PORT MACQUARIE HASTINGS COUNCIL

Review of Environmental Factors

NOTE: This REF is for projects that are completed by Public Authorities requiring an *Environmental Planning and Assessment Act 1979,* Part 5 assessment. See the *E,P and A* Act for further information on Part 5 assessment requirements.

Project Name	Illaroo Road Emergency Coastal Erosion Works	**Project Number**	SF22/4192
Project Location	Illaroo Road, Lake Cathie	**Assessment Date**	19 December 2022
Project Manager	Jack Grant	**Project Manager Contact details**	02 6581 8679

CONSTRUCTION WORK MUST NOT COMMENCE UNLESS:

- **A copy of this approval and all attachments is available onsite during works.**
- The person completing the REF has signed the completed document, verifying that each of the steps has been satisfied and no further assessment or investigation is required, AND
- The Determining Officer has signed this Checklist to verify that the assessment has been adequately completed, the conclusion as to the likely environmental impact of the project is reasonable and the project can proceed subject to relevant control measures and conditions in any approvals, licences or permits, AND
- The required approvals, licences and permits have been obtained as outlined in TABLE 2 and TABLE 3, AND
- All relevant construction personnel are aware of:
  - Their responsibilities detailed in the REF
  - The project's Environmental Impacts in TABLE 4
  - The project's specific Control Measures in TABLE 4
  - The project's environmentally Sensitive Areas in TABLE 3
  - The conditions in any approvals, licences or permits in TABLE 2
  - The project details and likely impact of the project on the community in TABLE 1

NOTE: If any environmental issues are identified or if any environmental control measures are required, refer to TABLE 4 from this completed EIA Checklist. The following is to occur:

- Where a construction drawing is prepared as part of the construction work pack, the environmental control measures should be listed in the schedule on that drawing, and for more complicated projects,
- The environmental control measures should be included in a project specific environmental management plan,
- The works area map should delineate the work zone to include all impacts from the development.

NOTE: If any approvals, licences or permits are required as outlined in TABLE 2 or TABLE 3 then copies of these MUST be included in the construction work pack that is submitted to the Construction Manager for the project.

NOTE: Projects may require a more detailed assessment of particular issues (eg a specialist ecology report). In these cases, this document should accompany this report as an attachment and the findings be considered in the assessment and identification of control measures.

NOTE: This checklist also includes an Environmental Protection and Biodiversity Conservation Act 1999 checklist.

NOTE: Some minor projects are 'Exempt development'. There is a separate checklist to be completed if you think your project is to be assessed under the Exempt provisions. Where the project meets the Exempt criteria and the Exempt criteria checklist has been completed, an REF is not required.

NOTE: Projects requiring a Part 4 planning approval must be referred to the Development Planning Section of PMHC.

TABLE 1 – PROJECT DETAILS

STEPS 1-2

NOTE Prior to completing this REF a site inspection is to be undertaken by the officer completing the assessment.

Date:		**Officer:**
	22/12/2022	Jack Grant, Ben Foster, Byron Reynolds, David Pyke

Site Inspection.	✓ Yes

Insert the works area map here - this works area map takes precedence over all other maps in the event of any inconsistency.

Figure 1: Location of works

Figure 2: Area of works

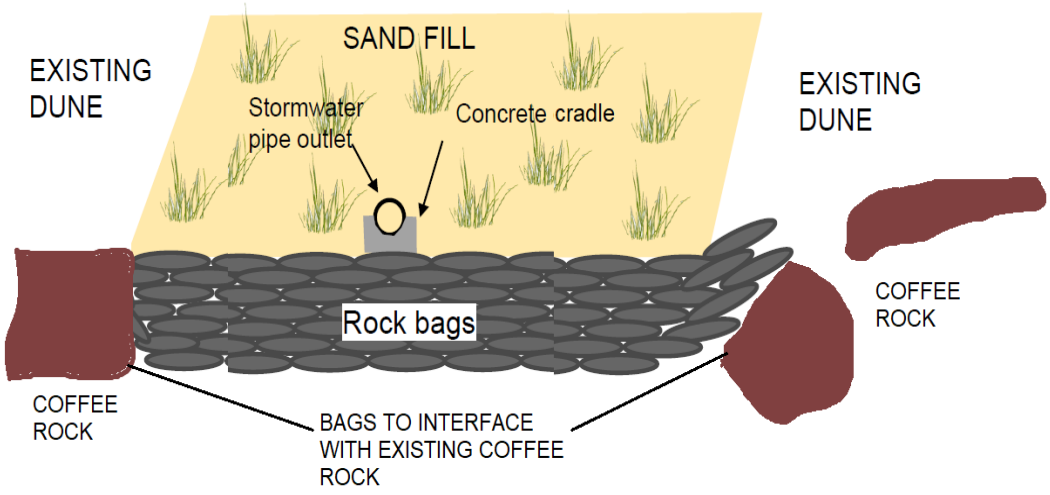


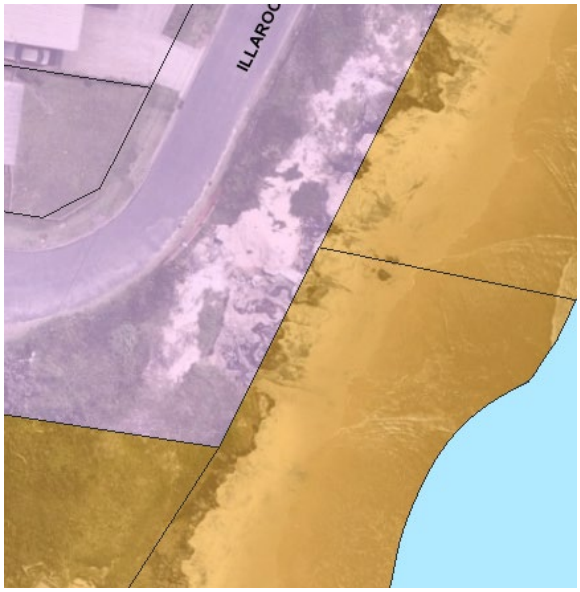
Figure 3: Concept Design of works

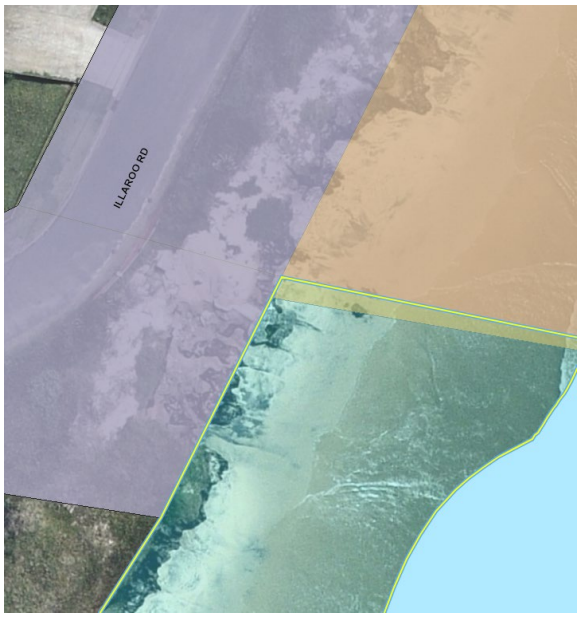
Figure 4: Site of proposed works looking north (5/1/23)

Figure 5: Site of proposed works looking south (5/1/23)

Figure 6: Site of proposed works looking east (22/12/22)

Item	Project justification	
1.1	Description of those activities of the project which are being assessed under Part 5 of the EP&A Act: (include ancillary activities such as future maintenance, street lighting, access tracks, fences, tree trimming, etc. and include all mitigation measures)	Emergency coastal protection measures are proposed at Lighthouse Beach, Lake Cathie, off Illaroo Road. Recent storm events have exacerbated erosion issues, most aggressively surrounding Council's stormwater assets at the Southern end of Illaroo Road, where erosion is encroaching on the road corridor. Large seas in December 2022 have also resulted in the stormwater headwall detaching from the stormwater pipe. Beach and dune surveys at this location determined that sand buffer seaward of the road is insufficient to protect against low-level storm action. PMHC proposes to replace the existing stormwater headwall and rehabilitate approximately 20m of the surrounding dune profile using rock bag protection tied into intact sections of coffee rock. Rock bags would be placed ~0.5m into the sand and extend to a height of approximately 2.5m. The rock bags will be filled offsite (most likely Council Depot) and placed onsite using a crane via Illaroo Road. Subject to approval from DPI Crown Lands, marine sand would then be taken from the beach below the Mean High Water mark nearby the rock wall to backfill the rehabilitated area and allow revegetation. It is likely that the placement of rock bags and scraping of sand will occur concurrently to achieve the desired design. Bluecoast Consulting Engineers developed the concept plan for the above works and have been engaged by Council to complete a detailed design for the works. The proposed works would allow the dune profile to hold a buffer of sand that would provide additional protection to stormwater assets and Illaroo Road against storms, supporting the ongoing beach nourishment strategy and ensuring deposited sands remain in place for longer periods.
1.2	Description of timings, phasing and schedules:	It is proposed that the works will be undertaken in February 2022, subject to Crown Land approval and Council staff availability. It is estimated that the works will take 1 - 2 weeks to complete. Beach scraping will need to be undertaken during low tide. Large swell events or significant erosion

		events prior to the work may cause beach scraping to be delayed.
1.3	Ownership of the property on which the development is taking place and the zoning (noting whether Council owns or manages the land, if easements or land acquisitions will be required for works. If Crown Land, National Parks, Marine estate, special provisions may apply, a plan of management or native title may apply)	The project is located within Zone *R1 – General Residential* and *C2 - Environmental Conservation* under the *Port Macquarie-Hastings Local Environment Plan 2011*. The western half of the project footprint is located in the Illaroo Road Corridor which is owned by Port Macquarie Hastings Council. The north eastern half of the project footprint is located in a Crown Road Reserve. The south eastern part of the project footprint is located on Crown Land.  *Figure: Zoning Map. Purple R1, Orange C2*

		 *Figure: Tenure Map. Purple PMHC, Orange Crown Road Reserve, Green Crown Land.*
1.4	Description of the environment – relevant to the potential impacts. (This could include drainage systems, waterways, flora and fauna, visual/scenic quality, transportation routes, land use, traffic flow, land contamination etc.) Note: delete specific issues that are not applicable to the development. **NOTE:** Review of Bionet Atlas search is required to complete this section. Please include a list of potential threatened flora and fauna found on the project site and an assessment of the likely impacts on these species. Guidance on how to generate this information is provided in **D2022/125260 - How to create a map of Bionet Species Sightings from Geocortex.**	**Coastal Morphology** It is generally accepted that beach scraping of 0.2m to 0.5m depth per run is unlikely to have adverse impacts on downcoast neighbouring beaches, if undertaken from the seaward side of the berm during accretionary conditions (i.e. while beaches are building, not eroding) (Carley et al, 2009). The premise is that nature provides most of the energy and it is an efficient way of accelerating beach recovery. Source material from the beach will be scraped by using a PMHC dozer (or similar) from the intertidal zone to a depth of 20 cm to 30 cm (aiming for 20 cm but acknowledging normal operator inconsistency). Sand would be extracted from the surrounding area, below the mean high tide water mark. A dozer will push the sand all the way to the foredune. An excavator then sculpts the sand and shapes it at the dune. This process is repeated over multiple runs on successive tidal cycles (to allow for sand replenishment of the intertidal zone) to achieve the desired dune restoration volume. Sand may need to be stockpiled above the mean high tide level immediately adjacent to the footprint of the works for short periods of time.

		Virgin rock will be used in the rock bags and will be sourced from a quarry. The rock bags will be inspected for visual contaminants prior to their installation. Rock bags will be placed in line with the existing coffee rock via a crane from Illaroo Road and not extent further into the active coastal zone than the coffee rock. **Aboriginal Heritage** Due to the abundance of permanent water sources in the immediate area, there would have been plentiful resources to sustain multiple campsites. The project area is located in close proximity to the Pacific Ocean and Lake Cathie, which would have provided year-round food resources for Aboriginal occupation. It can be surmised that the area would have been visited for the purposes hunting and gathering of marine and estuarine resources for food and other uses. Movement within the landscape would likely have been associated with seasonal availability of targeted species. Niche Environment and Heritage completed an Aboriginal Cultural Heritage Assessment (ACHA) Report in February 2021 that included the footprint of the proposed activity for the Illaroo Road Stormwater Redirection Project. The project assessed by Niche (2021) included the removal of the southern Illaroo Road stormwater outlet and backfilling of the area with marine sand. As such, the assessment is determined as relevant for the purposes of this REF. The ACHA by Niche (2021) is included as an Appendix A of this REF. Two Aboriginal stakeholders (including groups and individuals) identified themselves as Registered Aboriginal Parties. Consultation with both of these parties was ongoing through the development of the ACHA and subsequent Aboriginal Heritage Impact Permit (AHIP) application. The assessment included background archaeological and historical investigation, ongoing consultation, an archaeological survey, and an archaeological testing program including auguring/coring and archaeological excavation. *Results*

		Niche (2021) found the surrounding area to be situated within a sensitive landform, being dunes adjacent to the coast and estuarine Lake Cathie. During their survey, numerous shell lenses were observed eroding from the face of the dunes, some disturbed, and some in situ. Subsequently, this area was registered as an Aboriginal cultural heritage site for containing midden and Potential Archaeological Deposit (AHIMS ID# 30-6-0245). An archaeological excavation was carried out in October 2020 to inform the assessment which involved 30 augur/core sampling holes (including outside this activities footprint). Inclusions in the form of charcoal or shell fragments were rare; three of the 30 locations contained shell. Six test pits were advanced in November 2020 adjacent to Illaroo Road (including outside this activities footprint). Midden layers and increases in charcoal where seen at depths from 30-50cms within the test pits. Radiocarbon dating from a shell sample at 80-90cm depth indicated Aboriginal occupation of the site in the late Holocene period. No stone artefacts were identified. Following the results of the test pits, the boundary of the Aboriginal Cultural Heritage site AHIMS ID# 30-6-0245 was amended. It is situated immediately to the south of the activity footprint of the emergency works proposed in this REF. Niche (2021) concluded that the identified Aboriginal cultural heritage site possesses low scientific value. It constitutes part of what is most likely to have been be a widely distributed discontinuous midden deposit across the surrounding landscape, prior to significant anthropogenic and natural disturbance. Niche (2021) concluded that the potential impact of the proposed works and associated ground disturbance associated with works within the project footprint indicates that AHIMS registered site Lighthouse Beach SHLPAD01 (AHIMS ID# 30-6-0245) will not be harmed. Given the similarity of this proposed activity to what was assessed by Niche (2021), it is expected that this would also be true for the proposed activity. In addition, the emergency works do not extend into AHIMS ID# 30-6-0245. Impacts to Aboriginal

		Heritage is further discussed in Table 2 of this REF. It must also be noted that an Aboriginal Land Claim has been lodged over Jonathan Dickson Reserve (Lot 7015, DP 1065157), which is currently 'Incomplete' and is considered to still be an active claim (claim number 41285). Whilst this claim is active, it is considered that the proposed works will have no impacts on this site, given that part of Jonathan Dickson Reserve will only be used as a temporary site compound for this project. **Flora and Fauna** An extensive flora and fauna assessment was undertaken in 2021 as part of the Illaroo Road Stormwater Redirection Project. Following this assessment, the PMHC ecologist undertook a review of relevant databases and an inspection of the site on 22 December 2022. The findings of this investigation, and relevant database searches are included in Appendix B. A summary of most recent work from December 2022 is provided below. *Site Inspection* Councils Ecologist and accredited assessor Byron Reynolds (BAAS20014) conducted a flora survey and habitat assessment for threatened fauna on the 22 December 2022 between 11:30am to 12:30 pm Given the relatively small area, the entire site was traversed and all flora species identified on site. • A targeted search was conducted for the critically endangered Native Guava (*Rhodomyrtus psidioides*), which has previously been identified 300m south of the site. • The entire site was searched for the presence of nesting shore birds and habitat features that may provide habitat for fauna species. • The status of the vegetation community (plant community type) was verified. • Opportunistic sightings of fauna were recorded.

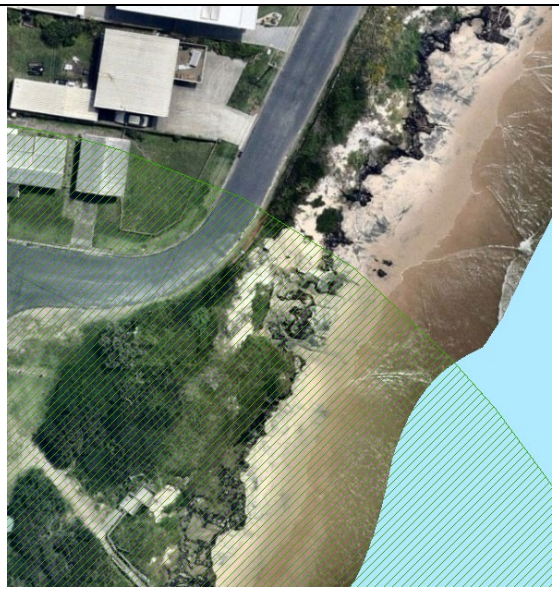
		The vegetation on site is very sparse with many bare patches of exposed sand as a result of the coastal erosion. Flora identified on site included: *Native* • Coastal pigface (Carpobrotus glaucescens) • Coastal wattle (Acacia longifolia subsp. Sophorae) • Cockspur thorn (Maclura cochinchinensis) • Coastal Spinifex (Spinifex sericeus) • Couch (Cynodon dactylon) • Beach alectryon (Alectryon coriaceus) • Swamp lily (Crinum pedunculatum) • Tuckeroo (Cupaniopsis anacardioides) • Coastal banksia (Banksia integrifolia) • Knobby club-rush (Ficinia nodosa) • Native Grape (Cayratia clematidea) *Exotic* • American Sea Rocket (Cakile edentula) • Largeleaf Pennywort • (Hydrocotyle bonariensis) • Lantana (Lantana camara) • Bitou bush (Chrysanthemoides monilifera) • Madeira vine (Anredera cordifolia) • Ground asparagus (Asparagus aethiopicus) • Bladder Dock (Rumex vesicarius) • Flaxleaf fleabane (Conyza bonariensis) Potential habitat was identified including coffee rock, crevices, concrete a damaged drainage pipe, small patches of vegetation and the beach. No evidence was identified that indicates any threatened species is using the site and only one species was observed during the site inspecting being a young eastern water dragon (*Intellagama lesueurii lesueurii)* on the damaged concrete. No evidence of nesting shore birds was identified and no birds were sighted during the inspection. The onsite assessment concluded • No nesting shore birds or other fauna were recorded on site. • Native guava was not recorded on site • The site does not qualify as a threatened ecological community or a plant community type

		Database Review The EPBC Act Protected Matters Report identifies that 78 listed threatened species, 59 listed migratory species and 4 listed threatened ecological communities potentially occur at the site and surrounding area. A search of the NSW Bionet Wildlife Atlas database has records of 61 threatened species occurring within 1.0km of the proposed project area (including 53 threatened fauna and 8 threatened flora. No threatened flora or fauna species were identified within the footprint of the works during the onsite ecological assessments. A 500m buffer has been applied to the NSW Bionet Wildlife Atlas results with threatened fauna sightings reduced to 14 and one record of threatened flora. A risk assessment for suitable habitat and likely occurrence is included in Appendix B with the NSW Bionet Wildlife Atlas. A review of the EPBC Act protected matters search resulted in one species being considered moderate risk of occurrence. The unsuitable habitat on site indicates the risk is low for most species, the habitat was determined as marginally suitable for several species with low risk of occurrence and three species were determined as habitat being marginally suitable with moderate risk of occurrence and one EPBC Act listed species. These species were included in the Threatened Species Test of Significance and EPBC Act Assessment of Significance. Appendix B provides the Threatened Species Test of Significance under section 7.3 of the *Biodiversity Conservation Act 2016 (BC Act)* for the *Pied* Oystercatcher (*Haematopus longirostris*), Little Tern (*Sternula albifrons*) and the Beach Stone-curlew (*Esacus magnirostris*). An *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) Assessment of Significance has been applied for the Rainbow Bee-Eater (*Merops oranatus*) The Threatened Species Test of Significance concluded it is unlikely that the proposed works will significantly impact upon the Pied Oystercatcher, Beach Stone-Curlew or the Little Tern, and consequently, Species

		Impact Statements for these species are not required for the proposal. This is because the works: • would only modify a small area of potential habitat for the species, especially • considering the areas of potential habitat within adjacent lands; • would not affect breeding habitat of either species; and • would not isolate an area of known habitat from currently interconnecting areas of • potential habitat for both species. The coffee rock on Lake Cathie Beach has been observed to be used extensively by the Rainbow Bee-eater. The project will disturb 227m^2 of eroded coastline beach and coffee rock which will reduce the area of habitat available to the species. The Assessment of Significance for the Rainbow Bee-Eater (*Merops oranatus*) concluded that given the wide distribution of the species, its high mobility, presence in many different habitat types; it is not anticipated that the works would have a significant impact on the population of this migratory species. **Noise and Vibration** Generally, the study area is dominated by noise from local traffic, occasional pedestrian activity and environmental noise such as birds, wind and the beach. Additional noise and vibration is likely to occur as part of the construction works from heavy machinery and, in particular, may cause minor disturbances to residents along the southern end of Illaroo Road, Kywong Street and the northern end of Chepana Street. Noise and vibration will be minimal and temporary during construction works. The impact is considered to be minor due to the relatively short construction timeframe and the temporary nature of the works. Any works undertaken will need to be carried out with adherence to noise controls compliant with the EPA's Construction Noise Guidelines. The proposed works will not produce significant noise impacts outside of normal daily operating hours, as work will be carried out during normal daily construction times.

		Social and Visual Amenity The current broken stormwater pipe outlet creates poor visual amenity in addition to the significant erosion surrounding the outlet that has resulted in a loss of vegetation. The completion of the works will substantially improve this area by removing damaged infrastructure, nourishing the dune with marine sand and revegetating the dune with native endemic species. During construction, the project area would be closed to the public. The use of the rock bags will generally align with the existing surrounding coffee rock and will partially be covered with sand. Once completed, the works are not expected to reduce the social or recreational use of the beach. The marine sands placed above the rock bags will be revegetated with endemic native species. **Traffic and Transport** Access to the site will be via local roads. Immediate site access is within Illaroo Road, either via Illaroo Road itself or Lighthouse Beach via the corner of Illaroo Road and Budella Avenue or off Ocean Drive, north of Dirah Street. Traffic on the local roads is light local traffic only. A works compound will likely be established at the northern end of Jonathon Dickson Reserve (southern end of Illaroo Road). Heavy vehicle access to this site is capable of being achieved via Kywong Street. Traffic along Illaroo Road will be interrupted at times during the construction period, in particular during the placement of rock bags via crane to the site. Traffic affected would include only local traffic. In addition, residents using bicycles and walking within the works area may be affected.
1.5	Description of types and quantities of waste.	Waste associated with the works is expected to be limited to the removal of the existing stormwater headwall and a small amount of concrete stormwater pipe to allow the connection of a new stormwater headwall. A minor amount of vegetation would also require disposal from the area that would be nourished with marine sands. All waste would be taken to an appropriately licenced waste facility for disposal. Site inspections undertaken by Council staff have not

		identified any asbestos containing material in this area.
1.6	Description of relevant Environmental Planning Instruments. Outline specific activities and clauses in legislation (ie SEPP Transport and Infrastructure 2021) which allow the proposal to be considered as development permitted without consent. (This could include LEPs, or SEPPs and if necessary, the relevant zoning, clause, provision or schedule) **NOTE:** If your works are located within a mapped coastal wetland or littoral rainforest area according to the SEPP Resilience and Hazards 2021 you need to refer to the PMHC flowchart and/or check with the Environmental Planner.	**Environmental Planning and Assessment Act 1979** The relevant state planning legislation for NSW is the Environmental Planning and Assessment Act 1979 (EP&A Act). PMHC is the consent authority under Section 4 of the EP&A Act. As such, Council is responsible for assessment of the impacts of its activities as required by Section 5.5 of the Act and Clause 228 of the EP&A Regulation 2000. Council must determine whether the activity is likely to have a significant effect on the environment and whether an EIS is required under Section 5.7 of the Act. **SEPP Resilience and Hazards** In relation to sourcing sand from Lighthouse Beach to be used as part of the activity, Chapter 2 Coastal Management, Part 2.3 Miscellaneous, Section 2.16 Coastal Protection Works: *(2) Coastal protection works by public authority Development for the purpose of coastal protection works may be carried out on land to which this Chapter applies by or on behalf of a public authority—* *(a) without development consent—if the coastal protection works are—* *...* *(ii) beach nourishment* 'land to which to this chapter applies' is identified in Section 2.3, being land within the coastal zone. Works will be carried out within land mapped as Proximity to Littoral Rainforest. Activities undertaken in accordance with Part 5 of the EP&A Act can occur within the proximity zone as they are not defined as development that requires consent.



Proximity Area to Littoral Rainforest

Further the land is located within the coastal zone in accordance with the SEPP, in particular the coastal environment area and the coastal use area. This SEPP aims to ensure that the biophysical, hydrological, natural processes, water quality marine vegetation visual amenity of the coast is protected, and to protect and preserve native coastal vegetation. The proposal will not impact on the amenity or use of the coastal foreshore or any wildlife corridors.

SEPP (Transport and Infrastructure) 2021
The stormwater component of the works meets section 2.137 development without consent from the SEPP (Transport and Infrastructure) 2021, Division 20 Stormwater Management Systems as below:
2.137 Development permitted without consent
(1) Development for the purpose of stormwater management systems may be carried out by or on behalf of a public authority without consent on any land

Crown Lands Act 1989
As part of the study area is located within Crown Land, the Crown Land division of NSW Department of Planning & Environment were notified of the intention to undertake works on Crown owned land. Crown Land have been involved in the project to date and are generally supportive of the works. Recent advice received from Crown has indicated

		that a Crown Land - Short Term Licence (1a) to extract sand will be required, in addition to a s.199 Fisheries Permit. **Local Government Act 1993** It is noted that Section 191A of the Local Government Act 1993 states the following with regard to Power of entry—construction and maintenance of water supply, sewerage and stormwater drainage works: *'(1) Without limiting section 191, a council employee (or other person) authorised by a council may enter any premises to carry out water supply work, sewerage work or stormwater drainage work on or under the premises (being work that the council is authorised by this or any other Act to carry out).'* The enactment of this clause may be required to allow for the stormwater component of the works, should works scheduling not allow for the timing requirements for a short term licence from Crown Lands.

1.7	Description of any relevant Council policy and Strategy, including: • Port Macquarie Hastings Council Local Environmental Plan 2011 • Port Macquarie Hastings Council Development Control Plan 2013 • Flood Policy 2018 • Local Strategic Planning Statement (and by proxy - Biodiversity Management Strategy 2018 and Koala Recovery Strategy 2018) • North Coast Regional Plan 2036	**Port Macquarie Hastings Local Environmental Plan 2011** The proposed stormwater management system works do not require development consent under the Port Macquarie Hastings Local Environmental Plan 2011 (PMH LEP 2011), pursuant to the works being undertaken under Division 20 of SEPP Transport Infrastructure (2021) which permits the works to be carried out without development consent. Clause 1.9 of the LEP confirms that the provisions of any State environmental planning policy prevails over this Plan as provided by section 3.28 of the Act. Accordingly, the provisions of Part 2 and 3 of the LEP are not applicable to the proposed works. **Lake Cathie CZMP** Under the Coastal Zone Management Program, the NSW Office of Environment and Heritage aims to reduce the impact of coastal hazards while maintaining the ecological health of our estuaries and coastlines while accounting for population growth.

		PMHC was directed by the State Government to prepare a Coastal Zone Management Plan (CZMP) for Lake Cathie due to the Lake Cathie Beach being designated a coastal erosion hotspot. The Lake Cathie CZMP (2016) identifies ongoing actions under Section 5.2.3 Short Term Beach to monitor the each for erosion hazards following storm events. It refers to the gazetted Lake Cathie Coastal Zone Management Plan - Emergency Management Plan (2013) which identifies actions to program works to repair/reinstate stormwater outlets & bank protection.
1.8	s7.15 Biodiversity Conservation Act – development has been designed to Avoid, Minimise then Mitigate impacts on native vegetation / habitat. (It may be necessary to revisit this step after identifying any project specific Control Measures in Table 4)	☐ REF documents the justified loss of native vegetation where other alternatives cannot be found. ✓ Demonstration that the development proposal has minimised impacts on Biodiversity by way of design modification / alignment review / use of alternative technology etc.
1.9	What is the likely long term impact of the project on the community?	✓ Low ☐ Moderate ☐ High
1.10	Description of community consultation undertaken or proposed. Attach all consultation responses to this REF. (Consultation methods should be added to Project Controls in Table 4.)	Updates about the project have been provided to the public via monthly reports to Council Ordinary Meetings. Residents from properties surrounding the works will be notified prior to their commencement.
1.11	Requirement for public display. Triggers for public display of an REF are stated in the Environmental Planning and Assessment Regulation 2021. A yes to any of the question in the adjoining column will require the REF to go on public display. Note that the public display is for information only.	Does the project have a Capital Investment Value (CIV) of greater than $5 Million? ☐YES ✓ NO Is a fisheries permit required (see question 15)? ✓ YES ☐NO Is the project considered in the public interest? ☐YES ✓ NO Are any of the following licences/permits required - Heritage permit, Environmental Protection Licence, National Park Section 90? ☐YES ✓ NO

NOTE: Most Council activities can be considered under Part 5. There are some exceptions (see guidelines) if in doubt consult with Council's Environmental Planner. Where the project cannot be considered under

Part 5, this form should not be used. Projects requiring Part 4 assessment will require the project manager to attend a Pre Lodgement meeting with the Development Planners.

TABLE 2 – APPROVALS, LICENCES and PERMITS

STEP 3

Item	Sensitive Areas Include:	Tick one
2.1	Working near Endangered, Threatened, Vulnerable or Protected Species, Populations, Ecological Communities or Critical Habitat (Flora and Fauna) –NSW Office of Environment and Heritage, Department of Primary Industries (NSW Fisheries).	☐Yes ✓ No
2.2	Working adjacent to land reserved under the National Parks and Wildlife Act (eg national park, nature reserve, Aboriginal area, wilderness area, conservation area or wild river) – NSW Office of Environment and Heritage	☐ Yes ✓ No
2.3	Working near Areas of National Environmental Significance (RAMSAR Wetlands, threatened species, migratory birds, World Heritage, National Heritage, nature reserve etc.) or on Commonwealth land or marine area – Department of the Environment (Commonwealth).	☐Yes ✓No
2.4	Working in the proximity zone of areas protected by State Environmental Planning Policies for conservation purposes (eg mapped coastal wetland or littoral rainforest area according to the SEPP Resilience and Hazards 2021) – NSW Office of Environment and Heritage, NSW Department of Planning & Environment.	✓Yes ☐ No See below
2.5	Working within an area that is subject to any conservation agreement entered into under the National Parks and Wildlife Act 1974, Biodiversity Conservation Act 2016 – NSW Office of Environment and Heritage, National Parks and Wildlife Service.	☐Yes ✓ No
2.6	Working near an aquatic reserve or 'Marine Vegetation' such as seagrass, mangroves etc –Department of Primary Industries (NSW DPI Fisheries)	☐Yes ✓ No
2.7	Dredging or reclamation of water – Fisheries NSW, Waterways or NSW Department of Primary Industries (NSW Fisheries).	☐Yes ✓ No
2.8	Development comprising a fixed or floating structure in or over navigable waters. Roads and Maritime Services.	☐Yes ✓No
2.9	Working within the 'place' of a 'Heritage Item' identified on the Register of the National Estate, under the NSW Heritage Act or an environmental planning instrument – Heritage Council, Local Council, NSW Office of Environment and Heritage.	☐Yes ✓No
2.10	Working within a State Forest or area subject to Forest Agreement – Forests NSW, NSW Department of Primary Industries, Department of the Environment and Energy (Commonwealth).	☐Yes ✓ No
2.11	Working near Aboriginal relics or places –Local Aboriginal Land council, National Parks and Wildlife Service (Due diligence code of practice for the protection of Aboriginal objects in NSW).	✓Yes ☐ No
2.12	Working where asbestos or asbestos containing materials exist (Determine if a licence or exemption will be required) – WorkCover.	☐Yes ✓ No

NOTE: If you have ticked any ☐ Yes above then you must either:

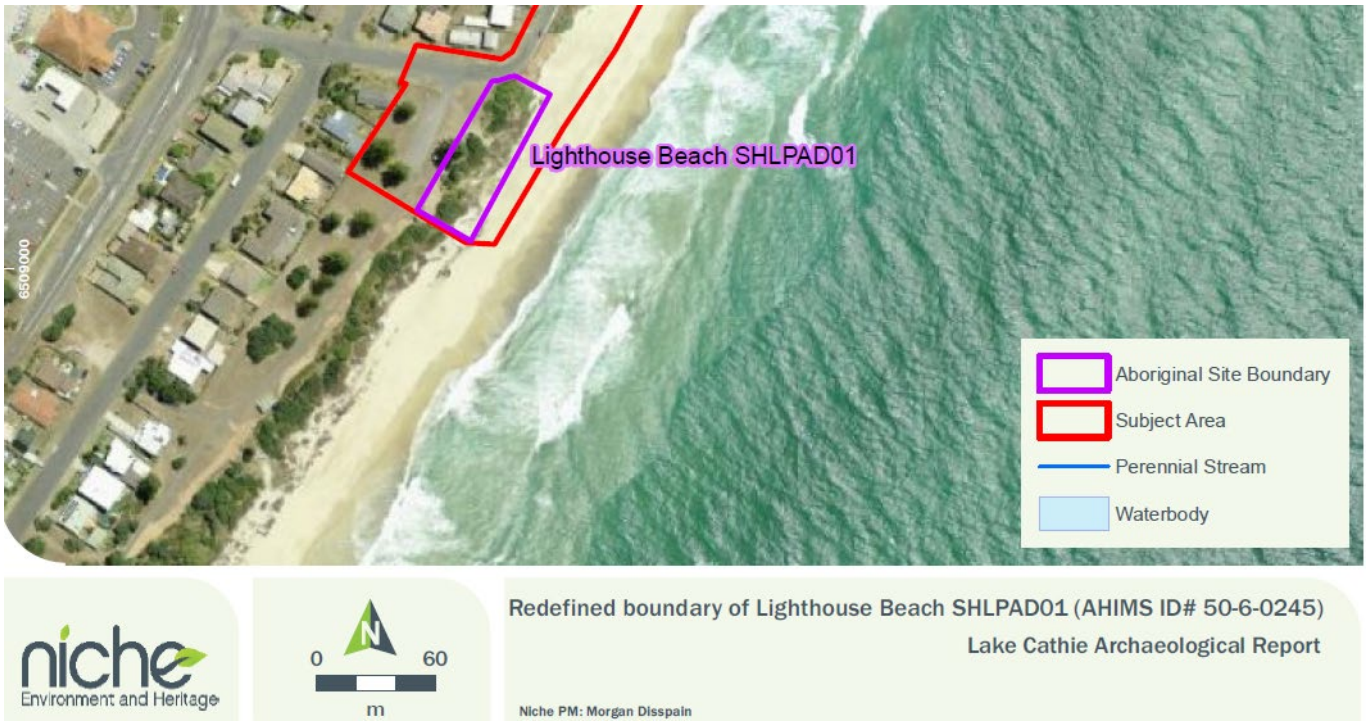
2.4: Works will be carried out within land mapped as Proximity to Littoral Rainforest. Activities undertaken in accordance with Part 5 of the EP&A Act can occur within the proximity zone as they are not defined as development that requires consent. The project footprint is located approximately 80m north of mapped littoral rainforest. An inspection undertaken by Councils Ecologist on 22 December 2022 confirmed the site of

the proposed works cannot be classified as Littoral Rainforest (see Appendix B). Given the relatively minor scale of the works, impacts associated with the proposed activity are not expected.

Proximity to Littoral Rainforest

2.11: Niche Environment and Heritage completed an Aboriginal Cultural Heritage Assessment (ACHA) Report in February 2021 that included the footprint of the proposed activity for the Illaroo Road Stormwater Redirection Project. This project included the removal of the southern Illaroo Road stormwater outlet and backfilling of the area with marine sand. During their survey and subsequent archaeological excavation, numerous shell lenses were observed eroding from the face of the dunes, some disturbed, and some in situ. Subsequently, this area was registered as an Aboriginal cultural heritage site for containing midden and Potential Archaeological Deposit (AHIMS ID# 30-6-0245). Niche (2021) concluded that identified Aboriginal cultural heritage site possesses low scientific value. It constitutes part of what is most likely to have been be a widely distributed discontinuous midden deposit across the surrounding landscape, prior to significant anthropogenic and natural disturbance. Niche (2021) concluded that the potential impact of the proposed works and associated ground disturbance associated with works within the project footprint indicates that AHIMS registered site Lighthouse Beach SHLPAD01 (AHIMS ID# 30-6-0245) will not be harmed. Given the similarity of the proposed activity of this REF to what was assess by Niche (2021), it is expected that this would also be true for the proposed activity. In addition, the emergency works are located immediately north of AHIMS ID# 30-6-0245.

Site name and number	Site Features	Zone	Easting	Northing
Lighthouse Beach SHLPAD01 (AHIMS ID# 30-6-0245)	Shell and Potential Archaeological Deposit	56	486473	6509229



NOTE If you have ticked any ☐ yes at items 2.3, 2.9, 2.10 or 2.12 a referral to the relevant authority is required under the SEPP Transport and Infrastructure 2021 and a period of 21 days allowed for response. All responses are to be considered and included in this assessment.

NOTE: If you have ticked any ☐ Yes above then you should carefully complete Table 4.

Item	OTHER AREAS INCLUDE:		
2.13	Generating, handling, storing, transporting or disposing of hazardous, industrial or Group A waste or "controlled waste" – Environment Protection Authority and Local Council (eg wastes such as pesticides, lead, contaminated soil etc.).	☐Yes	✓ No
2.14	Discharging anything to a waterway or stormwater drain – Environment Protection Authority and Local Council.	☐Yes	✓ No
2.15	Discharging 'Trade Waste' to the sewer –Local Council.	☐Yes	✓ No
2.16	Working on a classified road including freeway, highway, main road, tourist road etc. – Roads and Maritime Services or Local Council.	☐Yes	✓No
2.17	Disturbing subsurface or above ground utilities – Essential Energy, Telstra Local Council Water and Sewer.	☐Yes	✓ No
2.18	Working in a fire prone area or Using Hot Works on Total Fire Ban days or working within bushfire protected lands – NSW Rural Fire Service.	☐Yes	✓No

2.19	Working on Crown Lands – Department of Lands (see item 3.4) If yes, is the project consistent with the Plan of management for the site?		✓Yes ☐ No ☐Yes ☐ No No PoM exists for the site. Crown Lands are aware of the project. The project will need a Crown Lands Licence if the project is to proceed.
2.20	Other – please specify:		☐Yes ☐ No

NOTE: If you have ticked any ☐ Yes above then you must either:

A Crown Land licence will need to be obtained prior to commencement of works for extracting sand for sand nourishment.

TABLE 3 – OTHER SENSITIVE AREAS/ISSUES

STEP 4

Item	SENSITIVE AREAS INCLUDE:	Tick one
3.1	Wildlife corridors/refuges, native forests, Wildlife Management Areas, Significant Tree Registers (council), Koala Habitat (>1 hectare of bushland).	☐Yes ✓ No
3.2	Working within 40m of a sensitive environmental area (waterways, National parks etc.) or 5m upstream of a drain.	✓ Yes ☐ No
3.3	Areas with contaminated soil or water (ground or surface) or degraded air quality or Unhealthy Building Land Notice.	☐Yes ✓ No
3.4	Areas subject to land rights claims or Registered Native Title or Register of Indigenous Land Use Agreements (Native title tribunal - www.ntt.gov.au)	✓ Yes ☐ No
3.5	Prescribed Impacts E.G. Demolition of existing bridge (inspection for threatened species -fishing bats)	☐Yes ✓No

NOTE: If you have ticked any ☐ Yes in any of the above then you should carefully complete Table 4

3.3: The Water Management (General) Regulation 2011 sets out a number of exemptions in relation to controlled activities. A public authority does not need to obtain a controlled activity approval for any controlled activities that it carries out in, on or under waterfront land. As PMHC is a public authority, no controlled activity permit is required to be issued from WaterNSW for the proposed works.

3.4: Land claim present on Jonathan Dickson Reserve, however no impacts as area will only likely be used for site compound and laydown area.

Item	OTHER AREAS INCLUDE :			
3.6	Areas or items of high architectural, historical, environmental protection or scientific value.		☐Yes	✓ No
3.7	Environmental Protection Zones as defined by environmental planning instruments (eg foreshore scenic protection areas, conservation areas, scenic protection areas, beachfront scenic protection areas etc.).		✓ Yes	☐ No
3.8	Coastline and dune fields, caves or other unique landforms.		✓ Yes	☐ No
3.9	Areas or items of high aesthetic or scenic value (E.G. lighthouse).		☐Yes	✓ No
3.10	Recreational areas (beaches, foreshores, parks, picnic areas, lookouts, national features, tourist areas, tourist roads/routes etc.).		✓ Yes	☐ No
3.11	Excavating near a river, lake, lagoon, wetland, drinking water catchment, gutter, stormwater channel, drain, inlet or flood prone area (within 40m).		☐Yes	✓ No
3.12	Use of Pile drivers, Hydraulic hammers, Machine-mounted rock breakers, Sand blasters, Steam cleaners, Mole borers or similar equipment in an urban area.		☐Yes	✓ No
3.13	Excavating within erosion prone areas.		✓ Yes	☐ No
3.14	Areas containing potential acid sulphate soils.		☐Yes	✓ No
3.15	Cafes, restaurants, shops, outdoor dining, Pubs, places of worship etc.		☐Yes	✓ No
3.16	Areas of high bushfire risk.		☐Yes	✓ No
3.17	Presence of Priority Weeds listed in appendices North Coast Regional Strategic Weed Management Plan (Attachment E) https://northcoast.lls.nsw.gov.au/__data/assets/pdf_file/0006/722760/north-coast-regional-weed-management-plan.pdf		✓Yes	☐No
3.18	Urban bushland or remnant roadside vegetation.		☐Yes	✓ No
3.19	Major transport corridors (Highways, freeways, railways, shipping channels, airports etc.).		☐Yes	✓ No
3.20	Schools, childcare centres, playgrounds, sporting venues.		☐Yes	✓ No
3.21	Works on Private land. Please attach consultation letters.		☐Yes	✓ No
3.22	Other - please specify:		☐Yes	✓ No

Can the project still proceed under Part 5	✓ Yes	☐ No

TABLE 4 – ENVIRONMENTAL IMPACT ASSESSMENT

Steps:	5	6	7	8	9	10
		Multiply the 3 scores (EIA to fill out):	*1-3*	*1-3*	*1-3*	=

Item	Issue	Examples of impacts	Description of Impacts AND Causes *NOTE: Either tick 'no impact' OR provide details.*	Project Specific Control Measures	Likelihood	Extent	Sensitivity	Environmental Score

4.1	AIR	**Construction:** Dust generation (excavating, disturbing soil, stockpiling, trenching, erosion prone sites, clearing of vegetation, transporting soil etc.). Fumes, odours and other air pollution from vehicles, equipment, machinery or other activities.	☐ **No Impact** ***If ticked, go to next issue.***	The plant and equipment will generate local exhaust as part of the works. Soil has the potential to become windborne and create a dust issue (i.e sand stockpiles, exposed earth). [Noting that sand is wet and unlikely to be a problem]. The activity involves short term use of machinery including driving the machine onto the beach. There will be standard emissions of diesel fumes during the activity. Risks:. • Excessive generation of exhaust during the works. Windblown sand (dust) may be generated from the site compound and blow beyond	Measures to minimise or prevent air pollution or dust are to be used including watering or covering exposed areas. Stop work if windblown sand is entering surrounding properties as a result of construction activities. Works are not to be carried out during strong winds or in weather conditions where high levels of dust or air borne particulates are likely Vegetation or other materials are not to be burnt on site. Vehicles and vessels transporting waste or other materials that may produce odours or dust are to be covered during transportation Vehicles and equipment are to be maintained in good working order. Monitor work areas and stockpiles for dust generation and seed/cover/spray to suppress. Measures (including watering or covering exposed areas) are to be used to minimise or prevent air pollution and dust Do not leave vehicles idling Permanent revegetation of disturbed areas will involve use of locally endemic, indigenous plant species.	1	1	1	3

Steps:			5		6	7	8	9	10
					Multiply the 3 scores (EIA to fill out):	*1-3*	*1-3*	*1-3*	=
Item	**Issue**	**Examples of impacts**	**Description of Impacts AND Causes** *NOTE: Either tick 'no impact' OR provide details.*		**Project Specific Control Measures**	**Likelihood**	**Extent**	**Sensitivity**	**Environmental Score**
					Regular inspection and maintenance to check effectiveness of erosion and sediment controls and the revegetation process. All sediment and erosion controls to be in accordance with the "Blue Book" as a minimum. Works shall not take place in heavy rainfall, with disturbance prior to these forecast events to be limited. Any stockpiled material shall be kept to a minimum and appropriately watered down or covered to ensure dust generation is reduced. All vehicles entering and leaving the site with material shall have their loads appropriately covered.				
4.2		**Operation-** Fumes, odours and other air pollution from vehicles, equipment, machinery or other activities.	✓ **No Impact** *If ticked, go to next issue.*	**OR**					

4.3	WATER	**Construction** Polluting waterways, wetlands, stormwater drains or groundwater (e.g. storing, transporting, handling or disposing of oils, re-fueling, pesticides, chemicals, pit/trench water or other liquids). Sedimentation of waterways, wetlands, stormwater drains or groundwater (e.g. excavating, disturbing soil, stockpiling, trenching, concrete cutting, access tracks, erosion prone sites, lime treatment etc.).	☐ **No Impact** *If ticked, go to next issue.*	The machinery to be used is most likely the use diesel fuel and have hydraulic fluid and oils on board Risks: Pollution may occur from mishandling of fuels or leaks of the machine. Pollution may occur to the beach if rock bags break from vandalism or significant coastal erosion event.	Visual monitoring of local water quality (ie turbidity, hydrocarbon spills/slicks) is to be undertaken on a regular basis to identify any potential spills or deficient erosion and sediment controls. Water quality control measures are to be used to prevent any materials (eg. concrete, grout, sediment, etc) entering drain inlets or waterways. Wash down should use potable water and excess debris removed using hand tools. Wash down waste must be filtered before release, and away from all waterways. No dirty water may be released into drainage lines and/or waterways. Monitor weather forecast and to the greatest extent practicable stage and plan works to limit potential for exposed sites being impacted by rainfall. Prevent sediment moving off-site and sediment laden water entering any water course, drainage lines, or drain inlets Reduce water velocity and capture sediment on site All erosion and silt control devices will be visually inspected weekly to ensure effectiveness as well as after each rainfall event.	1	1	1	3

Steps:			5		6	7	8	9	10
					Multiply the 3 scores (EIA to fill out):	*1-3*	*1-3*	*1-3*	=
Item	**Issue**	**Examples of impacts**	**Description of Impacts AND Causes** *NOTE: Either tick 'no impact' OR provide details.*		**Project Specific Control Measures**	**Likelihood**	**Extent**	**Sensitivity**	**Environmental Score**
					Divert clean water around the site. Store fuels, chemical and hazardous materials in secure, bunded areas within temporary construction ancillary facilities, and at least 40m from all waterways. Capture and dispose of spill and contaminated materials from temporary construction ancillary facilities at a licensed facility. Provide spill kits around temporary construction ancillary facilities. No refueling is to occur within 40m of a waterbody.				
4.4		**Operation** - Polluting waterways, wetlands, stormwater drains or groundwater (e.g. storing, transporting, handling or disposing of oils, fuels, pesticides, chemicals, pit/trench water or other liquids). Sedimentation of waterways, wetlands, stormwater drains.	✓ **No Impact** *If ticked, go to next issue.*	OR					

4.5	NOISE AND VIBRATION	**Construction** noise/vibration (e.g. rockbreakers, concrete cutters, jackhammers, chainsaws, compressors, excavators, cranes, backhoes, trucks, vehicles, cranes, steel plates movements, generator etc.).	☐ No Impact *If ticked, go to next issue.*	Several houses are located adjacent to the proposed site, with several other houses nearby. Any works undertaken will need to be carried out with adherence to noise controls compliant with the EPA's Construction Noise Guidelines. The proposed works will not produce significant noise impacts outside of normal daily operating hours, as work will be carried out during normal daily construction times. Vibration from the proposed works is expected to be minimal because there is no requirement of heavy machinery that will cause significant vibration impacts.	All sensitive receivers (eg local residents) likely to be affected will be notified at least five working days prior to the start of any works associated with the activity that may have an adverse noise or vibration impact. Works to be carried out during normal work hours (i.e. 7am to 6pm Monday to Friday; 7am to 1pm Saturdays). No construction on Sundays or public holidays. Any work that is performed outside normal work hours or on Sundays or public holidays may not be permitted and, if permitted, works are to minimise noise impacts. Where out-of-hours activities are required, an additional assessment Noise and Vibration Management Plan will be prepared and implemented in consultation with sensitive receivers. Consultation with affected nearby residents and informing them in advance as to the extent and timing of works and responsibly advising when noise levels during such works may be relatively high. Provide a contact telephone number for the public to seek information or make a complaint. A log of complaints will be maintained and actioned by the site	1	1	1	3

Steps:			5		6	7	8	9	10
					Multiply the 3 scores (EIA to fill out):	*1-3*	*1-3*	*1-3*	=
Item	**Issue**	**Examples of impacts**	**Description of Impacts AND Causes** *NOTE: Either tick 'no impact' OR provide details.*		**Project Specific Control Measures**	**Likelihood**	**Extent**	**Sensitivity**	**Environmental Score**
					superintendent in a responsive manner; Undertake construction activities guided by AS2436-1981 "Guide to Noise Control on Construction, Maintenance and Demolition Sites". Construction work is to give due consideration to the amenity of site neighbours and any complaints are to be noted and addressed where possible.				
4.6		**Operational** noise/vibration (eg pumps, generators).	☐ No Impact *If ticked, go to next issue.*	OR					

4.7	CONTAMINATION AND WASTE	**Construction** Disturbing contaminated soil (eg known contamination, ASS, old industrial site, previous landfill etc.). Contaminating or polluting land (eg storing, handling or disposing of oils, fuels, pesticides, chemicals, pit/trench water or other liquids. Environmental problems caused by generating, storing, handling, transporting or disposing of waste (eg soils, building materials, oils, solvents, etc.). Restricting current and potential activities associated with the land (eg amenity, buildings, parking).	☐ **No Impact** ***If ticked, go to next issue.***	The following major waste streams are identified and methods for their management provided below. During construction the following waste will be produced: • General Construction Waste - construction at the site will generate general construction waste such as paper, plastics and metal; • Old stormwater headwall and small amount of connecting concrete stormwater pipe. • Vegetation waste; The work involves shallow excavation of the beach of uncontaminated soil.	If contaminated areas are encountered during construction, appropriate control measures will be implemented to manage the immediate risks of contamination. All other works that may impact on the contaminated area will cease until the nature and extent of the contamination has been confirmed and any necessary site-specific controls or further actions identified in consultation with relevant government agencies. Seek guidance from **D2020/002032 - Unexpected Discovery of Contaminated Land Procedure**. All surplus material, off cuts, and other debris resulting from the work shall be removed from site and disposed of by a licensed contractor to a licensed waste management facility. All waste to be covered during transportation. Where possible, utilise resource recovery exemptions and orders for beneficial reuse of surplus materials. During construction, any substances that are potentially harmful to the environment will be stored in a secure and weather-proof location or in a suitable offsite location. Any spills that occur on site are to be promptly cleaned up using equipment appropriate for	1	1	1	3

				Minor amounts of buried general waste may be uncovered The machinery to be used is most likely the use diesel fuel and have hydraulic fluid and oils on board Risks: Pollution may occur from mishandling of fuels/hydraulic oil leaks etc on the machines	the spilt substance, and the resulting waste to be taken to an appropriate disposal facility. A spill kit must be held onsite by the contractor at all times throughout the project. The following mitigation measures are to be implemented with regard to waste management: • Waste stored on site would be held in appropriate skips or bunded stockpiles and covered where appropriate. Transport of materials from site to sites of reuse or • disposal would be done using covered trucks; • Opportunities would be taken to minimise the production of waste and maximize the use of recycled or recyclable products and materials; • Materials would be disposed of at an approved waste disposal/recycling facility where re-use opportunities cannot be found; • Waste materials awaiting recycling, re-use or disposal are to be appropriately contained and stored in a manner that would ensure they do not escape into the environment; • In the event of any oil waste occurring on-site, this would				

Steps:			5		6	7	8	9	10
					Multiply the 3 scores (EIA to fill out):	*1-3*	*1-3*	*1-3*	=
Item	**Issue**	**Examples of impacts**	**Description of Impacts AND Causes** *NOTE: Either tick 'no impact' OR provide details.*		**Project Specific Control Measures**	**Likelihood**	**Extent**	**Sensitivity**	**Environmental Score**
					be collected and transported to the nearest oil recycling facility. Rock bags will be inspected for visual contaminated prior to their installation.				
4.8		**Operational** Contaminating or polluting land (eg storing, handling or disposing of oils, fuels, pesticides, chemicals, pit/trench water or other liquids. Environmental problems caused by generating, storing, handling, transporting or disposing of waste (eg soils, building materials, oils, solvents, etc.). Restricting current and potential activities associated with the land (eg amenity, buildings, parking).	✓ **No Impact** ***If ticked, go to next issue.***	**OR**					

4.9	LANDUSE AND TRANSPORT	**Construction** Restricting or affecting transport (eg pedestrian, car, bus, train, airports, boats, river crossings, bus stops, public transport corridors and infrastructure, construction related disturbances, property access, parking restrictions, etc.). Displacing, disturbing or damaging terrestrial or aquatic fauna (eg creating a barrier to fauna movement, clearing remnant vegetation or wildlife corridors, collisions etc.). •	☐ **No Impact** ***If ticked, go to next issue.***	Works will be undertaken between the lower and upper beach and will restrict pedestrian access alongshore through the project footprint. The project area will be sectioned off from the public. Localised traffic impacts may occur while the crane is placing rock bags in place. The main potential traffic and access impacts associated with the works include construction work traffic generation, localised traffic disruptions in the vicinity of the site. Traffic would be generated by the Proposal during construction through: • Construction employees entering and leaving the site.	Where possible, current traffic movements and property access are to be maintained during the works. Any disturbance is to be minimised to prevent unnecessary traffic delays. If traffic disturbance is unavoidable, a Traffic Control Plan (TCP) or Traffic Management Plan (TMP) will be prepared in accordance with the RMS Traffic Control at Work Sites Manual (RTA 2010) and QA Specification G10: Control of Traffic (RTA 2008). Erect signs regarding proposed works, temporary road closures, diversions, beach access restrictions and notify community members. All plant and equipment will be stored within an appropriate site compound, within the designated works area or off-site. Where necessary, appropriate signage should be in place to alert residents and other road users to the presence of trucks using the road during the construction period.	1	1	1	3

Steps:			5		6	7	8	9	10
					Multiply the 3 scores (EIA to fill out):	*1-3*	*1-3*	*1-3*	=
Item	**Issue**	**Examples of impacts**	**Description of Impacts AND Causes** *NOTE: Either tick 'no impact' OR provide details.*		**Project Specific Control Measures**	**Likelihood**	**Extent**	**Sensitivity**	**Environmental Score**
				• Equipment and plant being delivered to and used at the site for construction • purposes. • Periodic deliveries to the site for construction materials. Risks: Interactions of construction plant / activities and community pedestrians Community members ignoring signs/fencing and using the beach access point anyway.						

Steps:		5		6	7	8	9	10
				Multiply the 3 scores (EIA to fill out):	*1-3*	*1-3*	*1-3*	=
Item	**Issue**	**Examples of impacts**	**Description of Impacts AND Causes** *NOTE: Either tick 'no impact' OR provide details.*		**Project Specific Control Measures**	**Likelihood**	**Extent**	**Sensitivity**	**Environmental Score**
4.10		**Operation** Restricting or affecting transport (eg pedestrian, car, bus, train, airports, boats, river crossings, bus stops, public transport corridors and infrastructure, construction related disturbances, property access, parking restrictions, etc.). Displacing, disturbing or damaging terrestrial or aquatic fauna (eg creating a barrier to fauna movement, clearing remnant vegetation or wildlife corridors, collisions etc.).	✓ **No Impact** ***If ticked, go to next issue.***	**OR**					

4.11	FLORA AND FAUNA	**Construction** Clearing or modifying native vegetation (including trees, shrubs, grasses, roots, herbs or aquatic species). Introducing or spreading weeds (inc noxious) or vermin Introducing bushfire risk factors. Endangering any species of animal, plant or other form of life, whether living on land, in water or in the air (eg. any danger to birds in the locality). Any other environmental impacts on the ecosystems of the locality. The removal or modification of approximately of vegetation consisting of weed thickets, exotic groundcover and native / non-native shrubs for access and removal of the existing stormwater outlet pipe and headwall. Potential direct death of fauna whilst clearing and trampling of vegetation.	☐ **No Impact** ***If ticked, go to next issue.***	**OR**	As part of the site induction process, provide all site personnel with information on the biodiversity values of the study area, including threatened species, no-go areas and responsibilities under relevant environmental legislation, including but not limited to the EP&A Act, BC Act and EPBC Act and associated management plans for individual species Should unexpected threatened fauna or flora be located at any time during construction, cease work immediately in the area to prevent further harm. Contact Council's Environmental Planner/NRM manager/ecologist to determine way forward. Remove minimum required vegetation and minimise disturbance to remaining vegetation Construction machinery should be washed prior to entering and upon leaving site to ensure weed propagules are not transported. Area to be cleared/modified must be clearly marked in order to prevent any unnecessary clearing. Temporary fencing is to be installed and remain until all clearing and construction is completed.	1	1	1	3

					Site induction must specify that no clearing or construction activities are to occur beyond the marked area; All vehicles must only be parked in a designated area; Any materials must only be stored within the designated area, and must not be disposed or stored on any adjoining vegetation. Should fauna be injured during the activities, the project manager is to be notified and FAWNA contacted on 6581 4141 to provide assistance. The fore dune batter is to be stabilised with slotted biodegradable jute matting to prevent further erosion and to allow for future revegetation; Soil pegs are to be used in the fore dune batter jute matting to reduce the risk of erosion Vegetation plantings will be undertaken as part of the works. Contractor is to undertake these works. Native trees, shrubs and groundcovers are to be planted at suitable densities throughout the remediation area. Species should be sourced locally and must be representative of the species in the site locality. Species to be planted include: • Carpobrotus Glaucescens (Pigface)				

Steps:			5		6	7	8	9	10
					Multiply the 3 scores (EIA to fill out):	*1-3*	*1-3*	*1-3*	=
Item	**Issue**	**Examples of impacts**	**Description of Impacts AND Causes** *NOTE: Either tick 'no impact' OR provide details.*		**Project Specific Control Measures**	**Likelihood**	**Extent**	**Sensitivity**	**Environmental Score**
					• Dianella Caerulea (Paroo-Lily) • Isolepis Nodosa (Nodding Club-Rush) • Spinifex sericeus (Coastal Spinifex) • Coastal wattle (Acacia longifolia subsp. Sophorae) • Dune fan flower (Scaevola calendulacea) 'Runners' of Spinifex & Pigface may be retrieved from vegetation within the project footprint if available. Planting and establishment would be done by engagement of a suitably experienced and qualified bush regeneration business (or similar).				

Steps:		5		6	7	8	9	10
				Multiply the 3 scores (EIA to fill out):	*1-3*	*1-3*	*1-3*	=
Item	**Issue**	**Examples of impacts**	**Description of Impacts AND Causes** *NOTE: Either tick 'no impact' OR provide details.*		**Project Specific Control Measures**	**Likelihood**	**Extent**	**Sensitivity**	**Environmental Score**
4.12		**Operation** Introducing or spreading weeds (noxious weeds) or vermin. Introducing bushfire risk factors. Endangering any species of animal, plant or other form of life, whether living on land, in water or in the air (eg. any danger to birds in the locality). Any other environmental impacts on the ecosystems of the locality.	✓ **No Impact** ***If ticked, go to next issue.***	**OR**	Ongoing maintenance of the plants would be undertaken for approximately 6-12 months. This may include fertilising, watering, weeding for a period starting as frequent as twice weekly for 3 -6 weeks dropping to once per fortnight for a further 6 weeks then once per month for the next 4-5 months and then once per each alternative month for the next 6 months.	1	1	1	3

Steps:			5		6	7	8	9	10
					Multiply the 3 scores (EIA to fill out):	*1-3*	*1-3*	*1-3*	=
Item	Issue	Examples of impacts	Description of Impacts AND Causes *NOTE: Either tick 'no impact' OR provide details.*		Project Specific Control Measures	Likelihood	Extent	Sensitivity	Environmental Score
4.13	SOCIAL	**Construction** Creating a nuisance to the community (eg impact on amenity through noise, perceived risk of fires, explosions, property value devaluation etc.). Creating financial loss to members of the community (eg. restricting access to commercial premises, changing land use etc.).	☐ **No Impact** ***If ticked, go to next issue.***	The proposed works involve scraping sand and reprofiling the dune and access way works. Works will be undertaken between the lower and upper beach and will restrict pedestrian access alongshore within the project footprint. Any social or recreational use impacts are considered manageable and low due to the short project duration.	Contain all work within the boundaries designated on the site plan Restore work sites to as close to their original condition as possible, or to a state as agreed by the landowner Minimise spread of stockpiles, waste, and parking Display public information signs until site restoration is complete Carry out community and stakeholder consultation before works start Locate services on DBYD search and peg out no-go areas to avoid service-disruption All personnel will exercise courtesy in dealing with the community Liaise with other development sites to co-ordinate works and minimise impacts (eg delivery times, parking)	2	1	2	5

Steps:			5		6	7	8	9	10
					Multiply the 3 scores (EIA to fill out):	*1-3*	*1-3*	*1-3*	=
Item	**Issue**	**Examples of impacts**	**Description of Impacts AND Causes** *NOTE: Either tick 'no impact' OR provide details.*		**Project Specific Control Measures**	**Likelihood**	**Extent**	**Sensitivity**	**Environmental Score**
4.14		**Operation** Creating a nuisance to the community (eg impact on amenity through noise, perceived risk of fires, explosions, property value devaluation etc.). Creating financial loss to members of the community (eg. restricting access to commercial premises, changing land use etc.).	✓ **No Impact** ***If ticked, go to next issue.***	**OR**					

4.15	VISUAL AND HERITAGE	**Construction** Affecting a locality, item, place or building having aesthetic, anthropological, archaeological, architectural, historical, scientific, cultural or social significance or other special value (eg. visual effect on adjoining heritage buildings or items, disturb, move excavate Aboriginal object) or working where heritage items could be found (eg Archaeological Zoning Plans).Affecting any Aboriginal heritage (eg engravings, middens, carved trees, grinding grooves, paintings, burial sites, etc.).	☐ **No Impact** ***If ticked, go to next issue.***	The project activities involve shallow excavation of highly mobilised sand within the beach system, i.e. sand that has been transported recently by waves in the swash zone to a highly eroded area. Excavation will be limited to 0.5m at the base of the coffee rock - an area frequently eroded. It is considered unlikely (low likelihood) that cultural heritage may be impacted by this project and an AHIP is not necessary.	All personnel working on site will receive induction/training to ensure awareness of location of existing Aboriginal objects within the study area and immediate surrounds, and relevant statutory responsibilities. In particular, staff are to be made aware of the AHIMS registered site Lighthouse Beach SHLPAD01 (AHIMS ID# 30-6-0245) located immediately to the south of the site. If unexpected heritage finds are encountered, utilise **D2020/003022 - Unexpected Heritage Find Procedure.** PMHC should continue to consult with the Aboriginal community in regard to the Project in accordance with the Aboriginal Cultural Heritage Consultation Requirements for Proponents 2010 (DECCW 2010). Consultation may include but not limited to: • Reburial of material recovered during excavations; • Any potential further AHIPS applications; • Unexpected finds. All workers should be inducted so they are made aware of their obligations under the National Parks and Wildlife Act 1974 and any conditions of any future AHIP prior and during and after construction activities.	1	1	1	3

					In the unlikely event that suspected human remains are encountered during construction, all work in the area that may cause further impact, must cease immediately and: • The location, including a 20 m curtilage, should be secured using barrier fencing to avoid further harm. • The NSW Police must be contacted immediately. • No further action is to be undertaken until the NSW Police provide written notification to the PMHC. • If the skeletal remains are identified as Aboriginal, the NSW NPWS or their agent must contact: • the DPE's Enviroline on 131 555; and representatives of the RAPs. No works are to continue until Heritage NSW provides written notification to the proponent or their Agent. The following Find Procedure should be put in place as a minimum response in the unlikely event of the identification of artefacts or intact midden deposit within the Subject Area, and outside the updated Lighthouse Beach SHLPAD01 (AHIMS ID# 30-6-0245) site boundaries: • work in the surrounding area is to stop immediately; • a temporary fence is to be erected around the Aboriginal cultural				

					heritage site, with a buffer zone of at least 10 metres around the known edge; • an appropriately qualified archaeological consultant is to be engaged to identify the material; and • should the material be confirmed as an Aboriginal object or archaeological site, the archaeological consultant should facilitate, in co-operation with the appropriate authorities and the local Aboriginal community: • Recording and assessment of any finds: • Compliance with any legal requirements and Heritage NSW directions; and • the development and implementation of appropriate management strategies based on an assessment of significance of the finds. • Recommencement of ground disturbance works may only resume once legal requirements are fulfilled. • An AHIP will be required Should any potential European archaeological materials be exposed during any stage of excavation, work should immediately cease in that locality. If such materials can be regarded as European 'relics', management advice should be sought from Port Macquarie Hastings				

Steps:	5	6	7	8	9	10
		Multiply the 3 scores (EIA to fill out):	*1-3*	*1-3*	*1-3*	=

Item	Issue	Examples of impacts	Description of Impacts AND Causes *NOTE: Either tick 'no impact' OR provide details.*		Project Specific Control Measures	Likelihood	Extent	Sensitivity	Environmental Score
					Council and if necessary the Heritage Council of NSW.				

4.16			**Operational** Affecting a locality, item, place or building having aesthetic, anthropological, archaeological, architectural, historical, scientific, cultural or social significance or other special value (eg. visual effect on adjoining heritage buildings or items, disturb, move excavate Aboriginal object) or working where heritage items could be found (eg Archaeological Zoning Plans). Affecting any Aboriginal heritage (eg engravings, middens, carved trees, grinding grooves, paintings, burial sites, etc.). Changing the visual or scenic landscape (eg restricting views, removing trees.). Transforming a locality (e.g. significant earthworks).	☐	No Impact *If ticked, go to next issue.*	OR	Revegetation of the outlet areas will be used to soften the appearance and increase visual amenity. Ongoing san nourishment from lower Cathie Creek will be undertaken in the area in accordance with existing DA approvals.	1	1	1	3
4.17		OTHER ENVIRONMENT	Long-term effects on the environment (e.g. as a result of waste emissions). Degrading of the quality of the environment (e.g. effect on surrounding bushland, contamination, erosion).	✓	No Impact *If ticked, go to next issue.*	OR					

4.18	Any other risk to the safety of the environment.	✓ No Impact *If ticked, go to next issue.*	OR					
4.19	Reducing the range of beneficial uses of the environment (e.g. effect on surrounding land-uses and considering response of affected land owners).	✓ No Impact *If ticked, go to next issue.*	OR					
4.20	Increasing demands on resources (natural or otherwise) that are, or are likely to become, in short supply (e.g. demand on water use).	✓ No Impact *If ticked, go to next issue.*	OR					
4.21	Any cumulative environmental effect with other existing or likely future activities.	✓ No Impact *If ticked, go to next issue.*	OR					

NOTE: Projects with any HIGH Environmental Scores (>10) may require consultant report to assess environmental issues or re-evaluation of the project options or mitigation measures. It is recommended that there be consultation with your supervisor to determine the most appropriate course of action. Where the project is modified, a revised REF will be required.

TABLE 4A – OTHER RELEVANT Council POLICIES/GUIDELINES

Item	RELEVANT POLICY/GUIDELINE:	Is the policy relevant?	Has the policy been considered?
4A.1	Acid Sulphate Soils Clause 7.1 of LEP	☐ Yes ✓ No	☐ Yes ☐ No
4A.2	Acid Sulphate Soil Management Plan for Minor Works	☐ Yes ✓ No	☐ Yes ☐ No
4A.3	Acid Sulphate Soil Management Plan for Pipe Infrastructure Installations	☐ Yes ✓ No	☐ Yes ☐ No
4A.4	Unsealed Roads Manual - Guidelines 2009	☐ Yes ✓ No	☐ Yes ☐ No
4A.5	Contaminated Lands Policy - adopted 2010 Contaminated Land Policy Guideline 2017	☐ Yes ✓ No	☐ Yes ☐ No
4A.6	Port Macquarie-Hastings LGA Flood Policy	☐ Yes ✓ No	☐ Yes ☐ No
4A.7	Social Impact Assessment Policy (only when EIS is required)	☐ Yes ✓ No	☐ Yes ☐ No
4A.8	Trees on Private Land (see page 3-16 of PMH DCP 2011)	☐ Yes ✓ No	☐ Yes ☐ No
4A.9	Trees on Public Property (see page 3-15 of PMH DCP 2011)	☐ Yes ✓ No	☐ Yes ☐ No
4A.10	Airspace Protection (see page 3-22 of PMH DCP 2011)	☐ Yes ✓ No	☐ Yes ☐ No

NOTE: The person completing this Checklist must consider the policies identified in Table 4A that are relevant to the project. These policies may contain additional Control Measures to mitigate the Environmental Impacts of the project or additional requirements relating to how specific activities that are part of the project must be conducted. If there is a particular issue for which Council does not have a policy, the Assessing Officer should consult supervisor.

NOTE: Refer to Part 5 subdivision 3 of the EPA Act 1979, Section 171 of the EPA Regulation 2021, Guidelines for Division 5.1 assessments and DECC&W "Aboriginal cultural heritage consultation requirements for proponents 2010" for a full list of the matters that must be taken into account to determine the likely impact of an activity on the environment. The relevant documents can be found online at the following locations:

1 EP&A Act and EP&A Regulation:

www.legislation.nsw.gov.au/maintop/scanact/inforce/NONE/0

2 Department of Planning and Environment (2022) Guidelines for Division 5.1 assessments

Guidelines for Division 5.1 assessments (nsw.gov.au)

3 DECC&W "Aboriginal cultural heritage consultation requirements for proponents 2010"

https://www.environment.nsw.gov.au/resources/cultureheritage/commconsultation/09781ACHconsultreq.pdf

4 DPE's guideline 4 "Preparing an Environmental Impact Assessment"
https://www.planning.nsw.gov.au//media/Files/DPE/Guidelines/guideline-4-draft-preparing-an-environmental-impact-statement-2017-06.ashx

Consult with the Environmental Planner should any questions arise in the development of this document.

The following is to be taken into account for the purposes of determining whether a proposed development or activity is likely to significantly affect threatened species or ecological communities, or their habitats:

Item	The Biodiversity Conservation Act 5 Part Test of Significance	Does the development trigger a significant impact ?
S7.3(1) a	in the case of a threatened species, whether the proposed development or activity is likely to have an adverse effect on the life cycle of the species such that a viable local population of the species is likely to be placed at risk of extinction,	☐ Yes ✓ No
S7.3(1) 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,	☐ Yes ✓ No
S7.3(1) c	in relation to the habitat of a threatened species or ecological community: (i) the extent to which habitat is likely to be removed or modified as a result of the proposed development or activity, and (ii) whether an area of habitat is likely to become fragmented or isolated from other areas of habitat as a result of the proposed development or activity, and (iii) the importance of the habitat to be removed, modified, fragmented or isolated to the long-term survival of the species or ecological community in the locality,	☐ Yes ✓ No
S7.3(1) 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),	☐ Yes ✓ No
S7.3(1) 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.	☐ Yes ✓ No

OEH Threatened Species Test of Significance Guidelines to assist in interpreting the test of significance can be found at:

https://www.environment.nsw.gov.au/research-and-publications/publications-search/threatened-species-test-of-significance-guidelines

Biodiversity Values Map
https://www.lmbc.nsw.gov.au/Maps/index.html?viewer=BOSETMap
Note – Save a Biodiversity Values Map photo of the development area at the project pre lodgement meeting.

TABLE 4B – EPBC Act Assessment

Item	RELEVANT POLICY/GUIDELINE:	Tick one	
4B.1	Any environmental impact on a World Heritage Property?	☐ Yes	✓ No
4B.2	Any environmental impact on Wetlands of International Importance?	☐ Yes	✓ No
4B.3	Any environmental impact on National Heritage Place?	☐ Yes	✓ No
4B.4	Any environmental impact on Commonwealth listed Threatened Species or Ecological Communities?	☐ Yes	✓ No
4B.5	Any environmental impact on Commonwealth listed Migratory Species?	☐ Yes	✓ No
4B.6	Does any part of the proposal involve a Nuclear Action?	☐ Yes	✓ No
4B.7	Any environmental impact on a Commonwealth Marine Area?	☐ Yes	✓ No
4B.8	Any impact on Commonwealth land?	☐ Yes	✓ No

Notes- Table 4B

NOTE: You must tick ☐ No in Table 4B above to proceed with the project or obtain approval from the Commonwealth, For information to assist with completing Table 4B refer to Content Manager Instructional video:

- D2020/026808 - EPBC Act Protected Matters Search - Enviro How to Guide; and
- the EPBC Act and the Environmental Defenders' Office Fact Sheet 3. http://www.edo.org.au/edonsw/site/factsh/fs03_1.php

TABLE 5 – DECISION

Person who prepares the REF

I certify to the best of my knowledge that:

- I have completed this REF and
- The assessment meets the requirements of sections 1.7, 5.5, 5.6 and 5.7 of the EP&A Act, clause 170 of the EP&A Regulation and other relevant legislation and guidelines and
- The information contained in the REF is not materially misleading, and
- My assessment has been adequately completed, and
- My conclusion as to the likely environmental impact of the project is reasonable, and
- The community impacts are likely to be ✓ LOW ☐ MODERATE ☐ HIGH (tick one), and
- There are HIGH Environmental Scores (rating>10) ✓ NO ☐ YES (tick one).
- I am satisfied that, subject to the inclusion of the mitigation measures included in Table 4, the project will not have a significant impact on the environmental and social values.

Signature	J.G	**Date**	17/01/23
Name	Jack Grant	**Position**	Coast & Estuary Coordinator (acting)
Site Inspected	Yes	**Date**	22/12/22

Has the support MEMO from the Environmental Planner been attached?	✓ Yes ☐ No

TABLE 5 – SIGN OFF

Determining Officer – Council Officer Who Verifies the REF			
☑ I certify that I have reviewed and endorsed the contents of this REF Addendum document and, to the best of my knowledge, it is in accordance with the EP&A Act, the EP&A Regulation and the Guidelines approved under clause 170 of the EP&A Regulation, and the information it contains is neither false nor misleading. Based on the completed REF and my knowledge of the project, the assessment has been adequately completed, the project has minor and predictable impacts, the conclusion as to the likely environmental impact of the project is reasonable **and the project can proceed** subject to the relevant control measures and conditions in any approvals, licences or permits. **OR** ☐ The project requires additional environmental assessment **NOTE:** A site visit may be required depending on level of confidence and risk to the environment.			
Signature		**Date**	19/01/2023
Name	Debbie Archer	**Position:**	Group Manager Environment & Regulatory Services

Relevant Acts - www.legislation.nsw.gov.au

Legislation

Commonwealth

- Environment Protection and Biodiversity Conservation Act 1999
- Native Title Act 1993

New South Wales

- Environmental Planning and Assessment Act 1979
- Protection of the Environment Operations Act 1997
- Biodiversity Conservation Act 2016
- Coastal Management Act 2016
- Contaminated Land Management Act 1997
- Heritage Act 1977
- National Parks & Wildlife Act 1974
- Fisheries Management Act 1994
- Crown Land Management Act 2016
- Biosecurity Act 2015
- Roads Act 1993
- Water Management Act 2000
- Aboriginal Land Rights Act 1983
- Wilderness Act 1987
- Local Government Act 1993
- Rural Fires Act 1997

Environmental Planning Instruments

- State Environment Planning Policy (Transport and Infrastructure) 2021
- State Environment Planning Policy (Resilience and Hazards) 2021
- State Environment Planning Policy (Exempt and Complying Development Codes) 2008
- Port Macquarie Hastings Council Local Environmental Plan 2011
- Port Macquarie Hastings Council Development Control Plan 2013
- Flood Policy 2018

Strategies

- Local Strategic Planning Statement (and by proxy - Biodiversity Management Strategy 2018 and Koala Recovery Strategy 2018)
- North Coast Regional Plan 2036

Resources

- Atlas of NSW Wildlife
- Due Diligence Code of Practice for the protection of Aboriginal objects in NSW
- Aboriginal Heritage Information Management System (AHIMS)
- Historic Heritage Information Management System (HHIMS)
- State Heritage Register
- State Heritage Inventory

Websites

Office of Environment & Heritage - www.environment.nsw.gov.au

Department of Primary Industries - www.dpi.nsw.gov.au

- NSW Fisheries
- NSW Office of Water

Marine Parks Authority - www.mpa.nsw.gov.au

Commonwealth Department of Environment - www.environment.gov.au

- Environmental Protection & Biodiversity Conservation Act

World heritage properties and National Heritage places:
http://www.environment.gov.au/epbc/what-is-protected/world-heritage

Commonwealth Marine Areas:
http://www.environment.gov.au/epbc/what-is-protected/commonwealth-marine-areas

References:

James T Carley, Thomas D Shand, Ian R Coghlan, Matthew J Blacka, Ronald, J Cox, Adam Littman, Ben Fitzgibbon, Grant McLean, Phil Watson (2009) Beach scraping as a coastal management option. Water Research Laboratory, School of Civil and Environmental Engineering, University of New South Wales; Parsons Brinckerhoff, Sydney NSW; Byron Shire Council, NSW; Clarence City Council, TAS.

Appendix A: Niche (2021) Aboriginal Cultural Heritage Assessment

Appendix B: Flora and Fauna Assessment - December 2022

Flora and Fauna Assessment - December 2022

The following assessment was undertaken in December 2022 by Port Macquarie Hastings Council Ecologist to supplement the Review of Environmental Factors (REF) for the Illaroo Road Emergency Coastal Erosion Works. The assessment includes:

- A desktop review.
- An onsite ecological assessment.

Desktop Review

Terrestrial Fauna

The Commonwealth Department of Climate Change, Energy, the Environment and Water (DCCEEW) Protected Matters Tool was used to identify potential issues within Lake Cathie, in relation to matters of National Environmental Significance under the *Environment Protection and Biodiversity Conservation Act 1999 (*EPBC Act). The EPBC Act Protected Matters Report identifies that 78 listed threatened species, 59 listed migratory species and 4 listed threatened ecological communities potentially occur at the site and surrounding area. The full list of species from the search has been included in Appendices A.

A search of the NSW Bionet Wildlife Atlas database has records of 61 threatened species occurring within 1.0km of the proposed project area (Appendix B) including 53 threatened fauna and 8 threatened flora. No threatened flora or fauna species were identified within the footprint of the works during the onsite ecological assessment. A 500m buffer has been applied to the NSW Bionet Wildlife Atlas results with threatened fauna sightings reduced to 14 and one record of threatened flora (See Figure 1).

A risk assessment for suitable habitat and likely occurrence is included in Appendix B with the NSW Bionet Wildlife Atlas. A review of the EPBC Act protected matters search resulted in one species being considered moderate risk of occurrence. The unsuitable habitat on site indicates the risk is low for most species, the habitat was determined as marginally suitable for several species with low risk of occurrence and three species were determined as habitat being marginally suitable with moderate risk of occurrence and one EPBC Act listed species. These species were included in the Threatened Species Test of Significance and EPBC Act Assessment of Significance.

Appendix A provides the Threatened Species Test of Significance under section 7.3 of the *Biodiversity Conservation Act 2016 (BC Act)* for the *Pied* Oystercatcher (*Haematopus longirostris*), Little Tern (*Sternula albifrons*) and the Beach Stone-curlew (*Esacus magnirostris*). An *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) Assessment of Significance has been applied for the Rainbow Bee-Eater (*Merops oranatus*).

Figure 1 Bionet Search Results 500m buffer around project

A brief description of threatened fauna species which may occur within the locality is listed below and Threatened Species Tests of Significance under section 7.3 of the *Biodiversity Conservation Act 2016 (*BC Act) are provided in Appendix C for species determined as moderate risk of occurrence at the project site:

Black-necked Stork (*Ephippiorhynchus asiaticus*)
The Black-necked Stork is the only stork found in Australia and is restricted to mainly coastal and near-coastal areas of northern and eastern Australia. Listed as Endangered under the NSW BC Act, the Stork inhabits wetlands, such as floodplains of rivers with large shallow swamps and pools, and deeper permanent bodies of water. They also forage within or around estuaries and along intertidal shorelines, such as saltmarshes, mudflats and sandflats, and mangrove vegetation. The species has been recorded breeding in Lake Innes with a preference for nesting in live trees. Therefore, it is anticipated that this species will not be impacted by the proposed works as the vegetation proposed for removal does not provide suitable habitat for the species.

Beach Stone-curlew (*Esacus magnirostris*)
The Beach Stone-curlew are found exclusively along the coast, on a wide range of beaches, islands, reefs and estuaries, and may often be seen at the edges of or near mangroves. They forage in the intertidal zone of beaches and estuaries, on islands, flats, banks and spits of sand, mud, gravel or rock and among mangroves. Beach Stone-Curlews breed above the littoral zone, at the backs of beaches, or on sandbanks and islands, among low vegetation of grass, scattered shrubs or low trees; also among open mangroves. In NSW, clutches have been recorded from early October to late March. Their nests are just a shallow scrape in sand or gravel, above the tidal zone at the backs of beaches, or on sandbanks and islands or among open mangroves. The beach fronting Bundella Avenue is not a known nesting area for the Beach Stone- Curlew. The existing study area is subject to regular human disturbance by residents and visitors to Lake Cathie, which reduces suitability for nesting when compared with areas less populated by people. Notwithstanding, the habitat is still available in this area the species could potentially utilise the area for nesting, and the activity could potentially disturb the nesting site for breeding season. A Threatened Species Test of Significance under section 7.3 of the *Biodiversity Conservation Act 2016 (*BC Act) has been prepared (see Appendix A) and it is determined unlikely that any significant impact to the species will occur as a result of the proposed works.

Lesser Sand Plover (*Charadrius mongolus)*
The Lesser Sand Plover is a small to medium-sized grey-brown and white plover that is widespread in coastal regions, and has been recorded in all states. Internationally important sites within NSW include the Hunter River estuary, Tuggerah Lakes and the Clarence River estuary. Sightings of the Lesser Sand Plover within the Port Macquarie-Hastings LGA have previously been recorded within the Hastings River estuary. The species breeds in central and north eastern Asia, migrating further south for winter and would therefore not be affected by the proposed works in terms of nesting/breeding. The proposed works would potentially result in a reduction of shoreline foraging habitat for the species, however this area is relatively small and large areas of similar habitat is available in adjacent areas. A Threatened Species Test of Significance under section 7.3 of the *Biodiversity Conservation Act 2016 (*BC Act) has been prepared (see Appendix A) and it is determined unlikely that any significant impact to the species will occur as a result of the proposed works.

Little Tern (*Sternula albifrons)*
Listed as an endangered species under the NSW BC Act, Little Terns inhabit both sheltered coastal environments, including lagoons, estuaries and also on exposed ocean beaches. Nesting usually occurs at or near the mouth of an estuary and takes place from Wallagoot Lake, South Tuross Heads and Botany Bay in the south, to the

Entrance, Old Bar and Manning Point, and at Nambucca Heads, Bongil Bongil, Red Rock, Station Creek and Lake Cakora in the north of the State. The breeding season occurs from October to February in NSW, with the species migrating to the Northern Hemisphere from March onwards. Due to the high level of disturbance to the beach area fronting Illaroo Road from human disturbance and natural wave processes, the footprint of the works is unlikely to be a suitable nesting area for the species. A Threatened Species Test of Significance under section 7.3 of the *Biodiversity Conservation Act 2016 (*BC Act) has been prepared (see Appendix A) and it is determined unlikely that any significant impact to the species will occur as a result of the proposed works.

Pied Oystercatcher (*Haematopus longirostris*)
Listed as an endangered species under the NSW BC Act, the Pied Oystercatcher is thinly scattered along the entire NSW coast, with fewer than 200 breeding pairs estimated to occur in the State. The species is restricted to the littoral zone of beaches and estuaries, where it nests on the ground just above the tideline. In NSW, the Pied Oystercatcher occupies beaches and inlets along the entire coast and a breeding pair typically reuses a nest site over many years and will rarely shift its territory. The breeding season occurs from October to January. The proposed construction footprint area is subject disturbance from high tides and large swells, along with regular human disturbance by residents and visitors to Lighthouse Beach, which reduces the suitability for nesting when compared with areas less populated by people. A Threatened Species Test of Significance under section 7.3 of the *Biodiversity Conservation Act 2016 (*BC Act) has been prepared (see Appendix A) and it is determined unlikely that any significant impact to the species will occur as a result of the proposed works.

Little Eagle (*Hieraaetus morphnoides*)
The Little Eagle is a medium sized bird of prey which can be found throughout the Australian mainland. Listed as vulnerable under the NSW BC Act, the species generally occupies open eucalypt forest, woodland or open woodland and nests in tall living trees. This type of vegetation is not present within the study area.

Eastern Osprey (*Pandion cristatus*)
The Eastern Osprey is a large, water dependent bird of prey which breeds from July to September in NSW. Nests are made high up in dead trees or in dead crowns of live trees, usually within one kilometre of the sea. In the recent years of Council observation, the Norfolk Island Pines have not been used as nest trees by the Eastern Osprey.

Curlew Sandpiper (*Calidris ferruginea*)
The Curlew Sandpiper is a small highly-gregarious, migratory shorebird which is distributed around most of the Australian coastline and occurs along the entire coast of NSW. The species breeds in Siberia and migrates to Australia (as well as Africa and Asia) for the nonbreeding period, arriving in Australia between the months of August to November and departing between March and April. The species generally occupies littoral and estuarine habitats, and in NSW is mainly found in intertidal mudflats of sheltered coasts. The species typically roosts on shingle, shell or sand beaches; spits or islets on the coast or in wetlands; or sometimes in saltmarsh, among beach-cast seaweed or on rocky shores. As the species breeds and clutches outside of Australia, the proposed works would not affect the species in terms of nesting/breeding.

Sooty Oystercatcher (*Haematopus fuliginosus*)

The Sooty Oystercatcher is a large wader that can be found around the entire Australian coast, including offshore islands. The species favours rocky headlands, rocky shelves, and exposed reefs with rock pools, beaches and muddy estuaries. The species forages on exposed rock or coral at low tide for foods such as limpets and mussels. Breeding for the species occurs in spring and summer, almost exclusively on offshore islands. Whilst the species has not been formally recorded within the study area in the Bionet Atlas, the characteristics of the surrounding locality provides potential habitat for the species.

Other avifauna species
Other avifauna species which may be present within the coastal environment at Lake Cathie include:

- Australasian Bittern (NSW Endangered)
- Broad-billed Sandpiper (NSW Vulnerable)
- Brolga (NSW Vulnerable)
- Greater Sand-plover (NSW Vulnerable)
- Sanderling (NSW Vulnerable)
- Terek Sandpiper (NSW Vulnerable)
- Rainbow Bee-eater (Cwth Migratory)

From the species listed above, the Broad-billed Sandpiper, Greater Sand-plover, Sanderling and Terek Sandpiper are known to breed outside of Australia. The Australasian Bittern and the Brolga are known to prefer coastal floodplain wetlands, freshwater lagoons and coastal heath swamps rather than beach environments.

Rainbow Bee-Eater (*Merops oranatus*)
The Rainbow Bee-eater has been known to use the Coffee Rock on Lake Cathie Beach extensively for nesting. In Australia, the species breeding season extends from August to January, with the nest enclosed in an enlarged chamber at the end of a long burrow that is excavated. Pairs usually excavate a new nesting burrow for each breeding season. The movement pattern of the Rainbow Bee-eater are complex and not fully understood, however populations in southern Australia are migratory and typically move north after breeding, where they remain for the duration of the Australian winter. An EPBC Assessment of Significance has been applied for the species has been undertaken (see Appendix 1) and it is unlikely that any significant impact to the species will occur as a result of the proposed works. The table below highlights the known breeding season or presence of threatened bird species potentially affected by the Project.

Mammals
It is not anticipated that any threatened mammal species are present within the proposed works area. Of the threatened mammals sighted in close vicinity of the beach, the existing vegetation community in the area is not suitable for either the Koala or the Southern Right Whale.

Intertidal and Marine Fauna
Sandy beach ecosystems are some of the most common habitats along the NSW coast and provide a link between the marine and terrestrial environment. The sandy beach from the intertidal zone to the dune foot provides habitats for a diversity of species including interstitial organisms, intertidal macroinvertebrate fauna and supralittoral crustaceans and insects. Intertidal macroinvertebrate fauna plan a key role in the sandy beach food chain and in turn are an important food source for different kinds of predators such as wading birds, fish species such as flathead, flounder and whiting and larger crustaceans (Leewis et al 2012).

Loggerhead turtle
Listed as endangered under both the NSW BC Act and the Commonwealth EPBC Act, the loggerhead turtle is found in all tropical and subtropical oceans, inhabiting subtidal and intertidal coral and rocky reefs, seagrass meadows and as well as deeper soft-bottomed habitats off the continental shelf. Two major nesting sites exist for the eastern population of the species which are located on the mainland coast of South-East Queensland and the islands of the Swain Reefs and at Bushy Island off Mackay. Whilst the species is likely to occur within the waters off the coast at Lake Cathie, the behaviour of the species makes it highly unlikely to be found on the beach at this location.

Leatherback turtle
Listed as endangered under both the NSW BC Act and Commonwealth EPBC Act, the leatherback turtle is a very large sea-turtle measuring up to 3m long and can be found throughout the world's tropical and temperate seas and in all coastal waters of Australia. Large numbers of leatherback turtles feed in coastal waters from southern Queensland to the central coast of NSW. The species is oceanic and rarely found close to shore in Australia. Due to the behaviour of the species, it is highly unlikely to be found on the beach at this location.

Terrestrial Flora
The fringing vegetation zone of the coastal environment includes a number of flora species with varying tolerance to salt. It is also an area that is often dominated by weeds, especially where the area is bounded by urban development, industry or agriculture.

One record of the critically endangered Native Guava (*Rhodomyrtus psidioides*) is present within a dune system approximately 300m south of the project site. The habitat is not considered suitable at the project site for Native Guava and the species was not recorded during the onsite ecological assessment therefore the project is not considered a risk to Native Guava.

Plant Community Type
The site is not mapped as native vegetation under the Port Macquarie Hastings Council vegetation mapping 2014 or the NSW Plant Community Type Mapping 2022. The onsite ecological assessment concluded that none of the 4 listed threatened ecological communities identified in the EPBC Act Protected Matters Search were present.

Onsite Ecological Assessment

Councils Ecologist and accredited assessor Byron Reynolds (BAAS20014) conducted a flora survey and habitat assessment for threatened fauna on the 22 December 2022 between 11:30am to 12:30 pm.

Methods

Given the relatively small area, the entire site was traversed and all flora species identified on site.

- A targeted search was conducted for Native Guava.
- The entire site was searched for the presence of nesting shore birds and habitat features that may provide habitat for fauna species.
- The status of the vegetation community (plant community type) was verified.
- Opportunistic sightings of fauna were recorded.

Results

Table 1 provides a list of flora species identified on site

- No nesting shore birds or other fauna were recorded on site.
- Native guava was not recorded on site
- The site does not qualify as a threatened ecological community or a plant community type

Table 1 Flora species identified on site

Species	Status (BC/EPBC)	Comments
Native Species		
Coastal pigface (Carpobrotus glaucescens)	Not listed	Sparsely growing on erosion area
Coastal wattle (Acacia longifolia subsp. *Sophorae*)	Not listed	Top of erosion area adjacent to road appears to be planted
Cockspur thorn (Maclura cochinchinensis)	Not listed	Top of erosion area adjacent to road
Coastal Spinifex (Spinifex sericeus)	Not listed	Sparsely growing on erosion area
Couch (*Cynodon dactylon)*	Not listed	Patches
Beach alectryon (*Alectryon coriaceus)*	Not listed	Just outside project footprint adjacent to Road may have been planted
Swamp lily (Crinum pedunculatum)	Not listed	Top of erosion area adjacent to road
Tuckeroo (*Cupaniopsis anacardioides)*	Not listed	Small plant top of erosion area
Coastal banksia (*Banksia integrifolia*)	Not listed	Small plant just outside project footprint adjacent to Road may have been planted
Knobby club-rush (*Ficinia nodosa)*	Not listed	Top of erosion area and small patches throughout site
Native Grape *(Cayratia clematidea)*	Not listed	Small plant top of erosion area
Species	**Status (Biosecurity Act)**	**Comments**
Exotic species		
American Sea Rocket (*Cakile edentula*)	General Biosecurity Duty	Sparsely growing around erosion area
Largeleaf Pennywort (*Hydrocotyle bonariensis*)	General Biosecurity Duty	Sparsely growing around erosion area
Lantana (*Lantana camara*)	Containment regional	Just outside project footprint adjacent to Road
Bitou bush (*Chrysanthemoides monilifera)*	Containment regional	Just outside project footprint adjacent to Road
Madeira vine (*Anredera cordifolia*)	Asset protection	Just outside project footprint adjacent to Road
Ground asparagus (*Asparagus aethiopicus*)	General Biosecurity Duty	Sparsely growing under Coastal wattle adjacent to road

Bladder Dock (*Rumex vesicarius)*	Asset protection	Small patch adjacent to Road
Flaxleaf fleabane (*Conyza bonariensis)*	General Biosecurity Duty	Few scattered plants

Vegetation Community

The vegetation on site is very sparse with many bare patches of exposed sand as a result of the coastal erosion. Species identified on site are associated with Plant Community Type (PCT) 3410 Spinifex Strandline Grassland throughout and a small section on the edge of the road that appears to have been planted possibly as a measure to help prevent erosion includes species associated with PCT 3132 Northern Sands Tuckeroo- Banksia Forest which is a type of Littoral Rainforest listed as a Threatened Ecological Community under the BC Act and EPBC Act. The assessment has determined the patch does not qualify as a threatened ecological community (Tables 2 & 3) given the very small area the species were identified on the edge of the road and the low numbers of species including *Banksia integrifolia* which is also be associated with PCT 3132

A community can be considered *Littoral Rainforest and Coastal Vine Thickets of Eastern Australia* if it meets all of the following key criteria (DEWHA 2009) (Table 2):

Table 2: EPBC Act Criteria Assessment Littoral Rainforest

Criteria	**Community Assessed**
The community occurs in one of the following IBRA bioregions: Cape York Peninsula, Wet Tropics, Central Mackay Coast, South eastern Queensland, NSW North Coast, Sydney Basin and Southeast Corner	Yes- The community is within the NSW North Coast IBRA bioregion
The community occurs within two kilometres of the east coast, or on offshore islands, or adjacent to a large body of salt water, such as an estuary, where they are subject to maritime influences.	Yes- The community is within 800m of the sea
The ecological community occurs on coastal headlands, dunes, seacliffs or other places influenced by the sea.	Yes- The community is at the top of a coastal dune and under influence by the sea.
The minimum patch size needs to be 0.1 hectares	No the patch of species associated with Littoral Rainforest at the site is less and 20m²
The cover of transformer weed species is 70% or less. Transformer weeds are highly invasive taxa with the potential to seriously alter the structure and function of the ecological community. This threshold recognises the relative resilience and recoverability of the ecological community to invasion by weed species.	Yes - The site contains few weeds with less than 30% weed cover overall
Of the native plant species present in the patch, at least 25% of these must occur on the indicative plant species	No - less than 25% of the native plant species present in the community are associated with the species list for this

lists for the associated bioregion of this ecological community (found on SPRAT). OR At least 30% of the canopy cover in the patch must be from one or more of the rainforest canopy species (either a tree or shrub) that are on the indicative bioregional plant Species Lists (found on SPRAT) excluding Banksia or Eucalyptus species.	community. The site does not have a canopy.
Results	The criteria has determined the community cannot be considered Littoral Rainforest for the purpose of the EPBC Act

Littoral Rainforest Assessment - BC Act

Vegetation is assessed against the final determination criteria for *Littoral Rainforest in the South East Corner, Sydney Basin and NSW North Coast Bioregions* (NSWSC 2004f) (Table 3)

Table 3: BC Act Criteria Assessment Littoral Rainforest

Criteria	**Community Assessed**
Site is in close proximity to the ocean or marine environment and is north of Bega.	Yes - the site is within 800m of the ocean and subject to Maritime influence
Site is on a coastal headland, hind dune or other place subject to the marine environment and climatic influences. Within 2 km of the sea, but may occasionally be found further inland, but within reach of maritime influence.	Yes - the site is within 800m of the ocean and subject to Maritime influence
Community aligns with one or more of the Littoral Rainforest suballiances defined by Floyd (1990).	No although a few species identified within the site are associated with - Suballiance 17the full species assemblages are not present.
Site has a closed canopy (i.e. ~70% of the sky obscured by tree leaves and limbs - % cover may be lower if disturbed).	No the site does not have a canopy
Evidence that there has been no or a low occurrence of fire (i.e. few burnt tree trunks, well developed shrub layer; few sclerophyllous plants).	Yes- Evidence is that fire activity is absent within the patch
Shrub and tree layer is made up of rainforest plants and vines (i.e. evergreen, moist leathery type leaves). These features differentiate littoral rainforest from sclerophyll forest or scrub, but while the canopy is	No - the shrub layer does include a couple of species associated with suballiance 17 but there is no and tree layer.

dominated by rainforest species, scattered emergent individuals of sclerophyll species, such as *Angophora costata*, *Banksia integrifolia, Eucalyptus botryoides* and *E. tereticornis* occur in many stands	
Site contains a combination of the characteristic Littoral Rainforest Species	No although a few species identified within the site are associated with - Suballiance 17, the full species assemblages are not present.
Results	The criteria has determined the community cannot be considered Littoral Rainforest for the purpose of the BC Act

Habitat

Potential habitat was identified including coffee rock, crevices, concrete a damaged drainage pipe, small patches of vegetation and the beach. No evidence was identified that indicates any threatened species is using the site and only one species was observed during the site inspecting being a young eastern water dragon (*Intellagama lesueurii lesueurii)* on the damaged concrete. No evidence of nesting shore birds was identified and no birds were sighted during the inspection.

Fauna

One species was observed during the site inspecting being a young eastern water dragon (*Intellagama lesueurii lesueurii)*

Appendix A - EPBC Act Protected Matters Report

EPBC Act Protected Matters Report

This report provides general guidance on matters of national environmental significance and other matters protected by the EPBC Act in the area you have selected. Please see the caveat for interpretation of information provided here.

Report created: 21-Dec-2022

Summary

Matters of National Environment Significance

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

World Heritage Properties:	None
National Heritage Places:	None
Wetlands of International Importance (Ramsar	None
Great Barrier Reef Marine Park:	None
Commonwealth Marine Area:	None
Listed Threatened Ecological Communities:	4
Listed Threatened Species:	78
Listed Migratory Species:	59

Other Matters Protected by the EPBC Act

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

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

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

Commonwealth Lands:	None
Commonwealth Heritage Places:	None
Listed Marine Species:	79
Whales and Other Cetaceans:	11
Critical Habitats:	None
Commonwealth Reserves Terrestrial:	None
Australian Marine Parks:	None
Habitat Critical to the Survival of Marine Turtles:	None

Extra Information

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

State and Territory Reserves:	1
Regional Forest Agreements:	1
Nationally Important Wetlands:	None
EPBC Act Referrals:	2
Key Ecological Features (Marine):	None
Biologically Important Areas:	4
Bioregional Assessments:	None
Geological and Bioregional Assessments:	None

Details

Matters of National Environmental Significance

Listed Threatened Ecological Communities [Resource Information]

For threatened ecological communities where the distribution is well known, maps are derived from recovery plans, State vegetation maps, remote sensing imagery and other sources. Where threatened ecological community distributions are less well known, existing vegetation maps and point location data are used to produce indicative distribution maps.
Status of Vulnerable, Disallowed and Ineligible are not MNES under the EPBC Act.

Community Name	Threatened Category	Presence Text
Coastal Swamp Oak (Casuarina glauca) Forest of New South Wales and South East Queensland ecological community	Endangered	Community likely to occur within area
Littoral Rainforest and Coastal Vine Thickets of Eastern Australia	Critically Endangered	Community likely to occur within area
Subtropical and Temperate Coastal Saltmarsh	Vulnerable	Community likely to occur within area
Subtropical eucalypt floodplain forest and woodland of the New South Wales North Coast and South East Queensland bioregions	Endangered	Community likely to occur within area

Listed Threatened Species [Resource Information]

Status of Conservation Dependent and Extinct are not MNES under the EPBC Act.
Number is the current name ID.

Scientific Name	Threatened Category	Presence Text
BIRD		
Anthochaera phrygia		
Regent Honeyeater [82338]	Critically Endangered	Species or species habitat likely to occur within area
Botaurus poiciloptilus		
Australasian Bittern [1001]	Endangered	Species or species habitat likely to occur within area
Calidris canutus		
Red Knot, Knot [855]	Endangered	Species or species habitat known to occur within area

Scientific Name	Threatened Category	Presence Text
Calidris ferruginea Curlew Sandpiper [856]	Critically Endangered	Species or species habitat known to occur within area
Calyptorhynchus lathami lathami South-eastern Glossy Black-Cockatoo [67036]	Vulnerable	Species or species habitat likely to occur within area
Charadrius leschenaultii Greater Sand Plover, Large Sand Plover [877]	Vulnerable	Species or species habitat likely to occur within area
Diomedea antipodensis Antipodean Albatross [64458]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Diomedea antipodensis gibsoni Gibson's Albatross [82270]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Diomedea epomophora Southern Royal Albatross [89221]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Diomedea exulans Wandering Albatross [89223]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Erythrotriorchis radiatus Red Goshawk [942]	Vulnerable	Species or species habitat may occur within area
Falco hypoleucos Grey Falcon [929]	Vulnerable	Species or species habitat may occur within area
Fregetta grallaria grallaria White-bellied Storm-Petrel (Tasman Sea), White-bellied Storm-Petrel (Australasian) [64438]	Vulnerable	Species or species habitat likely to occur within area

Scientific Name	Threatened Category	Presence Text
Grantiella picta Painted Honeyeater [470]	Vulnerable	Species or species habitat likely to occur within area
Hirundapus caudacutus White-throated Needletail [682]	Vulnerable	Species or species habitat known to occur within area
Lathamus discolor Swift Parrot [744]	Critically Endangered	Species or species habitat known to occur within area
Limosa lapponica baueri Nunivak Bar-tailed Godwit, Western Alaskan Bar-tailed Godwit [86380]	Vulnerable	Species or species habitat known to occur within area
Macronectes giganteus Southern Giant-Petrel, Southern Giant Petrel [1060]	Endangered	Species or species habitat may occur within area
Macronectes halli Northern Giant Petrel [1061]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Numenius madagascariensis Eastern Curlew, Far Eastern Curlew [847]	Critically Endangered	Species or species habitat known to occur within area
Pachyptila turtur subantarctica Fairy Prion (southern) [64445]	Vulnerable	Species or species habitat likely to occur within area
Phoebetria fusca Sooty Albatross [1075]	Vulnerable	Species or species habitat may occur within area
Pterodroma leucoptera leucoptera Gould's Petrel, Australian Gould's Petrel [26033]	Endangered	Species or species habitat may occur within area
Pterodroma neglecta neglecta Kermadec Petrel (western) [64450]	Vulnerable	Foraging, feeding or related behaviour may occur within area

Scientific Name	Threatened Category	Presence Text
Rostratula australis Australian Painted Snipe [77037]	Endangered	Species or species habitat likely to occur within area
Sternula nereis nereis Australian Fairy Tern [82950]	Vulnerable	Species or species habitat may occur within area
Thalassarche bulleri Buller's Albatross, Pacific Albatross [64460]	Vulnerable	Species or species habitat may occur within area
Thalassarche bulleri platei Northern Buller's Albatross, Pacific Albatross [82273]	Vulnerable	Species or species habitat may occur within area
Thalassarche carteri Indian Yellow-nosed Albatross [64464]	Vulnerable	Species or species habitat likely to occur within area
Thalassarche cauta Shy Albatross [89224]	Endangered	Species or species habitat may occur within area
Thalassarche impavida Campbell Albatross, Campbell Black-browed Albatross [64459]	Vulnerable	Species or species habitat may occur within area
Thalassarche melanophris Black-browed Albatross [66472]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Thalassarche salvini Salvin's Albatross [64463]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Thalassarche steadi White-capped Albatross [64462]	Vulnerable	Species or species habitat may occur within area
FISH		
Epinephelus daemelii Black Rockcod, Black Cod, Saddled Rockcod [68449]	Vulnerable	Species or species habitat likely to occur within area

Scientific Name	Threatened Category	Presence Text
Hippocampus whitei		
White's Seahorse, Crowned Seahorse, Sydney Seahorse [66240]	Endangered	Species or species habitat likely to occur within area
Seriolella brama		
Blue Warehou [69374]	Conservation Dependent	Species or species habitat known to occur within area
Thunnus maccoyii		
Southern Bluefin Tuna [69402]	Conservation Dependent	Species or species habitat likely to occur within area
FROG		
Litoria aurea		
Green and Golden Bell Frog [1870]	Vulnerable	Species or species habitat likely to occur within area
Mixophyes balbus		
Stuttering Frog, Southern Barred Frog (in Victoria) [1942]	Vulnerable	Species or species habitat may occur within area
INSECT		
Argynnis hyperbius inconstans		
Australian Fritillary [88056]	Critically Endangered	Species or species habitat may occur within area
MAMMAL		
Balaenoptera musculus		
Blue Whale [36]	Endangered	Species or species habitat may occur within area
Chalinolobus dwyeri		
Large-eared Pied Bat, Large Pied Bat [183]	Vulnerable	Species or species habitat may occur within area
Dasyurus maculatus maculatus (SE mainland population)		
Spot-tailed Quoll, Spotted-tail Quoll, Tiger Quoll (southeastern mainland population) [75184]	Endangered	Species or species habitat likely to occur within area
Eubalaena australis		
Southern Right Whale [40]	Endangered	Species or species habitat likely to occur within area
Notamacropus parma		
Parma Wallaby [89289]	Vulnerable	Species or species habitat may occur within area

Scientific Name	Threatened Category	Presence Text
Petauroides volans		
Greater Glider (southern and central) [254]	Endangered	Species or species habitat likely to occur within area
Petaurus australis australis		
Yellow-bellied Glider (south-eastern) [87600]	Vulnerable	Species or species habitat likely to occur within area
Phascolarctos cinereus (combined populations of Qld, NSW and the ACT)		
Koala (combined populations of Queensland, New South Wales and the Australian Capital Territory) [85104]	Endangered	Species or species habitat known to occur within area
Potorous tridactylus tridactylus		
Long-nosed Potoroo (northern) [66645]	Vulnerable	Species or species habitat likely to occur within area
Pseudomys novaehollandiae		
New Holland Mouse, Pookila [96]	Vulnerable	Species or species habitat likely to occur within area
Pteropus poliocephalus		
Grey-headed Flying-fox [186]	Vulnerable	Foraging, feeding or related behaviour known to occur within area
PLANT		
Acronychia littoralis		
Scented Acronychia [8582]	Endangered	Species or species habitat likely to occur within area
Arthraxon hispidus		
Hairy-joint Grass [9338]	Vulnerable	Species or species habitat likely to occur within area
Asperula asthenes		
Trailing Woodruff [14004]	Vulnerable	Species or species habitat may occur within area
Cryptostylis hunteriana		
Leafless Tongue-orchid [19533]	Vulnerable	Species or species habitat may occur within area
Cynanchum elegans		
White-flowered Wax Plant [12533]	Endangered	Species or species habitat known to occur within area

Scientific Name	Threatened Category	Presence Text
Euphrasia arguta [4325]	Critically Endangered	Species or species habitat may occur within area
Leichhardtia longiloba listed as Marsdenia longiloba Clear Milkvine [91911]	Vulnerable	Species or species habitat may occur within area
Macadamia integrifolia Macadamia Nut, Queensland Nut Tree, Smooth-shelled Macadamia, Bush Nut, Nut Oak [7326]	Vulnerable	Species or species habitat may occur within area
Melaleuca biconvexa Biconvex Paperbark [5583]	Vulnerable	Species or species habitat may occur within area
Persicaria elatior Knotweed, Tall Knotweed [5831]	Vulnerable	Species or species habitat may occur within area
Phaius australis Lesser Swamp-orchid [5872]	Endangered	Species or species habitat may occur within area
Rhodamnia rubescens Scrub Turpentine, Brown Malletwood [15763]	Critically Endangered	Species or species habitat likely to occur within area
Rhodomyrtus psidioides Native Guava [19162]	Critically Endangered	Species or species habitat known to occur within area
Syzygium paniculatum Magenta Lilly Pilly, Magenta Cherry, Daguba, Scrub Cherry, Creek Lilly Pilly, Brush Cherry [20307]	Vulnerable	Species or species habitat may occur within area
Thesium australe Austral Toadflax, Toadflax [15202]	Vulnerable	Species or species habitat likely to occur within area
Vincetoxicum woollsii listed as Tylophora woollsii [40080]	Endangered	Species or species habitat likely to occur within area
REPTILE		

Scientific Name	Threatened Category	Presence Text
Caretta caretta		
Loggerhead Turtle [1763]	Endangered	Species or species habitat known to occur within area
Chelonia mydas		
Green Turtle [1765]	Vulnerable	Species or species habitat known to occur within area
Dermochelys coriacea		
Leatherback Turtle, Leathery Turtle, Luth [1768]	Endangered	Species or species habitat known to occur within area
Eretmochelys imbricata		
Hawksbill Turtle [1766]	Vulnerable	Species or species habitat known to occur within area
Natator depressus		
Flatback Turtle [59257]	Vulnerable	Breeding likely to occur within area
SHARK		
Carcharias taurus (east coast population)		
Grey Nurse Shark (east coast population) [68751]	Critically Endangered	Species or species habitat likely to occur within area
Carcharodon carcharias		
White Shark, Great White Shark [64470]	Vulnerable	Species or species habitat known to occur within area
Galeorhinus galeus		
School Shark, Eastern School Shark, Snapper Shark, Tope, Soupfin Shark [68453]	Conservation Dependent	Species or species habitat may occur within area
Rhincodon typus		
Whale Shark [66680]	Vulnerable	Species or species habitat may occur within area
Sphyrna lewini		
Scalloped Hammerhead [85267]	Conservation Dependent	Species or species habitat likely to occur within area

Listed Migratory Species		[Resource Information]
Scientific Name	Threatened Category	Presence Text
Migratory Marine Birds		

Scientific Name	Threatened Category	Presence Text
Anous stolidus Common Noddy [825]		Species or species habitat likely to occur within area
Apus pacificus Fork-tailed Swift [678]		Species or species habitat likely to occur within area
Ardenna carneipes Flesh-footed Shearwater, Fleshy-footed Shearwater [82404]		Foraging, feeding or related behaviour likely to occur within area
Ardenna grisea Sooty Shearwater [82651]		Species or species habitat likely to occur within area
Calonectris leucomelas Streaked Shearwater [1077]		Species or species habitat may occur within area
Diomedea antipodensis Antipodean Albatross [64458]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Diomedea epomophora Southern Royal Albatross [89221]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Diomedea exulans Wandering Albatross [89223]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Fregata ariel Lesser Frigatebird, Least Frigatebird [1012]		Species or species habitat known to occur within area
Fregata minor Great Frigatebird, Greater Frigatebird [1013]		Species or species habitat likely to occur within area

Scientific Name	Threatened Category	Presence Text
Macronectes giganteus Southern Giant-Petrel, Southern Giant Petrel [1060]	Endangered	Species or species habitat may occur within area
Macronectes halli Northern Giant Petrel [1061]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Phaethon lepturus White-tailed Tropicbird [1014]		Species or species habitat may occur within area
Phoebetria fusca Sooty Albatross [1075]	Vulnerable	Species or species habitat may occur within area
Sternula albifrons Little Tern [82849]		Species or species habitat may occur within area
Thalassarche bulleri Buller's Albatross, Pacific Albatross [64460]	Vulnerable	Species or species habitat may occur within area
Thalassarche carteri Indian Yellow-nosed Albatross [64464]	Vulnerable	Species or species habitat likely to occur within area
Thalassarche cauta Shy Albatross [89224]	Endangered	Species or species habitat may occur within area
Thalassarche impavida Campbell Albatross, Campbell Black-browed Albatross [64459]	Vulnerable	Species or species habitat may occur within area
Thalassarche melanophris Black-browed Albatross [66472]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Thalassarche salvini Salvin's Albatross [64463]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area

Scientific Name	Threatened Category	Presence Text
Thalassarche steadi White-capped Albatross [64462]	Vulnerable	Species or species habitat may occur within area
Migratory Marine Species		
Balaenoptera edeni Bryde's Whale [35]		Species or species habitat may occur within area
Balaenoptera musculus Blue Whale [36]	Endangered	Species or species habitat may occur within area
Carcharhinus longimanus Oceanic Whitetip Shark [84108]		Species or species habitat may occur within area
Carcharodon carcharias White Shark, Great White Shark [64470]	Vulnerable	Species or species habitat known to occur within area
Caretta caretta Loggerhead Turtle [1763]	Endangered	Species or species habitat known to occur within area
Chelonia mydas Green Turtle [1765]	Vulnerable	Species or species habitat known to occur within area
Dermochelys coriacea Leatherback Turtle, Leathery Turtle, Luth [1768]	Endangered	Species or species habitat known to occur within area
Dugong dugon Dugong [28]		Species or species habitat may occur within area
Eretmochelys imbricata Hawksbill Turtle [1766]	Vulnerable	Species or species habitat known to occur within area
Eubalaena australis as Balaena glacialis australis Southern Right Whale [40]	Endangered	Species or species habitat likely to occur within area

Scientific Name	Threatened Category	Presence Text
Lamna nasus Porbeagle, Mackerel Shark [83288]		Species or species habitat may occur within area
Megaptera novaeangliae Humpback Whale [38]		Species or species habitat known to occur within area
Mobula alfredi as Manta alfredi Reef Manta Ray, Coastal Manta Ray [90033]		Species or species habitat may occur within area
Mobula birostris as Manta birostris Giant Manta Ray [90034]		Species or species habitat may occur within area
Natator depressus Flatback Turtle [59257]	Vulnerable	Breeding likely to occur within area
Orcinus orca Killer Whale, Orca [46]		Species or species habitat may occur within area
Rhincodon typus Whale Shark [66680]	Vulnerable	Species or species habitat may occur within area
Migratory Terrestrial Species		
Cuculus optatus Oriental Cuckoo, Horsfield's Cuckoo [86651]		Species or species habitat may occur within area
Hirundapus caudacutus White-throated Needletail [682]	Vulnerable	Species or species habitat known to occur within area
Monarcha melanopsis Black-faced Monarch [609]		Species or species habitat known to occur within area
Myiagra cyanoleuca Satin Flycatcher [612]		Species or species habitat known to occur within area

Scientific Name	Threatened Category	Presence Text
[Rhipidura rufifrons](#) Rufous Fantail [592]		Species or species habitat known to occur within area
[Symposiachrus trivirgatus as Monarcha trivirgatus](#) Spectacled Monarch [83946]		Species or species habitat known to occur within area
Migratory Wetlands Species		
[Actitis hypoleucos](#) Common Sandpiper [59309]		Species or species habitat known to occur within area
[Calidris acuminata](#) Sharp-tailed Sandpiper [874]		Species or species habitat known to occur within area
[Calidris canutus](#) Red Knot, Knot [855]	Endangered	Species or species habitat known to occur within area
[Calidris ferruginea](#) Curlew Sandpiper [856]	Critically Endangered	Species or species habitat known to occur within area
[Calidris melanotos](#) Pectoral Sandpiper [858]		Species or species habitat may occur within area
[Charadrius leschenaultii](#) Greater Sand Plover, Large Sand Plover [877]	Vulnerable	Species or species habitat likely to occur within area
[Gallinago hardwickii](#) Latham's Snipe, Japanese Snipe [863]		Species or species habitat likely to occur within area
[Gallinago megala](#) Swinhoe's Snipe [864]		Foraging, feeding or related behaviour likely to occur within area
[Gallinago stenura](#) Pin-tailed Snipe [841]		Foraging, feeding or related behaviour likely to occur within area

Scientific Name	Threatened Category	Presence Text
Limosa lapponica Bar-tailed Godwit [844]		Species or species habitat known to occur within area
Numenius madagascariensis Eastern Curlew, Far Eastern Curlew [847]	Critically Endangered	Species or species habitat known to occur within area
Numenius minutus Little Curlew, Little Whimbrel [848]		Foraging, feeding or related behaviour likely to occur within area
Pandion haliaetus Osprey [952]		Breeding known to occur within area
Tringa nebularia Common Greenshank, Greenshank [832]		Species or species habitat likely to occur within area

Other Matters Protected by the EPBC Act

Listed Marine Species		[Resource Information]
Scientific Name	Threatened Category	Presence Text
Bird		
Actitis hypoleucos Common Sandpiper [59309]		Species or species habitat known to occur within area
Anous stolidus Common Noddy [825]		Species or species habitat likely to occur within area
Apus pacificus Fork-tailed Swift [678]		Species or species habitat likely to occur within area overfly marine area
Ardenna carneipes as Puffinus carneipes Flesh-footed Shearwater, Fleshy-footed Shearwater [82404]		Foraging, feeding or related behaviour likely to occur within area

Scientific Name	Threatened Category	Presence Text
Ardenna grisea as Puffinus griseus Sooty Shearwater [82651]		Species or species habitat likely to occur within area
Bubulcus ibis as Ardea ibis Cattle Egret [66521]		Species or species habitat may occur within area overfly marine area
Calidris acuminata Sharp-tailed Sandpiper [874]		Species or species habitat known to occur within area
Calidris canutus Red Knot, Knot [855]	Endangered	Species or species habitat known to occur within area overfly marine area
Calidris ferruginea Curlew Sandpiper [856]	Critically Endangered	Species or species habitat known to occur within area overfly marine area
Calidris melanotos Pectoral Sandpiper [858]		Species or species habitat may occur within area overfly marine area
Calonectris leucomelas Streaked Shearwater [1077]		Species or species habitat may occur within area
Charadrius leschenaultii Greater Sand Plover, Large Sand Plover [877]	Vulnerable	Species or species habitat likely to occur within area
Diomedea antipodensis Antipodean Albatross [64458]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Diomedea antipodensis gibsoni as Diomedea gibsoni Gibson's Albatross [82270]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area

Scientific Name	Threatened Category	Presence Text
Diomedea epomophora Southern Royal Albatross [89221]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Diomedea exulans Wandering Albatross [89223]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Fregata ariel Lesser Frigatebird, Least Frigatebird [1012]		Species or species habitat known to occur within area
Fregata minor Great Frigatebird, Greater Frigatebird [1013]		Species or species habitat likely to occur within area
Gallinago hardwickii Latham's Snipe, Japanese Snipe [863]		Species or species habitat likely to occur within area overfly marine area
Gallinago megala Swinhoe's Snipe [864]		Foraging, feeding or related behaviour likely to occur within area overfly marine area
Gallinago stenura Pin-tailed Snipe [841]		Foraging, feeding or related behaviour likely to occur within area overfly marine area
Haliaeetus leucogaster White-bellied Sea-Eagle [943]		Species or species habitat known to occur within area
Hirundapus caudacutus White-throated Needletail [682]	Vulnerable	Species or species habitat known to occur within area overfly marine area

Scientific Name	Threatened Category	Presence Text
Lathamus discolor Swift Parrot [744]	Critically Endangered	Species or species habitat known to occur within area overfly marine area
Limosa lapponica Bar-tailed Godwit [844]		Species or species habitat known to occur within area
Macronectes giganteus Southern Giant-Petrel, Southern Giant Petrel [1060]	Endangered	Species or species habitat may occur within area
Macronectes halli Northern Giant Petrel [1061]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Merops ornatus Rainbow Bee-eater [670]		Species or species habitat may occur within area overfly marine area
Monarcha melanopsis Black-faced Monarch [609]		Species or species habitat known to occur within area overfly marine area
Myiagra cyanoleuca Satin Flycatcher [612]		Species or species habitat known to occur within area overfly marine area
Neophema chrysostoma Blue-winged Parrot [726]		Species or species habitat may occur within area overfly marine area
Numenius madagascariensis Eastern Curlew, Far Eastern Curlew [847]	Critically Endangered	Species or species habitat known to occur within area
Numenius minutus Little Curlew, Little Whimbrel [848]		Foraging, feeding or related behaviour likely to occur within area overfly marine area

Scientific Name	Threatened Category	Presence Text
Pachyptila turtur Fairy Prion [1066]		Species or species habitat likely to occur within area
Pandion haliaetus Osprey [952]		Breeding known to occur within area
Phaethon lepturus White-tailed Tropicbird [1014]		Species or species habitat may occur within area
Phoebetria fusca Sooty Albatross [1075]	Vulnerable	Species or species habitat may occur within area
Rhipidura rufifrons Rufous Fantail [592]		Species or species habitat known to occur within area overfly marine area
Rostratula australis as Rostratula benghalensis (sensu lato) Australian Painted Snipe [77037]	Endangered	Species or species habitat likely to occur within area overfly marine area
Sternula albifrons as Sterna albifrons Little Tern [82849]		Species or species habitat may occur within area
Symposiachrus trivirgatus as Monarcha trivirgatus Spectacled Monarch [83946]		Species or species habitat known to occur within area overfly marine area
Thalassarche bulleri Buller's Albatross, Pacific Albatross [64460]	Vulnerable	Species or species habitat may occur within area
Thalassarche bulleri platei as Thalassarche sp. nov. Northern Buller's Albatross, Pacific Albatross [82273]	Vulnerable	Species or species habitat may occur within area
Thalassarche carteri Indian Yellow-nosed Albatross [64464]	Vulnerable	Species or species habitat likely to occur within area

Scientific Name	Threatened Category	Presence Text
Thalassarche cauta		
Shy Albatross [89224]	Endangered	Species or species habitat may occur within area
Thalassarche impavida		
Campbell Albatross, Campbell Black-browed Albatross [64459]	Vulnerable	Species or species habitat may occur within area
Thalassarche melanophris		
Black-browed Albatross [66472]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Thalassarche salvini		
Salvin's Albatross [64463]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Thalassarche steadi		
White-capped Albatross [64462]	Vulnerable	Species or species habitat may occur within area
Tringa nebularia		
Common Greenshank, Greenshank [832]		Species or species habitat likely to occur within area overfly marine area
Fish		
Acentronura tentaculata		
Shortpouch Pygmy Pipehorse [66187]		Species or species habitat may occur within area
Festucalex cinctus		
Girdled Pipefish [66214]		Species or species habitat may occur within area
Filicampus tigris		
Tiger Pipefish [66217]		Species or species habitat may occur within area
Heraldia nocturna		
Upside-down Pipefish, Eastern Upside-down Pipefish, Eastern Upside-down Pipefish [66227]		Species or species habitat may occur within area

Scientific Name	Threatened Category	Presence Text
Hippichthys heptagonus Madura Pipefish, Reticulated Freshwater Pipefish [66229]		Species or species habitat may occur within area
Hippichthys penicillus Beady Pipefish, Steep-nosed Pipefish [66231]		Species or species habitat may occur within area
Hippocampus whitei White's Seahorse, Crowned Seahorse, Sydney Seahorse [66240]	Endangered	Species or species habitat likely to occur within area
Histiogamphelus briggsii Crested Pipefish, Briggs' Crested Pipefish, Briggs' Pipefish [66242]		Species or species habitat may occur within area
Lissocampus runa Javelin Pipefish [66251]		Species or species habitat may occur within area
Maroubra perserrata Sawtooth Pipefish [66252]		Species or species habitat may occur within area
Solegnathus dunckeri Duncker's Pipehorse [66271]		Species or species habitat may occur within area
Solegnathus spinosissimus Spiny Pipehorse, Australian Spiny Pipehorse [66275]		Species or species habitat may occur within area
Solenostomus cyanopterus Robust Ghostpipefish, Blue-finned Ghost Pipefish, [66183]		Species or species habitat may occur within area
Solenostomus paradoxus Ornate Ghostpipefish, Harlequin Ghost Pipefish, Ornate Ghost Pipefish [66184]		Species or species habitat may occur within area
Stigmatopora nigra Widebody Pipefish, Wide-bodied Pipefish, Black Pipefish [66277]		Species or species habitat may occur within area

Scientific Name	Threatened Category	Presence Text
[Syngnathoides biaculeatus](#) Double-end Pipehorse, Double-ended Pipehorse, Alligator Pipefish [66279]		Species or species habitat may occur within area
[Trachyrhamphus bicoarctatus](#) Bentstick Pipefish, Bend Stick Pipefish, Short-tailed Pipefish [66280]		Species or species habitat may occur within area
[Urocampus carinirostris](#) Hairy Pipefish [66282]		Species or species habitat may occur within area
[Vanacampus margaritifer](#) Mother-of-pearl Pipefish [66283]		Species or species habitat may occur within area
Mammal		
[Arctocephalus forsteri](#) Long-nosed Fur-seal, New Zealand Fur-seal [20]		Species or species habitat may occur within area
[Arctocephalus pusillus](#) Australian Fur-seal, Australo-African Fur-seal [21]		Species or species habitat may occur within area
[Dugong dugon](#) Dugong [28]		Species or species habitat may occur within area
Reptile		
[Caretta caretta](#) Loggerhead Turtle [1763]	Endangered	Species or species habitat known to occur within area
[Chelonia mydas](#) Green Turtle [1765]	Vulnerable	Species or species habitat known to occur within area
[Dermochelys coriacea](#) Leatherback Turtle, Leathery Turtle, Luth [1768]	Endangered	Species or species habitat known to occur within area
[Eretmochelys imbricata](#) Hawksbill Turtle [1766]	Vulnerable	Species or species habitat known to occur within area

Scientific Name	Threatened Category	Presence Text
Hydrophis elegans Elegant Seasnake [1104]		Species or species habitat may occur within area
Natator depressus Flatback Turtle [59257]	Vulnerable	Breeding likely to occur within area
Pelamis platurus Yellow-bellied Seasnake [1091]		Species or species habitat may occur within area

Whales and Other Cetaceans [Resource Information]

Current Scientific Name	Status	Type of Presence
Mammal		
Balaenoptera acutorostrata Minke Whale [33]		Species or species habitat may occur within area
Balaenoptera edeni Bryde's Whale [35]		Species or species habitat may occur within area
Balaenoptera musculus Blue Whale [36]	Endangered	Species or species habitat may occur within area
Delphinus delphis Common Dolphin, Short-beaked Common Dolphin [60]		Species or species habitat may occur within area
Eubalaena australis Southern Right Whale [40]	Endangered	Species or species habitat likely to occur within area
Grampus griseus Risso's Dolphin, Grampus [64]		Species or species habitat may occur within area
Megaptera novaeangliae Humpback Whale [38]		Species or species habitat known to occur within area
Orcinus orca Killer Whale, Orca [46]		Species or species habitat may occur within area

Current Scientific Name	Status	Type of Presence
Stenella attenuata		
Spotted Dolphin, Pantropical Spotted Dolphin [51]		Species or species habitat may occur within area
Tursiops aduncus		
Indian Ocean Bottlenose Dolphin, Spotted Bottlenose Dolphin [68418]		Species or species habitat likely to occur within area
Tursiops truncatus s. str.		
Bottlenose Dolphin [68417]		Species or species habitat may occur within area

Extra Information

State and Territory Reserves [Resource Information]

Protected Area Name	Reserve Type	State
Lake Innes	Nature Reserve	NSW

Regional Forest Agreements [Resource Information]

Note that all areas with completed RFAs have been included.

RFA Name	State
North East NSW RFA	New South Wales

EPBC Act Referrals [Resource Information]

Title of referral	Reference	Referral Outcome	Assessment Status
Not controlled action			
Improving rabbit biocontrol: releasing another strain of RHDV, sthrn two thirds of Australia	2015/7522	Not Controlled Action	Completed
Referral decision			
Breeding program for Grey Nurse Sharks	2007/3245	Referral Decision	Completed

Biologically Important Areas

Scientific Name	Behaviour	Presence
Dolphins		
Tursiops aduncus		
Indo-Pacific/Spotted Bottlenose Dolphin [68418]	Breeding	Likely to occur
Seabirds		
Ardenna pacifica		
Wedge-tailed Shearwater [84292]	Foraging	Likely to occur
Sharks		

Scientific Name	Behaviour	Presence
Carcharias taurus		
Grey Nurse Shark [64469]	Foraging	Known to occur
Whales		
Megaptera novaeangliae		
Humpback Whale [38]	Foraging	Known to occur

Caveat

1 PURPOSE

This report is designed to assist in identifying the location of matters of national environmental significance (MNES) and other matters protected by the Environment Protection and Biodiversity Conservation Act 1999 (Cth) (EPBC Act) which may be relevant in determining obligations and requirements under the EPBC Act.

The report contains the mapped locations of:

- World and National Heritage properties;
- Wetlands of International and National Importance;
- Commonwealth and State/Territory reserves;
- distribution of listed threatened, migratory and marine species;
- listed threatened ecological communities; and
- other information that may be useful as an indicator of potential habitat value.

2 DISCLAIMER

This report is not intended to be exhaustive and should only be relied upon as a general guide as mapped data is not available for all species or ecological communities listed under the EPBC Act (see below). Persons seeking to use the information contained in this report to inform the referral of a proposed action under the EPBC Act should consider the limitations noted below and whether additional information is required to determine the existence and location of MNES and other protected matters.

Where data are available to inform the mapping of protected species, the presence type (e.g. known, likely or may occur) that can be determined from the data is indicated in general terms. It is the responsibility of any person using or relying on the information in this report to ensure that it is suitable for the circumstances of any proposed use. The Commonwealth cannot accept responsibility for the consequences of any use of the report or any part thereof. To the maximum extent allowed under governing law, the Commonwealth will not be liable for any loss or damage that may be occasioned directly or indirectly through the use of, or reliance

3 DATA SOURCES

Threatened ecological communities

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

Threatened, migratory and marine species

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

Where little information is available for a species or large number of maps are required in a short time-frame, maps are derived either from 0.04 or 0.02 decimal degree cells; by an automated process using polygon capture techniques (static two kilometre grid cells, alpha-hull and convex hull); or captured manually or by using topographic features (national park boundaries, islands, etc.).

In the early stages of the distribution mapping process (1999-early 2000s) distributions were defined by degree blocks, 100K or 250K map sheets to rapidly create distribution maps. More detailed distribution mapping methods are used to update these distributions

4 LIMITATIONS

The following species and ecological communities have not been mapped and do not appear in this report:

- threatened species listed as extinct or considered vagrants;
- some recently listed species and ecological communities;
- some listed migratory and listed marine species, which are not listed as threatened species; and
- migratory species that are very widespread, vagrant, or only occur in Australia in small numbers.

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

- listed migratory and/or listed marine seabirds, which are not listed as threatened, have only been mapped for recorded
- seals which have only been mapped for breeding sites near the Australian continent

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

Refer to the metadata for the feature group (using the Resource Information link) for the currency of the information.

Acknowledgements

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

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

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

Please feel free to provide feedback via the Contact us page.

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Appendix B - Bionet Atlas Search Table

Data from the BioNet Atlas website, which holds records from a number of custodians. The data are only indicative and cannot be considered a comprehensive inventory, and may contain errors and omissions. Species listed under the Sensitive Species Data Policy may have their locations denatured (^ rounded to 0.1°C; ^^ rounded to 0.01°C. Copyright the State of NSW through the Department of Planning, Industry and Environment. Search criteria : Public Report of all Valid Records of Threatened (listed on BC Act 2016) or Commonwealth listed Entities in selected area [North: -31.50 West: 152.81 East: 152.91 South: -31.60] returned a total of 1,530 records of 61 species.

Report generated on 21/12/2022 9:38 AM

Kingdom	Class	Family	Species Code	Scientific Name	Common Name	NSW status	Comm. status	Records	Habitat Suitability/Risk of Impact at Project Site
Animalia	Amphibia	Myobatrachidae	3137	*Crinia tinnula*	Wallum Froglet	V,P		14	Unsuitable habitat low risk
Animalia	Amphibia	Hylidae	3166	*Litoria aurea*	Green and Golden Bell Frog	E1,P	V	8	Unsuitable habitat low risk
Animalia	Amphibia	Hylidae	3169	*Litoria brevipalmata*	Green-thighed Frog	V,P		1	Unsuitable habitat low risk
Animalia	Reptilia	Cheloniidae	2004	*Caretta caretta*	Loggerhead Turtle	E1,P	E	2	Unsuitable habitat low risk
Animalia	Reptilia	Cheloniidae	2007	*Chelonia mydas*	Green Turtle	V,P	V	1	Unsuitable habitat low risk
Animalia	Reptilia	Cheloniidae	2008	*Eretmochelys imbricata*	Hawksbill Turtle	P	V	2	Unsuitable habitat low risk

Animalia	Reptilia	Dermochelyidae	2013	*Dermochelys coriacea*	Leatherback Turtle	E1,P	E	1	Unsuitable habitat low risk
Animalia	Aves	Columbidae	0025	*Ptilinopus magnificus*	Wompoo Fruit-Dove	V,P		2	Unsuitable habitat low risk
Animalia	Aves	Apodidae	0334	*Hirundapus caudacutus*	White-throated Needletail	P	V,C,J,K	3	Unsuitable habitat low risk
Animalia	Aves	Procellariidae	0072	*Ardenna carneipes*	Flesh-footed Shearwater	V,P	J,K	2	Unsuitable habitat low risk
Animalia	Aves	Ciconiidae	0183	*Ephippiorhynchus asiaticus*	Black-necked Stork	E1,P		38	Unsuitable habitat low risk
Animalia	Aves	Ardeidae	0197	*Botaurus poiciloptilus*	Australasian Bittern	E1,P	E	2	Unsuitable habitat low risk
Animalia	Aves	Accipitridae	0226	*Haliaeetus leucogaster*	White-bellied Sea-Eagle	V,P		57	Marginal habitat/Low Risk
Animalia	Aves	Accipitridae	0225	*Hieraaetus morphnoides*	Little Eagle	V,P		1	Marginal habitat/Low Risk
Animalia	Aves	Accipitridae	0230	*^^Lophoictinia isura*	Square-tailed Kite	V,P,3		3	Marginal habitatLow Risk
Animalia	Aves	Accipitridae	8739	*^^Pandion cristatus*	Eastern Osprey	V,P,3		30	Marginal habitat/Low Risk
Animalia	Aves	Burhinidae	0175	*Esacus magnirostris*	Beach Stone-curlew	E4A,P		1	Marginal habitat/Moderate Risk - test
Animalia	Aves	Haematopodidae	0131	*Haematopus fuliginosus*	Sooty Oystercatcher	V,P		2	Marginal habitat/Low Risk

Animalia	Aves	Haematopodidae	0130	*Haematopus longirostris*	Pied Oystercatcher	E1,P		16	Marginal habitat/Moderate Risk - test
Animalia	Aves	Scolopacidae	0164	*Calidris canutus*	Red Knot	P	E,C,J,K	11	Marginal habitat/Low Risk
Animalia	Aves	Scolopacidae	0161	*Calidris ferruginea*	Curlew Sandpiper	E1,P	CE,C,J,K	15	Marginal habitat/Low Risk
Animalia	Aves	Scolopacidae	0165	*Calidris tenuirostris*	Great Knot	V,P	CE,C,J,K	3	Marginal habitat/Low Risk
Animalia	Aves	Scolopacidae	0152	*Limosa limosa*	Black-tailed Godwit	V,P	C,J,K	1	Marginal habitat/Low Risk
Animalia	Aves	Scolopacidae	0149	*Numenius madagascariensis*	Eastern Curlew	P	CE,C,J,K	4	Marginal habitat/Low Risk
Animalia	Aves	Laridae	0117	*Sternula albifrons*	Little Tern	E1,P	C,J,K	10	Marginal habitat/Moderate Risk - test
Animalia	Aves	Cacatuidae	0265	*^Calyptorhynchus lathami*	Glossy Black-Cockatoo	V,P,2	V	11	Unsuitable habitat low risk
Animalia	Aves	Psittacidae	0260	*Glossopsitta pusilla*	Little Lorikeet	V,P		14	Unsuitable habitat low risk
Animalia	Aves	Psittacidae	0309	*Lathamus discolor*	Swift Parrot	E1,P	CE	36	Unsuitable habitat low risk
Animalia	Aves	Strigidae	0248	*^^Ninox strenua*	Powerful Owl	V,P,3		12	Unsuitable habitat low risk
Animalia	Aves	Tytonidae	0252	*^^Tyto longimembris*	Eastern Grass Owl	V,P,3		2	Unsuitable habitat low risk
Animalia	Aves	Tytonidae	0250	*^^Tyto novaehollandiae*	Masked Owl	V,P,3		3	Unsuitable habitat low risk
Animalia	Aves	Meliphagidae	0603	*Anthochaera phrygia*	Regent Honeyeater	E4A,P	CE	11	Unsuitable habitat low risk
Animalia	Aves	Neosittidae	0549	*Daphoenositta chrysoptera*	Varied Sittella	V,P		9	Unsuitable habitat low risk

Animalia	Aves	Artamidae	8519	*Artamus cyanopterus cyanopterus*	Dusky Woodswallow	V,P		3	Unsuitable habitat low risk
Animalia	Aves	Petroicidae	0382	*Petroica phoenicea*	Flame Robin	V,P		1	Unsuitable habitat low risk
Animalia	Mammalia	Dasyuridae	1008	*Dasyurus maculatus*	Spotted-tailed Quoll	V,P	E	3	Unsuitable habitat low risk
Animalia	Mammalia	Dasyuridae	1017	*Phascogale tapoatafa*	Brush-tailed Phascogale	V,P		4	Unsuitable habitat low risk
Animalia	Mammalia	Dasyuridae	1045	*Planigale maculata*	Common Planigale	V,P		1	Unsuitable habitat low risk
Animalia	Mammalia	Phascolarctidae	1162	*Phascolarctos cinereus*	Koala	E1,P	E	1045	Unsuitable habitat low risk
Animalia	Mammalia	Burramyidae	1150	*Cercartetus nanus*	Eastern Pygmy-possum	V,P		1	Unsuitable habitat low risk
Animalia	Mammalia	Petauridae	1136	*Petaurus australis*	Yellow-bellied Glider	V,P	V	14	Unsuitable habitat low risk
Animalia	Mammalia	Petauridae	1137	*Petaurus norfolcensis*	Squirrel Glider	V,P		12	Unsuitable habitat low risk
Animalia	Mammalia	Pteropodidae	1280	*Pteropus poliocephalus*	Grey-headed Flying-fox	V,P	V	28	Unsuitable habitat low risk
Animalia	Mammalia	Pteropodidae	1294	*Syconycteris australis*	Common Blossom-bat	V,P		1	Unsuitable habitat low risk
Animalia	Mammalia	Molossidae	1329	*Micronomus norfolkensis*	Eastern Coastal Free-tailed Bat	V,P		2	Unsuitable habitat low risk
Animalia	Mammalia	Vespertilionidae	1357	*Myotis macropus*	Southern Myotis	V,P		2	Unsuitable habitat low risk
Animalia	Mammalia	Vespertilionidae	1361	*Scoteanax rueppellii*	Greater Broad-nosed Bat	V,P		4	Unsuitable habitat low risk
Animalia	Mammalia	Vespertilionidae	1025	*Vespadelus troughtoni*	Eastern Cave Bat	V,P		4	Unsuitable habitat low risk
Animalia	Mammalia	Miniopteridae	1346	*Miniopterus australis*	Little Bent-winged Bat	V,P		22	Unsuitable habitat low risk

Animalia	Mammalia	Miniopteridae	3330	*Miniopterus orianae oceanensis*	Large Bent-winged Bat	V,P		2	Unsuitable habitat low risk
Animalia	Mammalia	Muridae	1466	*Pseudomys gracilicaudatus*	Eastern Chestnut Mouse	V,P		9	Unsuitable habitat low risk
Animalia	Mammalia	Otariidae	1543	*Arctocephalus forsteri*	New Zealand Fur-seal	V,P		1	Unsuitable habitat low risk
Animalia	Mammalia	Balaenidae	1561	*Eubalaena australis*	Southern Right Whale	E1,P	E	3	Unsuitable habitat low risk
Plantae	Flora	Apocynaceae	1226	*Cynanchum elegans*	White-flowered Wax Plant	E1	E	8	Unsuitable habitat low risk
Plantae	Flora	Casuarinaceae	8980	*Allocasuarina defungens*	Dwarf Heath Casuarina	E1	E	2	Unsuitable habitat low risk
Plantae	Flora	Myrtaceae	4134	*Eucalyptus nicholii*	Narrow-leaved Black Peppermint	V	V	2	Unsuitable habitat low risk
Plantae	Flora	Myrtaceae	4283	*Rhodamnia rubescens*	Scrub Turpentine	E4A	CE	3	Unsuitable habitat low risk
Plantae	Flora	Myrtaceae	4284	*Rhodomyrtus psidioides*	Native Guava	E4A	CE	21	Unsuitable habitat low risk
Plantae	Flora	Orchidaceae	6630	*^Dendrobium melaleucaphilum*	Spider orchid	E1,P,2		1	Unsuitable habitat low risk
Plantae	Flora	Orchidaceae	14732	*^Diuris byronensis*	Byron Bay Diuris	E1,P,2		1	Unsuitable habitat low risk
Plantae	Flora	Rutaceae	6457	*Acronychia littoralis*	Scented Acronychia	E1	E	2	Unsuitable habitat low risk

Appendix C: Threatened Species Test of Significance under section 7.3 of the *Biodiversity Conservation Act 2016 (*BC Act) and *Environment Protection and Biodiversity Conservation Act 1999* Assessment of Significance

Introduction

This document provides a Threatened Species Test of Significance under section 7.3 of the *Biodiversity Conservation Act 2016 (BC Act)* for the:

- *Pied* Oystercatcher (*Haematopus longirostris*)
- Little Tern (*Sternula albifrons*); and
- Beach Stone-curlew (*Esacus magnirostris*).

An *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) Assessment of Significance has been applied for the Rainbow Bee-Eater (*Merops oranatus*).

Pied Oystercatcher

Listed as an endangered species under the NSW BC Act, the Pied Oystercatcher is thinly scattered along the entire NSW coast, with fewer than 200 breeding pairs estimated to occur in the State. The species is restricted to the littoral zone of beaches and estuaries, where it nests on the ground just above the tideline. In NSW, the Pied Oystercatcher occupies beaches and inlets along the entire coast and a breeding pair typically reuses a nest site over many years and will rarely shift its territory.

The breeding season occurs from October to January.

The proposed 227m² construction footprint area is subject disturbance from high tides and large swells and coastal erosion along with regular human disturbance by residents and visitors to Lighthouse Beach, which reduces the suitability for nesting when compared with areas less populated by people.

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

It is unlikely that the works will have an adverse effect on the life cycle of the Pied Oystercatcher such that a viable local population of the species will be placed at risk of extinction. The area of Lighthouse Beach and the lower Cathie creek mouth subject to the works consists of comparably poor Pied Oystercatcher habitat when compared to the nearby Lake Innes Nature Reserve and Lake Innes State Conservation Area.

2. In the case of an endangered population, whether the action proposed is likely to have an adverse effect on the life cycle of the species that constitutes the endangered population such that a viable local population of the species is likely to be placed at risk of extinction

Not applicable. The Pied Oystercatcher is not listed as an endangered population.

3. In the case of an endangered ecological community or critically endangered ecological community, whether the action proposed:

a. 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

b. 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.

Not applicable. The Pied Oystercatcher is not an endangered ecological community or a critically endangered ecological community.

4. In relation to the habitat of a threatened species, population or ecological community:
a. The extent to which habitat is likely to be removed or modified as a result of the action proposed; and
b. Whether an area of habitat is likely to become fragmented or isolated from other habitat as a result of the proposed action; and
c. 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.
a. As described in the REF, the area subject to the construction activities involving excavation of a small section of 227m² including some vegetation for the purposes of repairs to damaged stormwater pipe and coastal protection works - Illaroo Road. The proposed 227m² construction footprint area is subject disturbance from high tides and large swells and coastal erosion along with regular human disturbance by residents and visitors to Lighthouse Beach, which reduces the suitability for nesting when compared with areas less populated by people.

b. The preferred habitat of the Pied Oystercatcher includes intertidal flats of inlets and bays, open beaches and sandbanks. While the works would disturb isolation of areas of Pied Oystercatcher habitat, as the intertidal flats and remainder of Lighthouse Beach and Lake Cathie estuary will be unaffected.
c. The importance of the habitat to be removed, fragmented or isolated to the long term survival of the Little Tern in the locality is considered to be low.

5. Whether the action proposed is likely to have an adverse effect on critical habitat (either directly or indirectly)
Not applicable. No critical habitat has been declared for the Pied Oystercatcher.

6. Whether the action proposed is consistent with the objectives or actions of a recovery plan or threat abatement plan
No recovery plans or threat abatement plans have been prepared for the Pied Oystercatcher.

7. Whether the action proposed constitutes or is part of a key threatening process or is likely to result in the operation of, or increase the impact of, a key threatening process.
Although the action proposed will result in some disturbance to the immediate area, the proposed action does not constitute a key threatening process, or part of a key threatening process, under the BC Act. The proposed action is also not likely to result in the operation of, or increase the impact of, a key threatening process.

Little Tern
Listed as an endangered species under the BC Act, Little Terns inhabit both sheltered coastal environments, including lagoons, estuaries and also on exposed ocean beaches. Nesting usually occurs at or near the mouth of an estuary and takes place from Wallagoot Lake, South Tuross Heads and Botany Bay in the south, to the Entrance, Old Bar and Manning Point, and at Nambucca Heads, Bongil Bongil, Red Rock, Station Creek and Lake Cakora in the north of the State.
The breeding season occurs from October to February in NSW, with the species migrating to the Northern Hemisphere from March onwards. Due to the high level of disturbance to the beach area fronting Bundella Avenue from human disturbance and natural wave processes, the construction footprint of the works is unlikely to be a suitable nesting area for the species.

1. In the case of a threatened species, whether the action proposed is likely to have an adverse effect on the life cycle of the species such that a local population of the species is likely to be placed at risk of extinction.
No Little Tern nesting sites have ever been recorded at Lake Cathie or Lighthouse Beach, with the nearest recorded nesting sites being located in Port Macquarie and Camden Head. Port Macquarie's last Little Tern nest was recorded in the 1989-1990 breeding season, and Camden Head's last nest was recorded prior to 1959. The last recorded sighting of a Little Tern in Lake Cathie was in 1995. Therefore, it is unlikely that the construction activities will adversely affect the life cycle of the Little Tern such that a viable local population of Little Tern is likely to be placed at risk of extinction.

2. In the case of an endangered population, whether the action proposed is likely to have an adverse effect on the life cycle of the species that constitutes the endangered population such that a viable local population of the species is likely to be placed at risk of extinction
Not applicable. The Little Tern is not listed as an endangered population.

3. In the case of an endangered ecological community or critically endangered ecological community, whether the action proposed:
a. 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
b. 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.
Not applicable. The Little Tern is not an endangered ecological community or a critically endangered ecological community.

4. In relation to the habitat of a threatened species, population or ecological community:
a. The extent to which habitat is likely to be removed or modified as a result of the action proposed; and
b. Whether an area of habitat is likely to become fragmented or isolated from other habitat as a result of the proposed action; and
c. 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.
a. As described in the REF, the area subject to the construction activities involving excavation of a small section of 227m² including some vegetation for the purposes of repairs to damaged stormwater pipe and coastal protection works - Illaroo Road. The proposed 227m² construction footprint area is subject disturbance from high tides and large swells and coastal erosion along with regular human disturbance by residents and visitors to Lighthouse Beach, which reduces the suitability for nesting when compared with areas less populated by people.
b. While the works would disturb a small section of coastline, it would not result in the fragmentation or isolation of areas of habitat for the Little Tern. No Little Tern nesting sites have ever been recorded on Lighthouse Beach, and the last recorded sighting of a Little Tern was in Lake Cathie was in 1995.
c. The importance of the habitat to be removed, fragmented or isolated to the long term survival of the Little Tern in the locality is considered to be low. This is due to the habitat not being removed, fragmented or isolated as a result of the works, and the lack of any recorded nesting sites or recent (post 1995) recorded sightings of the Little Tern in the locality.

5. Whether the action proposed is likely to have an adverse effect on critical

habitat (either directly or indirectly)
Not applicable. No critical habitat has been declared for the Little Tern.

6. Whether the action proposed is consistent with the objectives or actions of a recovery plan or threat abatement plan
Not applicable. While there is a Recovery Plan for the Little Tern, it is not applicable to the construction area due to there being no recorded Little Tern nesting sites in the area.

7. Whether the action proposed constitutes or is part of a key threatening process or is likely to result in the operation of, or increase the impact of, a key threatening process.
Although the action proposed will result in some disturbance to the immediate area, the proposed action does not constitute a key threatening process, or part of a key threatening process, under the BC Act. The proposed action is also not likely to result in the operation of, or increase the impact of, a key threatening process.

Beach Stone-curlew
List the species, populations and ecological communities, or their habitats which are likely to be affected by the proposal:
The Beach Stone-curlew are found exclusively along the coast, on a wide range of beaches, islands, reefs and estuaries, and may often be seen at the edges of or near mangroves. They forage in the intertidal zone of beaches and estuaries, on islands, flats, banks and spits of sand, mud, gravel or rock and among mangroves. Beach Stone-Curlews breed above the littoral zone, at the backs of beaches, or on sandbanks and islands, among low vegetation of grass, scattered shrubs or low trees; also among open mangroves. In NSW, clutches have been recorded from early October to late March. Their nests are just a shallow scrape in sand or gravel, above the tidal zone at the backs of beaches, or on sandbanks and islands or among open mangroves.

1. In the case of a threatened species, whether the action proposed is likely to have an adverse effect on the life cycle of the species such that a local population of the species is likely to be placed at risk of extinction.
The beach and estuary fronting Bundella Avenue is not a known nesting area for the Beach Stone- Curlew. The existing study area is subject to regular human disturbance by residents and visitors to Lake Cathie which reduces suitability for nesting when compared with areas less populated by people. Notwithstanding, the habitat is still available in this area the species could potentially utilise the area for nesting, and the construction activity could potentially disturb the nesting site for breeding season. With regards to foraging activity, the species is known to forage within the intertidal zone of beaches and estuaries and may be affected by loss of foraging sand flats due to a reduction of nearshore fauna availability within the study area. The relative size 227m² of the proposed construction impact area is considered insignificant when compared to the greater Lighthouse/Rainbow Beach area (15.9 km) and it is unlikely that the Project will adversely affect the life cycle of the Beach Stone-curlew such that a viable population is likely to be placed at risk of extinction.

2. In the case of an endangered population, whether the action proposed is likely to have an adverse effect on the life cycle of the species that constitutes the endangered population such that a viable local population of the species is likely to be placed at risk of extinction
Not applicable, the Beach Stone-curlew is not listed as an endangered population.

3. In the case of an endangered ecological community or critically endangered ecological community, whether the action proposed:
a. 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
b. 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.
Not applicable, the Beach Stone-curlew is not listed as an endangered population.

4. In relation to the habitat of a threatened species, population or ecological community:
a. The extent to which habitat is likely to be removed or modified as a result of the action proposed; and
b. Whether an area of habitat is likely to become fragmented or isolated from other habitat as a result of the proposed action; and
c. 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.
a. As described in the REF, the area subject to the construction activities involving excavation of a small section of 227m² including some vegetation for the purposes of repairs to damaged stormwater pipe and coastal protection works - Illaroo Road. The proposed 227m² construction footprint area is subject disturbance from high tides and large swells and coastal erosion along with regular human disturbance by residents and visitors to Lighthouse Beach, which reduces the suitability for nesting when compared with areas less populated by people.
b. The Project will disturb a 227m² section of eroded coastline which is unlikely to be used by the species as habitat. It is noted that the site is not a known nesting area for the species and is subject to regular human disturbance, reducing the suitability of the area as a nesting site when compared with areas less populated by people.

5. Whether the action proposed is likely to have an adverse effect on critical habitat (either directly or indirectly)
Not applicable, no critical habitat has been declared for the Beach Stone-curlew.

6. Whether the action proposed is consistent with the objectives or actions of a recovery plan or threat abatement plan
The OEH have established 6 management sites where conservation activities need to take place to ensure the conservation of this species. The Project is not located within these sites.

7. Whether the action proposed constitutes or is part of a key threatening process
or is likely to result in the operation of, or increase the impact of, a key threatening
process.
One of the key threats to the conservation of population is urban and industrial coastal development and associated increases in human populations. As the site is not a known nesting area for the species, the proposed action is not likely to result in the operation of, or increase the impact of a key threatening process.

Conclusion
In conclusion, it is unlikely that the proposed works will significantly impact upon the

Pied Oystercatcher, Beach Stone-Curlew or the Little Tern, and consequently, Species Impact Statements for these species are not required for the proposal. This is because the works:

- would only modify a small area of potential habitat for the species, especially
- considering the areas of potential habitat within adjacent lands;
- would not affect breeding habitat of either species; and
- would not isolate an area of known habitat from currently interconnecting areas of
- potential habitat for both species.

EPBC – Assessment of Significance

5.1 Rainbow Bee-Eater *Merops oranatus*

According to the DOE (2013) 'significant impact criteria' for migratory species, an action is likely to have a significant impact on a migratory species if there is a real chance or possibility that it will:

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 Rainbow Bee-eater is a medium-sized bird, and the only bee-eater in Australia. The species is usually seen in pairs or small flocks, although when migrating it may occur in groups of up to 500 birds or more. It usually nests in loose colonies that may contain up to about 50 pairs, but some pairs nest solitarily. The coffee rock on Lake Cathie Beach has been observed to be used extensively by the Rainbow Bee-eater. The project will disturb 227m² of eroded coastline and coffee rock which will reduce the area of habitat available to the species in the short term. It is noted that the Rainbow Bee-eater is distributed across much of mainland Australia, occurs on several near-shore islands and is known for its ability to undertake long-distance movements. Whilst there will be a short term reduction in habitat available for the species, there is still coffee rock habitat available south of the project area in sections of the beach which is less impacted by human activity.

Furthermore, the Rainbow Bee-eater is known to mainly occur in open forests and woodlands, shrublands, and in various cleared or semi-cleared habitats, including farmland and areas of human habitation. Due to the mobility of the species and its presence in many different habitat types, it is considered that whilst the works will result in a reduction in available habitat for the species, the extent of the impact will not substantially destroy or isolate an area of important habitat for the species.

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

The Rainbow Bee-eater is currently considered to be a low priority for management. Further research is required to determine the population size and to determine trends and their actual or potential impacts before any management program can be implemented meaningfully. The Commonwealth Species Profile and Threats Database list the following invasive species as threats to the Rainbow Bee-eater:

- Red Fox, Fox
- Domestic Dog
- Cane Toad
- Dingo

The works are unlikely to attract the species mentioned above into areas adjacent to habitat utilised by the species.

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

In Australia, the breeding season extends from August to January, with the nest located in an enlarged chamber at the end of a long burrow or tunnel that is excavated, often in flat or sloping ground, in the banks of rivers, creeks or dams, in roadside cuttings. The species has been observed within the Coffee Rock at Lake Cathie beach. Nesting areas are often re-used, however pairs usually excavate a new nest burrow for each breeding season. The young remain in their natal burrows for a period of 23 to 36 days, and continue to be fed by adults for another two to four weeks after their first departure from the nest. It is proposed that the works be undertaken outside the breeding period for these species so as to avoid disruption to the lifecycle of this population. It is also noted that the Rainbow Bee-eater is widely distributed across Australia and the works would therefore not disrupt an ecologically significant population of this migratory species.

Conclusion of Assessment of Significance

The coffee rock on Lake Cathie Beach has been observed to be used extensively by the Rainbow Bee-eater. The project will disturb 227m² of eroded coastline beach and coffee rock which will reduce the area of habitat available to the species. Given the wide distribution of the species, its high mobility, presence in many different habitat types; it is not anticipated that the works would have a significant impact on the population of this migratory species. It is recommended that environmental control measures including timing of construction to be done outside of the breeding season be implemented to further reduce the risk of impact to the species.