low based on species records and habitat features and are shown in Appendix 2, along with consideration of all species listed that have potential to occur within the subject site.

6.2.1 Threatened fauna.

BC Act listed threatened fauna previously recorded within the subject site include Sooty Oystercatcher and Pied Oystercatcher. Birdata also includes records of EPBC Act-listed Eastern Curlew at Moona Moona Creek from 2018 and earlier. Nesting habitat for these species is illustrated in Figure 4.

Based on the habitat present within the subject site (including both the beach environment and the foreshore reserve), BC Act listed threatened fauna species that have the potential to occur at the subject site are:

- Birds:
  - Sooty Oystercatcher *Haematopus fuliginosus*
  - Pied Oystercatcher *Haematopus longirostris*
  - White-bellied Sea Eagle *Haliaeetus leucogaster*
  - Square-tailed Kite *Lophoictinia isura*
  - Gang-gang Cockatoo *Callocephalon fimbriatum*
  - Glossy Black Cockatoo *Calyptorhynchus lathami*
  - Eastern Osprey *Pandion cristatus*
  - Little Lorikeet *Glossopsitta pusilla*

Sooty Oystercatchers were observed within the subject site during the site inspection. Additionally, nesting shorebirds including Pied Oystercatchers were observed on the southern side of Moona Moona Creek in the shorebird nesting area (Figure 4).

Hollow-bearing trees were found to occur in close proximity to Huskisson Beach. However, these will not be impacted on by the proposed activity as no habitat removal will be conducted.

No other threatened fauna or signs of threatened fauna were detected during surveys. Targeted nocturnal surveys were not undertaken since no potential threatened species roosting / nesting habitat (e.g., hollows) would be removed or otherwise impacted on as part of the proposed activity.

An assessment of potential impact on threatened fauna based on the above findings is provided in Section 8.1.1.

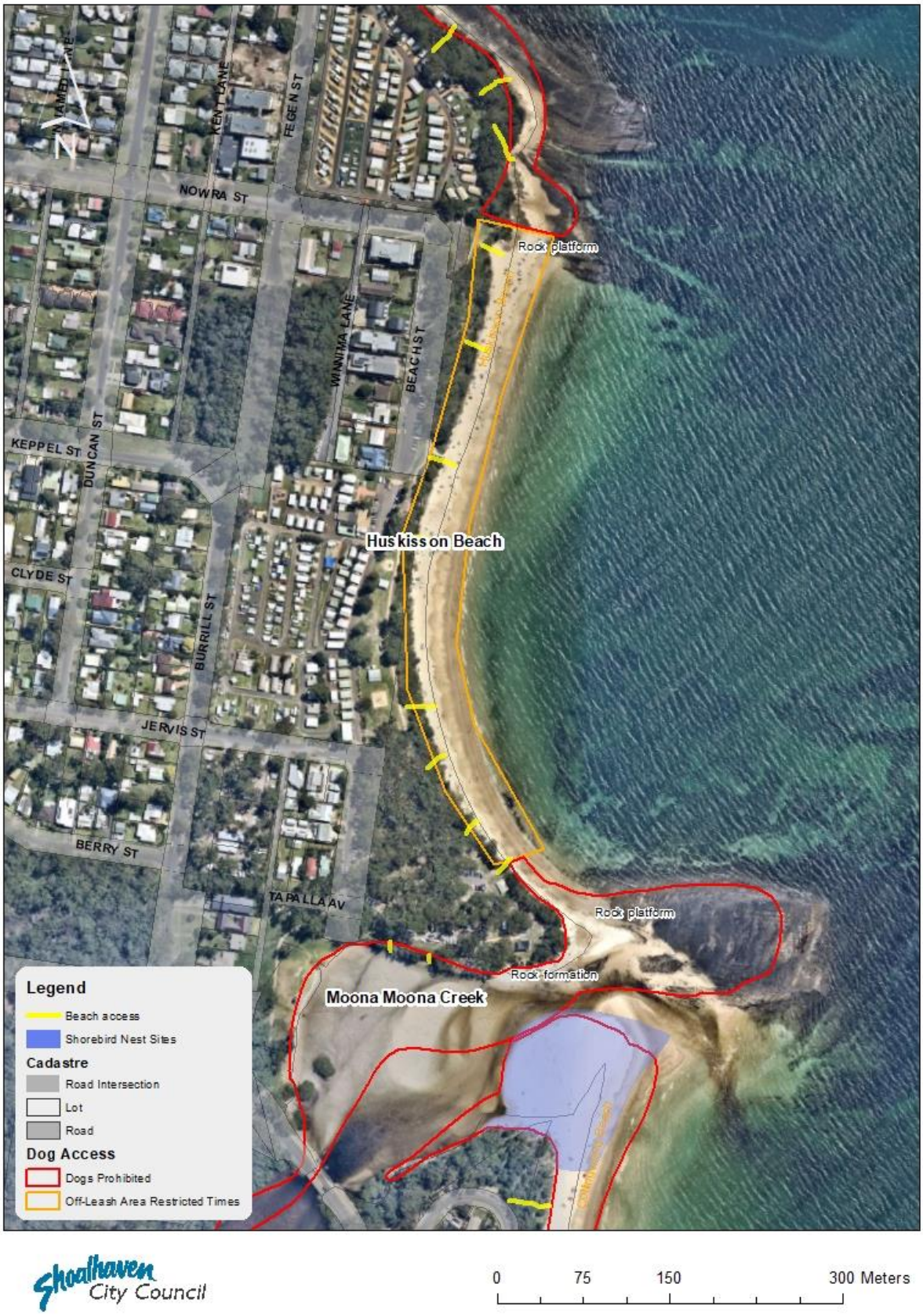

Figure 4 Shorebird nesting location adjacent to the subject site.

6.2.2 Threatened flora.

During the site inspection in preparation for this REF, no threatened flora was observed within the subject site or study area.

Bauer's Midge Orchid *Genoplesium baueri* is the only species considered likely to occur within the subject site. This species typically grows in dry sclerophyll forests and moss gardens over sandstone. Thus, habitat may be present in the foreshore reserve part of the study area.

Habitat is available within the subject site for the Sand Spurge (*Chamaesyce psammogeton*) in the form of foredunes containing Spinifex (*Spinifex sericeus*). However, Sand Spurge records were investigated, and no known populations of Sand Spurge are located within the subject site or study area.

An assessment of the potential impact of the proposed activity on Bauer's Midge Orchid is provided in Section 8.1.2.

6.2.3 Threatened ecological communities.

The TEC *Bangalay Sand Forest in the Sydney Basin and South East Corner* was identified at Huskisson Beach, confirming Council's GIS mapping (Figure 3). This was also validated during the site inspection conducted on 22 November 2022.

An assessment of the potential impact on this threatened ecological community is provided in Section 8.1.2.

6.3 Heritage

6.3.1 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 subject site. There were two recorded Aboriginal heritage sites within the study area, approximately 40 and 42 metres from Huskisson Beach.

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 metres of waters and sand dune).

A literature search was also conducted utilising Council's document archive on 10 November 2022. No documents relating directly to the subject site were found in association with Aboriginal cultural heritage. The two nearby sites have been carefully investigated through examination of site identification cards and are not within a location where they would be impacted on by the proposed activity.

The dune and foreshore 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."*

The proposed activity is within disturbed land as the lands have been subjected to continued disturbance through human activities and 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, the activity can proceed with caution and Step 3 is not required.

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 objects occurring in the area of the proposed activity. As a result, an AHIP is not required, and the activity can proceed. Furthermore, negligible ground disturbance will result from the activity.

6.3.2 Non-Indigenous

Heritage items listed under Schedule 5 of the SLEP 2014 include:

- Item 200 Tapalla Point geological rock platform.
- Item 201 Long grave of Robert Johnson.

Both heritage items are listed as local significance in the Shoalhaven. Heritage Item 201 is located at the northern foreshore of Huskisson Beach at the end of Beach Street, and Heritage Item 200 extends the length of Huskisson Beach and around to Shark Net Beach. The proposed activity is unlikely to have a negative impact on both heritage items.

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

7 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.

7.1 Department of Primary Industries (NSW Fisheries)

No dredging or impact on fish habitat, or the Jervis Bay Marine Park, consultation is not required.

7.2 Department of Planning and Environment (DPE)

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. In addition, recommendations were made in relation to mitigative measures including Council Ranger presence to encourage compliance, and educational signage regarding threatened shorebirds in the area.

7.3 Council Departments

This REF has been prepared by Council's Environmental Services Department, in consultation with Council's Certification and Compliance (Ranger Services Unit) and Recreation Projects – Planning and Delivery Departments.

Ranger Services have confirmed a monitoring presence will continue at Nelsons Beach, Vincentia. Other internal representatives from various council teams were also consulted and attended internal workshops, including Shoalhaven Animal Shelter, Tourism, Community Engagement, and Property.

7.4 Community

Council undertook a comprehensive review of Access Areas for Dogs Policy in 2021, 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 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
- DPE
- 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 – Council Range presence, dog off-leash activity outside of designated hours, and people not picking up after their dogs.
- User conflict and safety – conflict between beach-users with and without dogs, and conflict between dogs and native fauna.

The mitigation measures in Section 96.3 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 garbage receptacles for dog faeces.
- Off-peak time restrictions to reduce conflict with other beach-users.
- 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.

8 Impact assessment

This section reports on the potential for impacts in relation to the environmental factors identified in Section 6 associated with the proposed activity, to comply with relevant legislation identified in Section 4.

Consultation referred to in Section 7 was considered in the assessment of impacts on threatened fauna, flora and threatened ecological communities.

Many of the mitigation measures provided in Section 9 are informed through these assessments.

8.1 Potential impacts

Section 1.7 of the EP&A Act applies the provisions of Part 7 of the BC Act that relate to the operation of the Act in connection with the terrestrial and aquatic environment.

8.1.1 Threatened fauna.

The impact of dog off-leash access on the species listed in Section 6.2.1 have been assessed in this section.

Disturbance of nesting shorebirds and direct predation of eggs and chicks by domestic dogs as a threat for all threatened shorebirds.

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.

Tests of Significance have been undertaken for the relevant species in Appendix 3 Test of Significance (BC Act). The Test of Significance determined that the impact of the proposed activity on BC Act listed threatened species that have the potential to occur at the site is negligible. The impact of the proposed activity on these areas is considered to be negligible as Moona Moona Creek provides a geographical barrier between the dog off-leash area and the known shorebird nesting site that acts as a buffer between shorebirds and dog activity (Figure 4).

The Gang-gang Cockatoo and Glossy Black Cockatoo are also listed as Matters of National Environmental Significance (MNES) with Gang-gang Cockatoo being Endangered and Glossy Black Cockatoo being Vulnerable. Additional fauna species listed as MNES include the Eastern Curlew as Critically Endangered and Migratory, Caspian Tern, and the migratory species Crested Tern, Double Banded Plover, Eastern Curlew, Ruddy Turnstone and Whimbrel.

Assessments using the Significant Impact Criteria in accordance with the Commonwealth Significant Impact Guidelines 1.1 have been undertaken for the above MNES (

Appendix 4 Significant Impact Criteria for EPBC Act Listed Threatened Species). The assessment against the Significant Impact Criteria determined that the impact of the proposed activity on MNES that have the potential to occur at the site is negligible.

8.1.2 Threatened flora and ecological communities.

The impact of dog off-leash access on the species listed in Section 6.2.2 and the TECs listed in section 6.2.3 have been assessed and are reported in this section. Due to the nature of the subject site, i.e., a sand beach, no impact on threatened flora from the proposed activity is likely as these species occur outside of this habitat. Impacts on threatened flora may occur indirectly but are not considered significant.

Tests of Significance have been undertaken for listed threatened flora in Appendix 3 Test of Significance (BC Act). The Test of Significance determined that the impact of the proposed activity on BC Act listed threatened species that have the potential to occur at the site is low.

The Bauer's Midge Orchid is also listed as MNES under the EPBC Act as Endangered.

Assessments in accordance with the Commonwealth Significant Impact Guidelines 1.1 have been undertaken for the above MNES

Appendix 4 Significant Impact Criteria for EPBC Act Listed Threatened Species). The assessment against the Significant Impact Criteria determined that the impact of the proposed activity on MNES that have the potential to occur at the site is negligible.

A Test of Significance has been undertaken for the *Bangalay Sand Forest in the Sydney Basin and South East Corner bioregions* TEC (Appendix 3 Test of Significance (BC Act)). The Test of Significance determined that the impact of the proposed activity on this BC Act listed TEC that has the potential to occur at the site is negligible.

9 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 6, consultation outcomes in Section 7 and the assessment of potential impacts in Section 8, the following safeguards are required to mitigate potential impacts of the proposed activity on the community and the environment:

- A dog-prohibited buffer area between the dog off-leash area and Moona Moona Creek of 200-metres will be maintained. This buffer also contains a geographical barrier of a creek that will provide additional protection to nesting shorebirds. The dog off-leash area boundary has been moved slightly to coincide with the southern access track to promote compliance and reduce boundary confusion (Figure 5).
- The subject site is restricted to a sand beach environment, which does not include suitable habitat for threatened flora species.
- Signage clearly detailing the dog on-leash transit areas, dog off-leash area and dog-prohibited areas will ensure dog owners and dog walkers are aware of these.
- New signage will utilise existing signposts where possible.
- Educational signage regarding the presence of and threat of dogs on threatened shorebirds will be installed at priority access points.
- The off-leash area is limited to off-peak times (4 pm to 8 am Australian Eastern Daylight-Saving Time; and 3 pm to 10 am Australian Eastern Standard Time) to limit impacts on other beach users.
- Regular monitoring by Council Rangers will occur to enforce compliance and to monitor for the presence of dogs in the adjoining prohibited area at Moona Moona Creek. The presence of Council Rangers will also enable the provision of education to the community.
- A penalty infringement notice will be issued by Council Rangers, following an initial caution, for any repeat offenders.
- Council's Environmental Services Department will liaise with 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 and collaborative 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.
- 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, human behaviour and resulting from ongoing and regular assurance activities with stakeholders.

Figure 5 Recommended measures to mitigate potential impacts resulting from the Huskisson Beach dog off-leash area.

The above-listed mitigation measures address the key environmental factors assessed in Section 6 of this REF. All impacts from the proposed activity have been considered and the mitigation measures required to minimise these have been listed in Appendix 5 Impact mitigation measures5.

10 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 Huskisson Beach, including the associated signage installations at access points.

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:

- The proposed safeguards identified in the report (Section 9 and Appendix 5 Impact mitigation measures) shall be adopted and adaptive management of the subject site will be implemented.
- It is unlikely that there will be any significant environmental impact in response to the proposed activity and an Environmental Impact Statement is not required for the proposed activity.
- The proposed activity is not likely to significantly affect threatened species or ecological communities, or their habitats and entry into the Biodiversity Offset Scheme or preparation of a Species Impact Statement is not required.
- The proposed activity is not a 'controlled action' for the purposes of the EPBC Act and referral to the Commonwealth Environment Minister is not required.

Dr Michael Roberts **Date: 13 June 2023**
Manager, Environmental Services
Shoalhaven City Council

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OEH (Office of Environment and Heritage, NSW) 2017, *Sooty Oystercatcher – Profile*
https://www.environment.nsw.gov.au/threatenedspeciesapp/profile.aspx?id=10385

Appendix 1 Photographs of the subject site

Plate 1: Signage located toward southern end of Huskisson Beach indicating end of off-leash area.

Plate 2: Signage located at northern end of Huskisson Beach.

Plate 3: Access track along Huskisson Beach.

Plate 4: Access track at the northern end of Huskisson Beach.

Plate 5: Southern aspect of Huskisson Beach.

Plate 6: Northern end of Huskisson Beach where the dog prohibited area begins.

Plate 7: Southern bank of Moona Moona Creek within the dog-prohibited area.

Plate 8: Vegetation along the southern end of Huskisson Beach.

Plate 9: Vegetation along middle section of Huskisson Beach.

Plate 10: Pathway that runs along Huskisson Beach.

Plate 11: Grassed area and car park at southern end of Huskisson Beach/Moona Moona Creek.

Plate 12: Signage located at Moona Moona Creek.

Plate 13: Temporary signage at Moona Moona Creek (within the nearby dog-prohibited area) indicating nesting shorebirds.

Plate 14: North-eastern aspect of Moona Moona Creek.

Plate 15: Temporary fencing at Moona Moona Creek to protect the shorebird nesting area.

Appendix 2 Threatened species listed under BC Act and EPBC Act

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 (Table 1Table 3). Likelihood of occurrence was assessed for the species listed under BC Act and EPBC Act that have been previously recorded within the locality.

The terms for likelihood of occurrence (Table 3) are defined as:

- 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's 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 on.

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 3 Threatened species listed under BC Act and EPBC Act, recorded for the subject site or 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 Act	EPBC Act			
Birds						
Barking Owl	*Ninox connivens*	V		Inhabits woodland and open forest, including fragmented remnants and partly cleared farmland. It is flexible in its habitat use, and hunting can extend into closed forest and more open areas. Sometimes able to successfully breed along timbered watercourses in heavily cleared habitats due to the higher density of prey found on these fertile riparian soils	Low	No – species is unlikely to be reliant on the habitats located within the subject site.
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 – while the nearby Moona Moona Creek estuary provides likely habitat for the species, the beach environs of the subject site lack the habitat requirements for this species.
Caspian Tern	*Hydroprogne caspia*		M	Sheltered coastal habitats including harbours, lagoons,	Medium	**Yes** – (SIA, Appendix 4)

Common name	Scientific name	Legislation		Habitat associations	Likelihood of occurrence	Significance assessment completed (Appendix 3 and/or 4)
		BC Act	EPBC Act			
				inlets, bays, estuaries, and rivers with sandy or muddy margins.		Although species records indicate presence is uncommon in the locality, the species is known to use the sandy beach habitats of the subject site.
Common Noddy	*Anous stolidus*		M	Usually occurs on or near islands, on rocky islets and stacks with precipitous cliffs, or on shoals or cays of coral or sand. When not at the nest, individuals will remain close to the nest, foraging in the surrounding waters. Birds may nest in bushes, saltbush, or other low vegetation.	Low	No – species is typically found on off-shore tropical islands. Records indicate presence is unlikely to occur at 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 around muddy margins or rocky shores and rarely on mudflats.	Low	No – very rare visitor to the Shoalhaven and important habitat characteristics including wetland environments, are absent from the subject site.
Crested Tern	*Thalasseus bergii*		M	Coastal areas including open shores, low-lying sandy, rocky or coral islands and sometimes shrubland.	High	**Yes** – (SIA, Appendix 4) Species has been recorded at subject site and suitable habitat within subject site.

Common name	Scientific name	Legislation		Habitat associations	Likelihood of occurrence	Significance assessment completed (Appendix 3 and/or 4)
		BC Act	EPBC Act			
Double Banded Plover	*Charadrius bicinctus*		M	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.	Medium	**Yes** – (SIA, Appendix 4) Although species records indicate presence is uncommon in the locality, the species is known to use the sandy beach habitats of the subject site.
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 does not inhabit the sandy beach habitats present within the subject site.
Eastern Bristlebird	*Dasyornis brachypterus*	E	E	Dense, low vegetation including heath and open woodland with a	Low	No – while the species is known in the locality, it is unlikely to occur

Common name	Scientific name	Legislation		Habitat associations	Likelihood of occurrence	Significance assessment completed (Appendix 3 and/or 4)
		BC Act	EPBC Act			
				heathy understorey. Age of habitat since fire is of paramount importance to species (15+ years).		within the dune vegetation adjoining the subject site given the high level of human disturbance.
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.	Medium	**Yes** – (SIA, Appendix 4) Although species records indicate presence is uncommon in the locality, the species has been recorded at the subject site. The species was observed at Moona Moona Creek in February 2023.
Eastern Ground Parrot	*Pezoporus wallicus*	V		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 abundance and diversity of food, adequate cover and suitable roosting and nesting opportunities. It spends most of its time on or near the ground.	Low	No – while the species is known in the locality, it is unlikely to occur within the dune vegetation adjoining the subject site given the high level of human disturbance.
Eastern Osprey	*Pandion cristatus*	V		Favour coastal areas, especially the mouths of large rivers, lagoons and lakes.	Medium	**Yes** – (ToS Appendix 3) Species is known to forage within Moona Moona Creek.

Common name	Scientific name	Legislation		Habitat associations	Likelihood of occurrence	Significance assessment completed (Appendix 3 and/or 4)
		BC 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.	Medium	**Yes** – (ToS Appendix 3, and SIA Appendix 4) A nest site has been recorded near subject site.
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.	Medium	**Yes** – (ToS, Appendix 3; and SIA, Appendix 4) species has been recorded near subject site and suitable habitat is located nearby.
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,	Low	No – no habitat in the form of wetland areas 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 Act	EPBC Act			
				around bays and beaches, and at tidal rivers.		
Little Lorikeet	*Glossopsitta pusilla*	V		Forages primarily in the canopy of open Eucalypt 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.	Medium	**Yes** – (ToS, Appendix 3) Species could use the habitats located within the Moona Moona Creek Reserve adjoining the subject site.
Masked Owl	*Tyto novaehollandiae*	V		Dry eucalypt forests and woodlands from sea level to 1100 metres.	Low	No – no impact as species is unlikely to be reliant on the vegetation communities or habitats located within the subject site.
Olive Whistler	*Pachycephala olivacea*	V		Mostly inhabit wet forests above about 500 metres. During the winter months they may move to lower altitudes.	Low	No – no impact as species is unlikely to be reliant on the vegetation communities or habitats located within the subject site.
Pied Oystercatcher	*Haematopus longirostris*	E		Favours intertidal flats of inlets and bays, open beaches and sandbanks. Coastal or estuarine beaches.	High	**Yes** – (ToS, Appendix 3) Species has been recorded near subject site and suitable habitat is located within subject site.
Powerful Owl	*Ninox strenua*	V		Inhabits a range of vegetation types, from woodland and open sclerophyll forest to tall open wet	Low	No – no impact as species is unlikely to be reliant on the

Common name	Scientific name	Legislation		Habitat associations	Likelihood of occurrence	Significance assessment completed (Appendix 3 and/or 4)
		BC Act	EPBC Act			
				forest and rainforest. Requires large tracts of forest or woodland habitat but can occur in fragmented landscapes as well.		vegetation communities or habitats located within the subject site
Regent Honeyeater	*Anthochaera phrygia*	E	CE	Inhabits dry open forest and woodland, particularly Box-Ironbark woodland, and riparian forests of River Sheoak. These woodlands have significantly large numbers of mature trees, high canopy cover and abundance of mistletoes.	Low	No – records indicate the species is unlikely to occur at the subject site. No breeding habitat for the species occurs in the Shoalhaven.
Ruddy Turnstone	*Arenaria interpres*		M	Found along the coastline and occasionally inland on exposed rocks and reefs with shallow pools and on sandy beaches.	Medium	**Yes** – (SIA, Appendix 4) Although species records indicate presence is uncommon in the locality, the species is known to use the sandy beach habitats of the subject site.
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 – can be seen as deceased individuals on beach during migration, however it is a pelagic species with no important habitat is not present within the subject site.
Sooty Owl	*Tyto tenebricosa*	V		Occurs in rainforest, including dry rainforest, subtropical and	Low	No – no impact as species is unlikely to be reliant on the

Common name	Scientific name	Legislation		Habitat associations	Likelihood of occurrence	Significance assessment completed (Appendix 3 and/or 4)
		BC Act	EPBC Act			
				warm temperate rainforest, as well as moist eucalypt forests.		vegetation communities or habitats located within the subject site.
Sooty Oystercatcher	*Haematopus fuliginosus*	V		Favours rocky headlands, rocky shelves, exposed reefs with rock pools, beaches and muddy estuaries	High	**Yes** – (ToS, Appendix 3) Species has been recorded at subject site and suitable habitat is located within subject site.
Sooty Tern	*Onychoprion fuscata*	V		Large colonies occupy sand or coral scrapes on offshore islands.	Low	No – pelagic species with no important habitat is not present within the subject site.
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.	Medium	**Yes** – (ToS, Appendix 3) Species has been recorded near subject site and suitable habitat is located nearby at the Moona Moona Creek Reserve.
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. 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.*	Low	No – species records and habitat assessment indicate the species is unlikely to occur at the subject site. No breeding habitat for the species occurs in the Shoalhaven.

Common name	Scientific name	Legislation		Habitat associations	Likelihood of occurrence	Significance assessment completed (Appendix 3 and/or 4)
		BC Act	EPBC Act			
				sideroxylon, and White Box *E. albens*. Commonly used lerp infested trees include Inland Grey Box *E. microcarpa,* Grey Box *E. moluccana,* Blackbutt *E. pilularis*, and Yellow Box *E. melliodora*		
Turquoise Parrot	*Neophema pulchella*	V		Lives on the edges of eucalypt woodland adjoining clearings, timbered ridges and creeks in farmland	Low	No – minimal suitable habitat in the adjoining Moona Moona Creek Reserve and records indicate the species is unlikely to occur within the subject site.
Varied Sittella	*Daphoenositta chrysoptera*	V		Inhabits eucalypt forests and woodlands, especially those containing rough-barked species and mature smooth-barked gums with dead branches, mallee and Acacia woodland.	Low	No – minimal suitable habitat in the adjoining Moona Moona Creek Reserve and records indicate the species is unlikely to occur within the subject site.
Wedge-tailed Shearwater	*Ardenna pacifica*		M	Mostly a pelagic, marine species. Found along inshore and offshore water masses.	Low	No – can be seen as deceased individuals on beach during migration, however it is a pelagic species with no important habitat is not present within the subject site
Whimbrel	*Numenius phaeopus*		M	Intertidal mudflats, along muddy banks of estuaries and in coastal lagoons, either in open unvegetated areas or mangroves. Occasionally in harbours, lagoons, estuaries,	Medium	**Yes** – (SIA, Appendix 4) Although species records indicate presence is uncommon in the locality, the species is known to use

Common name	Scientific name	Legislation		Habitat associations	Likelihood of occurrence	Significance assessment completed (Appendix 3 and/or 4)
		BC Act	EPBC Act			
				rivers or sandy and rocky beaches, platforms, or reefs.		the sandy beach habitats of the subject site.
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, 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	Medium	**Yes** – (ToS, Appendix 3) Species has been recorded nearby and suitable habitat is located within the subject site.
White-throated Needletail	*Hirundapus caudacutu*		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.	Low	No – typically aerial species that do not breed in Australia. May roost in trees, but unlikely to rely on the beach habitats within the subject site.
Frogs						
Giant Burrowing Frog	*Heleioporus australiacus*	V	V	Found in heath, woodland and open dry sclerophyll forest on a variety of soil types except those that are clay based	Low	No – recorded near the subject site however the beach environs of the subject site do not provide habitat for the species.

Common name	Scientific name	Legislation		Habitat associations	Likelihood of occurrence	Significance assessment completed (Appendix 3 and/or 4)
		BC Act	EPBC Act			
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.). Optimum habitat includes waterbodies that are unshaded, free of predatory fish such as Plague Minnow (*Gambusia holbrooki*), have a grassy area nearby and diurnal sheltering sites available	Low	No – species is unlikely to be reliant on the vegetation communities or habitats located within the subject site.
Reptiles						
Green Turtle	*Chelonia mydas*	V	V	Ocean-dwelling species spending most of its life at sea	Low	No – 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.
Hawksbill Turtle	*Eretmochelys imbricata*		V	Ocean-dwelling species spending most of its life at sea	Low	No – 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 Act	EPBC Act			
Insects						
Giant Dragonfly	*Petalura litorea*	E		Occupies a variety of permanent to semi-permanent coastal freshwater wetlands	Low	No – species records indicate presence is uncommon within the locality and no important habitats are present within the subject site.
Mammals						
Australian Fur-seal	*Arctocephalus pusillus doriferus*	V		Occurs in inshore and offshore marine waters	Low	No – species records indicate presence is uncommon and no important habitats are present within the subject site.
Eastern Chestnut Mouse	*Pseudomys gracilicaudatus*	V		Found in heathland and is most common in dense, wet heath and swamps. In the tropics it is more an animal of grassy woodlands. Optimal habitat appears to be in vigorously regenerating heathland burnt from 18 months to four years previously.	Low	No – species is unlikely to be reliant on the vegetation communities or habitats located within the subject site.
Eastern Coastal Free-tailed Bat	*Micronomus norfolkensis*	V		Occur in dry sclerophyll forest, woodland, swamp forests and mangrove forests	Low	No – likely to forage in the adjoining Moona Moona Creek Reserve at night however species is unlikely to be reliant on the beach habitats located within the subject site.
Eastern False Pipistrelle	*Falsistrellus tasmaniensis*	V		Prefers moist habitats, with trees taller than 20 m. Generally,	Low	No – likely to forage in the adjoining Moona Moona Creek Reserve at

Common name	Scientific name	Legislation		Habitat associations	Likelihood of occurrence	Significance assessment completed (Appendix 3 and/or 4)
		BC Act	EPBC Act			
				roosts in eucalypt hollows, but has also been found under loose bark on trees or in buildings		night however species is unlikely to be reliant on the beach habitats located within the subject site.
Eastern Pygmy-possum	*Cercartetus nanus*	V		Found in a broad range of habitats from rainforest through sclerophyll (including Box-Ironbark) forest and woodland to heath, but in most areas woodlands and heath appear to be preferred. Occupy small patches of vegetation in fragmented landscapes, can be known to occur in grassy woodlands and the presence of Eucalypts alone is sufficient for populations of low densities.	Low	No – species is unlikely to be reliant on the vegetation communities or habitats located within the subject site.
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 – likely to forage in the adjoining Moona Moona Creek Reserve at night however species is unlikely to be reliant on the beach habitats located within the subject site.
Southern Greater Glider	*Petauroides volans*	E	E	Can be found in dry or wet sclerophyll forests, heathlands and temperate rainforests	Low	No – 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 Act	EPBC Act			
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 – a camp occurs to the north of the subject site in Huskisson. This is well beyond the study area. As such, this species is unlikely to be reliant on the vegetation communities or habitats located within the subject site.
Humpback Whale	*Megaptera novaeangliae*	V	V	The population of Australia's east coast migrates from summer cold-water feeding grounds in Subantarctic waters to warm-water winter breeding grounds in the central Great Barrier Reef.	Low	No – ocean-going species.
Koala	*Phascolarctos cinereus*	E	E	Inhabit eucalypt woodlands and forests.	Low	No – species records indicate presence is unlikely within the subject site.
Large Bent-winged Bat	*Miniopterus orianae oceanensis*	V		Caves are the primary roosting habitat, but also use derelict mines, storm-water tunnels, buildings and other man-made structures	Low	No – likely to forage in the adjoining Moona Moona Creek Reserve at night. However, the species is unlikely to be reliant on the beach habitats located within the subject site.
New Holland Mouse	*Pseudomys novaehollandiae*		V	Known to inhabit open heathlands, woodlands and forests with a heathland	Low	No – species records indicate presence is unlikely to occur within the subject site.

Common name	Scientific name	Legislation		Habitat associations	Likelihood of occurrence	Significance assessment completed (Appendix 3 and/or 4)
		BC Act	EPBC Act			
				understorey and vegetated sand dunes		
New Zealand Fur-seal	*Arctocephalus forsteri*	V		Prefers rocky parts of islands with jumbled terrain and boulders	Low	No – species records and habitat observations indicate the species is unlikely to occur within the subject site.
Spotted-tailed Quoll	*Dasyurus maculatus*	V	E	Utilise a variety of habitat types from rainforests to coastal heath. Occupy hollow-bearing trees, fallen logs, other animal burrows and caves for den sites.	Low	No - species records and habitat observations indicate the species is unlikely to occur within the subject site.
Southern Brown Bandicoot (eastern)	*Isoodon obesulus*	E	E	Generally, only found in heath or open forest with a heathy understorey on sandy or friable soils.	Low	No – species records and habitat observations indicate the species is unlikely to occur within the subject site.
Southern Myotis	*Myotis macropus*	V		Typically roots close to water in caves, mine shafts, hollow-bearing trees, storm water channels, buildings, under bridges and in dense foliage.	Low	No – likely to forage and potentially roost in the adjoining Moona Moona Creek Reserve however species is unlikely to be reliant on the beach habitats located within the subject site.
Southern Right Whale	*Eubalaena australis*	E	E	Migrate between summer feeding grounds in Antarctica and winter breeding grounds around the coasts of southern	Low	No – ocean-going species.

Common name	Scientific name	Legislation		Habitat associations	Likelihood of occurrence	Significance assessment completed (Appendix 3 and/or 4)
		BC Act	EPBC Act			
				Australia, New Zealand, South Africa and South America. They feed in the open ocean in summer.		
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 mid-storey.	Low	No – species records and habitat observations indicate the species is unlikely to occur within the subject site.
White-footed Dunnart	*Sminthopsis leucopus*	V		Can be found in coastal dune vegetation, coastal forest, tussock grassland and sedgeland, heathland, woodland and forest. In NSW, the species seems to favour vegetation communities with an open understorey structure.	Low	No – species is unlikely to be reliant on the vegetation communities or habitats located within the subject site.
Yellow-bellied Glider	*Petaurus 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, moist	Low	No – species has been recorded near subject site and suitable habitat is located nearby, however the species will not use the beach habitats within the subject site.

Common name	Scientific name	Legislation		Habitat associations	Likelihood of occurrence	Significance assessment completed (Appendix 3 and/or 4)
		BC Act	EPBC Act			
				coastal gullies and creek flats to tall montane forests in the south.		
Plants						
Bauer's Midge Orchid	*Genoplesium baueri*	E	E	Grows in dry sclerophyll forest and moss gardens over sandstone.	Medium	**Yes** – (ToS, Appendix 3; and SIA, Appendix 4) Species has been recorded near the subject site and suitable habitat is present within the study area in the form of the foreshore reserve.
Biconvex Paperbark	*Melaleuca biconvexa*	V	V	Generally, grows in damp places, often near streams or low-lying areas on alluvial soils of low slopes or sheltered aspects.	Medium	No – the activity will not result in any impact on vegetation. Habitat preferences are not available within the subject site.
Eastern Australian Underground Orchid	*Rhizanthella slateri*	V	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 – the activity will not result in any impact on vegetation. Habitat preferences are not available within the subject site.

Common name	Scientific name	Legislation		Habitat associations	Likelihood of occurrence	Significance assessment completed (Appendix 3 and/or 4)
		BC Act	EPBC Act			
Ettrema Mallee	*Eucalyptus sturgissiana*	V		Grows on sandy. Swampy soils. Usually restricted to the Northern Budawang Range in Morton National Park, with a few occurrences on the nearby coastal plain.	Low	No – species records and site observations indicate presence is unlikely within the subject site.
Jervis Bay Leek Orchid	*Prasophyllum affine*	E	E	Grows on poorly drained grey clay soils that support low heathland and sedgeland communities.	Medium	No – the activity will not result in any impact on vegetation. Habitat preferences are not available within the subject site.
Leafless Tongue Orchid	*Cryptostylis hunteriana*	V	V	Does not appear to have well defined habitat preferences and is known from a range of communities, including swamp-heath and woodland.	Medium	No – the activity will not result in any impact on vegetation. Habitat preferences are 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 – species records and field observations indicate presence is unlikely within the subject site.
Narrow-leafed Wilsonia	*Wilsonia backhousei*	V		This is a species of the margins of salt marshes and lake	Low	No – species records and field observations indicate presence is unlikely within the subject site.
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	Medium	No – the activity will not result in any impact on vegetation. Habitat

Common name	Scientific name	Legislation		Habitat associations	Likelihood of occurrence	Significance assessment completed (Appendix 3 and/or 4)
		BC Act	EPBC Act			
				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.		preferences are not available within the subject site.
Sand Spurge	*Chamaesyce psammogeton*	E		Grows on foredunes, pebbly strandlines and exposed headlands, often with Spinifex (*Spinifex sericeus*) and Prickly Couch (*Zoysia macrantha*)	Low	No - no known populations of the species are located within the subject site or study area.
Thick Lip Spider Orchid	*Caladenia tessellata*	E	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 records and observations indicate the species is unlikely to occur within the subject site.
	Banksia vincentia	CE	CE	Low sedgeland and grassy heath, sometimes amongst emergent mallee *Corymbia gummifera* and other tall shrubs of Banksia and Hakea Found on coastal sands over clay on sandstone.	Low	No – unlikely to be reliant on the vegetation communities or habitats located within the subject site. Genetic analysis does not support the description of *Banksia vincentia* as a distinct species

Common name	Scientific name	Legislation		Habitat associations	Likelihood of occurrence	Significance assessment completed (Appendix 3 and/or 4)
		BC Act	EPBC Act			
				One population known, containing 14 individuals		
	Pterostylis ventricosa	E		Predominantly in more open areas of tall coastal eucalypt forest often dominated by one or more of the following tree species: - Turpentine, Spotted Gum, Grey Ironbark, Blackbutt, White Stringybark, Scribbly Gum and Sydney Peppermint. Often favours more open areas such as along powerline easements and on road verges where the tree overstorey has been removed or thinned.	Low	No – species records and observations indicate the species is unlikely to occur within the subject site.
Villous Mint-bush	*Prostanthera densa*	V	V	This species has been previously recorded in the Currarong area. It grows in sclerophyll forest and shrubland on coastal headlands in the coastal zone.	Low	No – species records and observations indicate the species is unlikely to occur within the subject site.

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:

Fauna

- Sooty Oystercatcher
- Pied Oystercatcher
- White-bellied Sea Eagle
- Square-tailed Kite
- Gang-gang Cockatoo
- Glossy Black Cockatoo
- Eastern Osprey
- Little Lorikeet

Flora

- Bauer's Midge Orchid

Ecological Communities

- Bangalay Sand Forest in the Sydney Basin 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 - Sooty Oystercatcher and Pied Oystercatcher

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. Huskisson Beach provides suitable habitat in some locations for foraging behaviour. However, the disturbance to the species via dog presence is unlikely to have a significant impact on the survival of the species.

Pied Oystercatchers frequently nest at Moona Moona Creek in Huskisson 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. Although Huskisson Beach provides suitable habitat for nesting and foraging for Pied Oystercatcher, it is uncommon for the species to occur along the beach. Important Pied Oystercatcher habitat at Moona Moona Creek will remain protected, and an appropriate buffer will be implemented between the dog off-leash area and the prohibited area to provide adequate protection for this species.

Huskisson Beach has already been used as a dog off-leash access area for several years and is not considered a viable nesting location for shorebirds. Dogs are prohibited from many other beaches located in the township of Huskisson and nearby Vincentia. Maguire *et al*. (2018) noted the positive impact of diverting dog walkers to specific areas, as dogs are then less likely to be present in more sensitive, prohibited areas.

In relation to signage installation:

- 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 the Sooty Oystercatcher or Pied Oystercatcher such that a viable local population is placed at risk of extinction.

Other threatened birds – White-bellied Sea Eagle, Square-tailed Kite, Gang-gang Cockatoo, Glossy Black Cockatoo, Little Lorikeet, Eastern Osprey

Huskisson Beach foredune and surrounding vegetation provides appropriate habitat for White-bellied Sea Eagle. 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 that are used as 'guard roosts'. White-bellied Sea Eagles have not been recorded nesting in the area. However, if nesting was to occur, the species would be unaffected due to the nature and location of nests being outside the dog off-leash area.

Foraging habitat is also critical in the life cycle of White-bellied Sea Eagle. Foraging habitat along Huskisson Beach will be reduced by the presence of dogs. However, more optimal areas of foraging habitat occur at Shark Net Beach to the north and Collingwood Beach to the south. Mitigation measures detailed in Section 9 are expected to avoid impacts on these optimal areas of foraging habitat.

Square-tailed Kite mainly inhabits open eucalyptus forests and woodlands, often dominated by stringybarks, peppermints or box–ironbark eucalypts, as well as Woollybutt, Spotted Gum, Manna Gum, Messmate, River Red Gums, as well as other trees such as Angophora, cypress-pines and casuarinas. It also occurs along the edges of dense forest and along road verges with remnant or planted trees, and in clearings within forest or in areas of regrowth, up to four years after the area has been logged. Critical habitat needed for the survival of Square-tailed Kite is not located within the subject site and is therefore not considered to be affected by the proposed activity.

Gang-gang Cockatoo are generally found in tall mountain forests and woodlands, particularly in heavily timbered and mature wet sclerophyll forests in spring and summer and move to lower altitudes to drier open Eucalyptus forests in autumn and winter. They typically favour old growth forest and woodland attributes for nesting and roosting. Nests are located in hollows that are 7 centimetres in diameter or larger in eucalypts and 3 metres above ground. Hollow-bearing trees are found within proximity to Huskisson Beach. However, Gang-gang Cockatoos have not been recorded nesting within the proximity of the subject site.

Glossy Black Cockatoo inhabits open forest woodlands of the coast where sheoak occurs. Black Sheoak (*Allocasuarina littoralis*) and Forest Sheoak (*A. torulosa*) are important foods for this species. Glossy Black Cockatoo are dependent on hollow-bearing Eucalyptus trees for nest sites. Hollow-bearing trees are found within the proximity of Huskisson Beach. However, Glossy Black Cockatoos have not been recorded nesting within the proximity of the subject site.

Little Lorikeet forage primarily in the canopy of open *Eucalyptus* spp. dominated forest and woodland. However, birds can also find food sources in *Angophora, Melaleuca* and other tree species. Little Lorikeet favour riparian environments when foraging for food. However, birds often roost in treetops distant from feeding areas. Breeding typically occurs from May to September in locations within the proximity of feeding site. Little Lorikeet has been recorded within the locality but are unlikely to be observed on Huskisson Beach because of the availability of the preferred habitats.

Eastern Osprey is considered uncommon to rare or absent from many closely settled parts of south-eastern Australia and has been recorded within the study area. Eastern Osprey favour coastal areas, especially in the mouths of large rivers, lagoons, and lakes. When nesting, Eastern Osprey create nests in high dead trees or artificial structures within 1 kilometre from the sea. Suitable habitat for nesting occurs along Huskisson Beach and Moona Moona Creek. However, the species has not been recorded nesting adjacent to the dog off leash area. 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. Eastern Osprey feed on fish over clear, open water. Therefore, foraging behaviour will remain unaffected.

It is therefore considered unlikely that White-bellied Sea Eagle, Square-tailed Kite, Gang-gang Cockatoo, Glossy Black Cockatoo, Little Lorikeet and Eastern Osprey will be impacted on by the proposed activity, 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.

Bauer's Midge Orchid

Bauer's Midge Orchid has been recorded from locations between Ulladulla and Port Stephens. The species grows in dry sclerophyll forest and moss gardens over sandstone. The core sections of the subject site (Huskisson Beach) do not contain suitable habitat for the species. The foreshore reserve parts of the study area contain some habitat commensurate with the requirements for this species, but these areas will not be disturbed in response to the proposed activity as designated areas have already experienced disturbance.

As such, the proposed activity is unlikely to have an adverse effect on the life cycle of the Bauer's Midge Orchid such that a viable local population of the species is to be placed at risk of extinction.

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 beach and foredune area, where dogs are proposed to be permitted off-leash, does not comprise an endangered ecological community. However, areas surrounding Moona Moona Creek are classified as *Bangalay Sand Forest in the Sydney Basin and South East Corner bioregions* TEC (Figure 3). 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,

(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 this 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 Shoalhaven LGA.

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 proposed activity 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 for EPBC Act Listed Threatened Species

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 on a matter protected under national environment law — the EPBC Act, 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 this section.

The following terminology is used throughout the Significant Impact Criteria (SIC) assessment:

- **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 (also Migratory)

Endangered Fauna

- Sooty Oystercatcher
- Square-tailed Kite
- Gang-gang Cockatoo

Endangered Flora

- Bauer's Midge Orchid

Vulnerable Fauna

- Glossy Black Cockatoo

Migratory Birds

- Caspian Tern
- Double Banded Plover
- Eastern Curlew
- Ruddy Turnstone
- Whimbrel

Critically Endangered

- **Eastern Curlew (*Numenius madagascariensis*)**

Each significant impact criteria have been addressed below:

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

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. Thus, the proposed activity will not lead to a long-term decrease in the size of an Eastern Curlew population.

Reduce the area of occupancy of the species.

The species does not occupy the subject site. Thus, the proposed activity will not reduce the area of occupancy for the Eastern Curlew.

Fragment an existing population into two or more populations.

The dog prohibited area at Moona Moona Creek provides potential foraging habitat for the Eastern Curlew. As such, this designated area will provide protection for the species and the population will therefore remain unaffected and unfragmented.

Adversely affect habitat critical to the survival of a species

The 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 islets. Since foraging habitat is located within the dog prohibited area at Moona Moona Creek, the proposed activity will not adversely affect habitat critical to the survival of the species.

Disrupt the breeding cycle of a population.

The Eastern Curlew breeds in Russia and north-eastern China but its distribution is poorly known. As such, the proposed activity will not disrupt the breeding cycle of the species population.

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

The proposed activity will not destroy, remove, isolate, or decrease the availability or quality of habitat for the species, as the habitat for this species is more likely to occur within a designated dog prohibited area.

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.

Introduce disease that may cause the species to decline, or

The proposed activity will not result in the introduction of a disease that may cause the Eastern Curlew species to decline.

Interfere with the recovery of the species.

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

Conclusion

The proposed activity is not considered to constitute a significant impact on the Eastern Curlew and therefore a referral to the Commonwealth is not recommended.

Endangered Species

- **Gang-gang Cockatoo (*Callocephalon fimbriatum*)**

Each significant impact criteria have been assessed below:

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

No populations have been recorded within the study area. 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. Accordingly, the proposed activity will not lead to a long-term decrease in the size of a Gang-gang Cockatoo population.

Reduce the area of occupancy of the species.

The species is not known to occupy the subject site. The species may use the subject site for foraging purposes. However, more optimal foraging habitat is located in nearby woodland areas.

Fragment an existing population into two or more populations.

There is no existing population that occurs within 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

Gang-gang Cockatoo are generally found in tall mountain forests and woodlands, particularly in heavily timbered and mature wet sclerophyll forests in spring and summer and move to lower altitudes to drier open eucalyptus forests in autumn and winter. They typically favour old growth forest and woodland attributes for nesting and roosting. No such habitat is located within the subject site. Therefore, habitat critical to the survival of the species is unlikely to be affected.

Disrupt the breeding cycle of a population.

The Gang-gang Cockatoo species favour old growth forest and woodland attributes for nesting and roosting. Appropriate trees consisting of large hollows that are 7 centimetres or more in diameter, and 3 metres above the ground are not located within the subject site. Therefore, the breeding cycle of the population 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.

The proposed activity will not destroy, remove, isolate, or decrease the availability or quality of habitat for the Gang-gang Cockatoo since breeding and complementary foraging habitat is present outside the study area.

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.

Introduce disease that may cause the species to decline, or

The proposed activity will not result in the introduction of a disease that may cause the Gang-gang Cockatoo species to decline.

Interfere with the recovery of the species.

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

Conclusion

The proposed activity is not considered to constitute a significant impact on the Gang-gang Cockatoo and therefore a referral to the Commonwealth is not recommended.

- **Bauer's Midge Orchid *Genoplesium baueri***

Each significant impact criteria have been assessed below:

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

No populations have been recorded within the study area. 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. Thus, the proposed activity will not lead to a long-term decrease in the size of a Bauer's Midge Orchid population.

Reduce the area of occupancy of the species.

Bauer's Midge Orchid does not occupy the subject site.

Fragment an existing population into two or more populations.

Bauer's Midge Orchid has been recorded from locations between Ulladulla and Port Stephens and grows in dry sclerophyll forest and moss gardens over sandstone. The subject site does not contain suitable habitat for the species. Some marginal habitat occurs in the study area in sections of the foreshore reserve, however, as these areas are already disturbed and the proposed activity will not elevate this level of disturbance, fragmentation is considered unlikely to occur.

Adversely affect habitat critical to the survival of a species

Since there is only marginal habitat for this species in the study area, and it will not be impacted on, the proposed activity will not affect habitat critical to the survival of the Bauer's Midge Orchid.

Disrupt the breeding cycle of a population.

The Bauer's Midge Orchid is known to reproduce via seed – at the base of the mature plant and germinate, or via dispersal mechanisms and germinate where they are deposited, or vegetatively through budding polyps or beads on an existing mature tuber. Since all of these mechanisms are localised, and marginal habitat only occurs in the study area that will not be impacted on, the proposed activity will not affect the breeding cycle of the Bauer's Midge Orchid.

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

The proposed activity will not destroy, remove, isolate, or decrease the availability or quality of habitat for the Bauer's Midge Orchid since only marginal habitat is present in the study area and this will not be impacted on.

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 Bauer's Midge Orchid species.

Introduce disease that may cause the species to decline.

The proposed activity will not result in the introduction of a disease that will cause the Bauer's Midge Orchid species to decline.

Interfere with the recovery of the species.

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

Conclusion

The proposed activity is not considered to constitute a significant impact on the Bauer's Midge Orchid and therefore a referral to the Commonwealth is not recommended.

Vulnerable Species

- **Glossy Black Cockatoo (*Calyptorhynchus lathami lathami*)**

Each significant impact criteria have been addressed below:

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

No important Glossy Black Cockatoo 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. As such, the proposed activity will not lead to a long-term decrease in the size of an important Glossy Black Cockatoo population.

Reduce the area of occupancy of an important population.

No important Glossy Black Cockatoo populations have been recorded within the subject site. Although the species may utilise the subject site and the study area for foraging purposes, more optimal foraging habitats (containing *Allocasuarina* spp.) with complementary breeding habitat is available outside the study area. Accordingly, the proposed activity is not considered to reduce the area of occupancy for the Glossy Black Cockatoo or an important population of this species.

Fragment an existing important population into two or more populations.

No important Glossy Black Cockatoo populations have been recorded within the subject site. Individuals of this species may only occur periodically within the subject site as transients. Therefore, the proposed activity will not result in fragmentation of a Glossy Black Cockatoo population or an important population of this species.

Adversely affect habitat critical to the survival of a species

Complementary breeding and foraging habitat for the Glossy Black Cockatoo occurs outside of the study area. Consequently, the proposed activity will not adversely affect habitat critical to the survival of the Glossy Black Cockatoo species.

Disrupt the breeding cycle of an important population.

No important Glossy Black Cockatoo populations have been recorded within the subject site. This species is dependent on large hollow-bearing eucalyptus for nest sites. The vegetation within the subject site does not support core breeding habitat required by this species. Therefore, the proposed activity is not considered to disrupt the breeding cycle of the Glossy Black Cockatoo or of an important population of this species.

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

The proposed activity will not destroy, remove, isolate or decrease the availability or quality of habitat for the Glossy Black Cockatoo.

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 the Glossy Black Cockatoo species.

Introduce disease that may cause the species to decline.

The proposed activity will not result in the introduction of a disease that will cause the Glossy Black Cockatoo species to decline.

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

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

Conclusion

The proposed activity is not considered to constitute a significant impact on the Glossy Black Cockatoo and therefore a referral to the Commonwealth is not recommended.

Migratory Species

The following species are considered together as the occupy similar habitats upon migration to south-eastern Australia:

- **Caspian Tern (*Hydroprogne caspia*)**
- **Eastern Curlew (*Numenius madagascariensis*)**
- **Whimbrel (*Numenius phaeopus*)**

Each significant impact criteria have 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.

Important non-breeding habitat for these species comprises sheltered embayments (Caspian Tern) and intertidal mudflats (Eastern Curlew and Whimbrel). Important breeding habitat for these species occurs outside of Australia for the Eastern Curlew and Whimbrel, whereas Menindee Lakes of NSW is the nearest important breeding habitat for the Caspian Tern.

Important non-breeding habitat does not occur within the subject site or study area. It may occur within adjacent areas of the coastal zone, such as Shark Net Beach, Moona Moona Creek, and Collingwood Beach, and these will remain unaffected by the proposed activity. As such, no important habitat for these species will be destroyed or isolated by the 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.

Important habitat does not occur within the subject site or study area. The proposed activity will not result in the establishment of an invasive species that is harmful to the migratory species that visit or forage within the subject site or important habitat in other areas of the coastal zone.

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

All three migratory species occupy similar foraging habitats consisting of intertidal mudflats or sand flats, located near estuaries, lakes, lagoons, or harbours.

Important breeding habitat for these species occurs outside of the study area.

Although these species have occasionally been recorded on open-coast sandy beaches, no significant proportions of these migratory species are known to occupy the subject site. As such, the proposed activity will not have an impact on breeding, feeding, migration or resting behaviour to the extent that it would seriously disrupt the lifecycle of these migratory species.

Conclusion

The proposed activity is not considered to constitute a significant impact on the Caspian Tern, Eastern Curlew and Whimbrel and therefore a referral to the Commonwealth is not recommended.

- **Crested Tern *Thalasseus bergii***

Each significant impact criteria have 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.

Important breeding habitat for the Crested Tern consists of shallow scrapes (depressions) in rock and often in areas without shelter.

Important non-breeding habitat for the Crested Tern is typically offshore waters with fish being the main food that is consumed.

As these habitats are not present within the subject site and study area, the proposed activity will not substantially modify, destroy, or isolate an area of important habitat for the Crested Tern.

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

No important habitat for the Crested Tern is present in the subject site and study area. As such, the proposed activity will not result in the establishment of an invasive species that is harmful to the Crested Tern.

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

The Crested Tern is an oceanic forager and utilises rock scrapes for laying eggs. Both habitat types are not present in the subject site or study area.

Potential resting habitat occurs within designated dog prohibited areas. Therefore, 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 Crested Tern species**.**

Conclusion

The proposed activity is not considered to constitute a significant impact on the Crested Tern and therefore a referral to the Commonwealth is not recommended.

- **Double Banded Plover *Charadrius bicinctus***

Each significant impact criteria have 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.

The Double Banded Plover occupies shingled and sometimes rocky beaches, harbours, and margins of fresh or saline terrestrial wetlands. Foraging consists of consuming molluscs, worms, crustaceans, and spiders. Breeding only occurs in New Zealand.

As there is no habitat present in the subject site and study area, the proposed activity will not substantially modify, destroy, or isolate an area of important habitat for the Double Banded Plover.

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

The proposed activity will not result in the establishment of an invasive species that is harmful to the Double Banded Plover species.

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

The Double Banded Plover forage on vegetated shingle beds, closely cropped pasture, tilled grounds and mudflats. Since these habitat types are not present within the subject site and study area, and there are no ecologically significant proportions of this species 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 it will seriously disrupt the lifecycle of the Double Banded Plover.

Conclusion

The proposed activity is not considered to constitute a significant impact on the Double Banded Plover and therefore a referral to the Commonwealth is not recommended.

- **Ruddy Turnstone *Arenaria interpres***

Each significant impact criteria have 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.

The Ruddy Turnstone mainly forages between lower supralittoral and lower littoral zones of foreshores, from strand-line to wave-zone. Breeding does not occur in Australia for this species.

As there is no habitat present in the subject site and study area, the proposed activity will not substantially modify, destroy, or isolate an area of important habitat for the Ruddy Turnstone.

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

The proposed activity will not result in the establishment of an invasive species that is harmful to the Ruddy Turnstone species.

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

The Ruddy Turnstone forage among banks of stranded seaweed or tide wrack, between the lower supralittoral and lower littoral zones of foreshores. They are also known to occupy exposed rocky platforms, coral reefs and mudflats. Since these habitat types are not present within the subject site and study area, and there are no ecologically significant proportions of this species 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 it will seriously disrupt the lifecycle of the Ruddy Turnstone.

Conclusion

The proposed activity is not considered to constitute a significant impact on the Ruddy Turnstone and therefore a referral to the Commonwealth is not recommended.

Appendix 5 Impact mitigation measures

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 Moona Moona Creek of 200 metres will be maintained. This buffer also contains a geographical barrier of a creek that will provide additional protection to nesting shorebirds. The subject site is restricted to a sand beach environment, which does not include suitable habitat for threatened flora species.
		Educational signage regarding the presence of and threat of dogs on threatened shorebirds will be installed at priority access points (refer Figure 5).
		Council's Environmental Services Department will liaise with 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 and collaborative influence from NPWS, to inform adaptive management of controls.
		Adaptive management of the subject site will be implemented. 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.
	Vegetation clearing	Signage installation will utilise existing posts where possible
	Trail proliferation and trampling	Existing access tracks will be utilised to ensure surrounding vegetation remains undisturbed.

Category	Type of Impact	Safeguard/Mitigation Measure
		If the vegetation surrounding the access tracks become disturbed or degraded, fencing will be installed to confine beach users to the transit 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.
Water	Water pollution – dog waste	Dog owners/walkers are required to clean up dog faeces under the CAA Act. Compliance activities will help to enforce this obligation.
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 Planning and Environment'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 and submissions regarding noise will be monitored and adaptive management will be implemented.
		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 works.
Social	Impact on other beach users	The off-leash area is limited to off-peak times (4 pm to 8 am Australian Eastern Daylight-Saving Time; and 3 pm to 10 am Australian Eastern Standard Time) to limit impacts on other beach users

Category	Type of Impact	Safeguard/Mitigation Measure
		High-use areas adjacent to Huskisson Beach at Moona Moona Creek are dog prohibited, to provide a dog-free area for the public.
		Dog owners/walkers are required to have control of their dogs at all times and are responsible for waste disposal from dog faeces under the CAA Act. Compliance activities will help to enforce this obligation.
		Signage clearly detailing the transit areas, off-leash area and dog prohibited areas will ensure dog owners are aware of these. The off-leash access area boundary has been moved slightly to coincide with the southern access track to promote compliance and reduce boundary confusion.
		Council Rangers will monitor the subject site regularly to enforce compliance and to monitor for the presence of dogs in the adjoining prohibited area at Moona Moona Creek
		A penalty infringement notice will be issued, following an initial caution, for any repeat offenders observed.
		An adaptive management approach will be incorporated into the ongoing monitoring and maintenance of the site, which will respond to changes including threatened species distribution, human behaviour 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.