

Coffs Harbour Dredging and Beach Nourishment Program

Minor works review of
environmental factors

December 2022



Acknowledgement of Country

Transport for NSW acknowledges Gumbaynggirr Country, the traditional custodians of the land on which the Coffs Harbour Dredging and Beach Nourishment Program is proposed.

We pay our respects to Elders past and present and celebrate the diversity of Aboriginal people and their ongoing cultures and connections to the lands and waters of NSW.

Many of the transport routes we use today – from rail lines, to roads, to water crossings – follow the traditional Songlines, trade routes and ceremonial paths in Country that our nation's First Peoples followed for tens of thousands of years.

Transport for NSW is committed to honouring Aboriginal peoples' cultural and spiritual connections to the land, waters and seas and their rich contribution to society.



Document review tracking

Draft No.	Date	Reviewed by	Comments
1	22/12/2022	L. Piggott	
Final	23/12/2023	L Piggott	

MW REF approval and authorisation

Approved by	Julian Burgess – Project Manager
Signed	<i>Julian Burgess</i>
Date	22 December 2022

Table of contents

1.	Introduction	6
2.	The proposal.....	7
2.1	Description	7
2.2	Need and options	15
2.3	Statutory and planning framework	16
2.4	Community and agency consultation	20
3.	Environmental assessment	27
3.1	Soil	27
3.2	Waterways and water quality	29
3.3	Hydrology and coastal processes	32
3.4	Noise and vibration	33
3.5	Air quality.....	36
3.6	Aboriginal heritage.....	37
3.7	Non-Aboriginal heritage.....	37
3.8	Biodiversity	38
3.9	Traffic and transport	49
3.10	Socio-economic	50
3.11	Landscape character and visual amenity	52
3.12	Waste	53
4.	Consideration of State and Commonwealth environmental factors..	55
4.1	Environmental Planning and Assessment Regulation 2021 factors	55
4.2	Matters of National Environmental Significance	58
5.	Summary of safeguards and environmental management measures	59
5.1	Licensing and approvals.....	62
5.2	Other requirements	63
6.	Certification, review and decision	64
6.1	Certification.....	64
6.2	Environment staff review	65
6.3	Environment staff recommendation.....	65
6.4	Determination	66
6.5	EP&A Regulation publication requirement	66
	Appendix A: Proposal features.....	67
	Appendix B: Hydrographic Survey (October 2022).....	68
	Appendix C: Procedure for Aboriginal Cultural Heritage Consultation and Investigation	69

Appendix D: Protected Matters Search Tool	70
---	----

Appendix E: Construction Noise Estimator Tool	71
---	----

Tables

Table 2-1: Proposal location details.....	7
Table 2-2: Anticipated Equipment and Machinery	11
Table 2-3: Ancillary facilities.....	12
Table 2-3: Consultation required with Council.....	21
Table 2-4: Consultation with other public authorities	24
Table 2-5: Notification of council and occupiers of adjoining land.....	26
Table 3-1: Soil	27
Table 3-2: Waterways and water quality	29
Table 3-3: Noise and vibration	33
Table 3-4: Air quality	36
Table 3-5: Aboriginal heritage.....	37
Table 3-6: Non-Aboriginal heritage	37
Table 3-7: Biodiversity.....	38
Table 3-8: Traffic and transport.....	49
Table 3-9: Socio-economic.....	50
Table 3-10: Landscape character and visual amenity	52
Table 3-11: Waste	53
Table 4-1: Consideration of section 171 of the EP&A Regulation factors	55
Table 4-2: Matters of national environmental significance.....	58
Table 5-1: Summary of site-specific safeguards for proposed work	59
Table 5-2: Summary of licensing and approvals required.....	62
Table 5-3: Other requirements.....	63
Table 6-1: EP&A Regulation publication requirement	66

1. Introduction

The purpose of the Minor Works review of environmental factors (REF) is to describe the proposal, to document the likely impacts of the proposal on the environment, to detail mitigation measures to be implemented and to determine whether or not the proposal can proceed. For the purposes of this work Transport for NSW (Transport) is the proponent and determining authority under Division 5.1 of the Environmental Planning and Assessment Act 1979 (EP&A Act).

The description of the proposed works and assessment of associated environmental impacts has been undertaken in the context of section 171 of the *Environmental Planning and Assessment Regulation 2021*, Guidelines for Division 5.1 Assessments (DPE, 2022), the *Biodiversity Conservation Act 2016 (NSW)* (BC Act), the *Fisheries Management Act 1994* (FM Act) and the *Environment Protection and Biodiversity Conservation Act 1999 (Commonwealth)* (EPBC Act).

In doing so the REF helps to fulfil the requirements of section 5.5 of the EP&A Act including that Transport examine and take into account to the fullest extent possible all matters affecting or likely to affect the environment by reason of the activity.

The findings of the REF would be considered when assessing:

- Whether the proposal is likely to have a significant impact on the environment and therefore the necessity for an environmental impact statement to be prepared and approval to be sought from the Minister for Planning and Public Spaces under Division 5.2 of the EP&A Act.
- The significance of any impact on threatened species as defined by the BC Act and/or FM Act, in section 1.7 of the EP&A Act and therefore the requirement for a Species Impact Statement or a Biodiversity Development Assessment Report
- The potential for the proposal to significantly impact a matter of national environmental significance, including nationally listed threatened biodiversity matters, or the environment of Commonwealth land. Where a significant impact is considered likely on nationally listed biodiversity matters, either the proposal must be reconsidered or a Project REF must be prepared.

2. The proposal

2.1 Description

2.1.1 Proposal location details

Table 2-1: Proposal location details

Location details	
Title	Coffs Harbour Boat Ramp Navigational Dredging
File number	0080252
Road name and number	Jordan Esplanade and Ocean Parade
Local government area	Coffs Harbour
Transport for NSW region	North

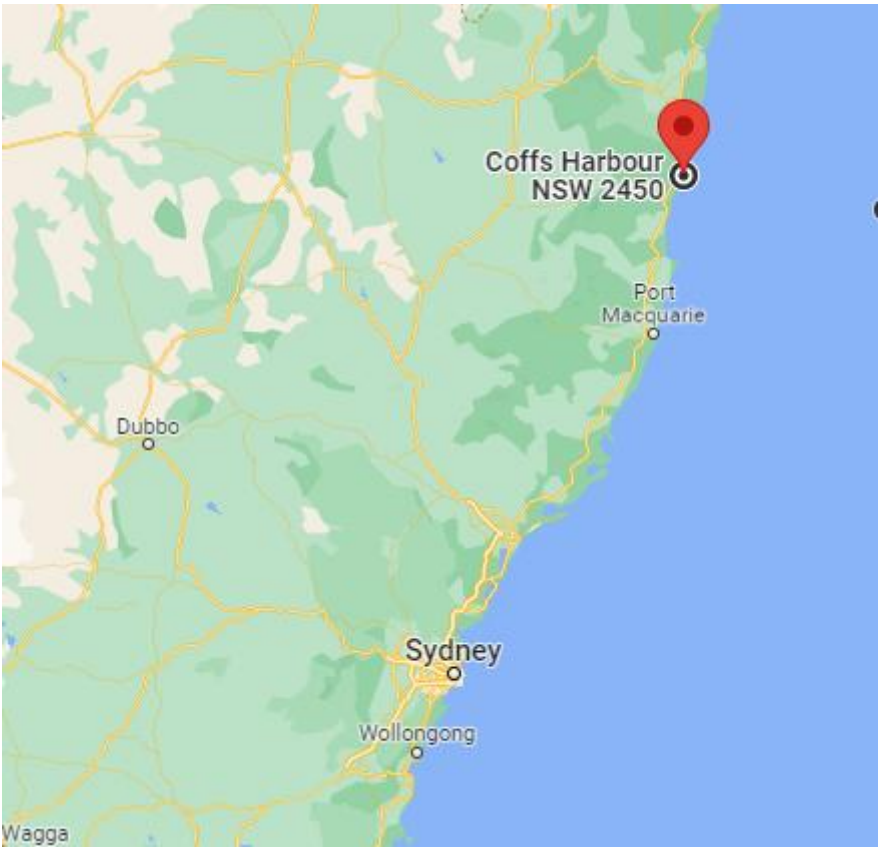


Figure 2-1 – Locality

2.1.2 Proposal location description

Transport for NSW proposes to carry out:

- Dredging operations at Coffs Harbour Boat Ramp and;
- Various beach nourishment campaigns at Park Beach.

This assessment has been informed by Upgrade of Coffs Harbour RBR Stages 1-2 Review of Environmental Factors (REF) (TfNSW, 2020).

Key features of the proposal will include various construction and ongoing operational activities (up to 18 months) as identified below:

- | | |
|--------------|---|
| Construction | <ul style="list-style-type: none"> • Installation of the sand pump and ancillary infrastructure • Establishment of the Fitzgerald St car park / Park Beach access track and hardstand area (northern ingress option) |
| Operational | <ul style="list-style-type: none"> • Extraction of sand material from boat ramp channel • Transfer of dewatered sand material to Corambirra Point Quarry (CPQ) stockpile area • Transfer of stockpiled sand material to either: <ul style="list-style-type: none"> ◦ Fitzgerald St/ Park Beach Carpark (northern ingress option) ◦ Coffs Harbour Surf Lifesaving Club Carpark (southern ingress option) – including minor site establishment • Beach Nourishment activities along Park Beach |

The preferred ingress point to Park Beach for Beach Nourishment works is via the carpark located opposite Fitzgerald St/ Ocean Pd intersection (northern ingress option). An alternate ingress option has also been proposed if significant constraints with the preferred option are identified prior to works commencing.

There are no construction activities required associated with the transfer of sand material to CPQ stockpile area, transfer of sand material to southern ingress option or beach nourishment activities along Park Beach however minor site establishment works will be required within Coffs Harbour SLSC carpark prior to the commencement of each nourishment campaign.

A summary of each component of the proposal is provided below.

Construction

Installation of the sand pump and ancillary infrastructure

Sand pumps are proposed to be installed within the boat ramp channel to remove build up of sand material and permit a safe navigable pathway from the boat ramp into harbour. The sand pump design proposes to be installed below the sea bed of the channel to passively collect sand material and pump out to an established dewatering bund. The aim of the pumps are to reduce the need of active dredging operations by excavator or barges.

In addition, the pump system proposes to operate semi-autonomously with a single onsite operator to oversee pumping.

Components of the sand pumps installation include:

- Install all pumping equipment and supporting equipment
- Connect pipework to the jet pump
- Suspend by crane or float into position
- Operate system to allow the jet pumps to self bury
- Divers disconnect rigging and carry out sea bed survey to ensure there are no navigation hazards from the jet pump or its pipework

Jet pumps will be installed by excavator or crane working on breakwater and require the excavation of material up to -7.5m AHD. Installation of the jet pumps will likely require the temporary closure of the boat ramp however the installation of other mechanical equipment, such as piping and pumping infrastructure, will not impede boat ramp users. The jet pumps will self bury and sit within the channel bed once installed.

Pipework will comprise of jet pumps motive and slurry return pipelines. Pipework to the dewatering bund will be surface laid. Installation of each jet pumps may temporarily close the access channel for several hours. Subject to the sand build up in the area, boats may still get past to the west of the jet pump location.

Terrestrial based equipment, such as pumping infrastructure will be fabricated and installed offsite in 6m shipping containers. These containers (up to 4) will be trucked to site and located with a mobile crane or

excavator. All pumping equipment for this trial is diesel powered. Each engine/pump combination is installed in an insulated shipping container and is fitted with a super critical muffler to reduce noise.

Once material is collected from the sand pumps, sand will be transferred via a pipe to an existing dewatering bund. Features of the proposal are shown in **Appendix A**.

Establishment of northern ingress option

Construction of an access track to Park Beach is proposed from the carpark opposite to Fitzgerald St / Ocean Pd intersection. The proposed access track is around 25m in length and 4m in width as shown in **Appendix A**. The access track will also include a hardstand/ stockpile transfer point 20x20m beach side of the access track. The total clearing area for the access track and hardstand/stockpile transfer point is about 500m².

Impacts associated with clearing this area are assessed in **Section 3**. Vegetation clearing works will be limited to the removal of up to 5 trees less than 200mm DBH along with samplings, shrubs and other understorey vegetation within a 500m² footprint.

The access track and hardstand.stockpile transfer point will require excavation up to a depth of 500mm depending on ground conditions and existing gradient. Geo-fabric, clean quarry rock and erosion and sediment controls will be installed to minimise erosion and sediment risks and boundary control. A lockable gate will also be installed or upgraded, if required, to limit access to the work area and Park Beach.

Operational

Sand extraction works

Sand extraction works will be undertaken in two phases:

- Direct excavation via long reach excavator from the breakwall or cutter suction dredge via barge in water
- Operation of sand pumps

Due to the expedited nature of works to ensure ongoing navigability of the channel, direct excavation of the channel will be undertaken as a priority until such a time as the sand pumps are installed and become operational.

Sand extraction works via direct excavation will be undertaken periodically and on demand based on hydrographic surveys and inspections. Hydrographic surveys are undertaken on at least a quarterly basis. The most recent hydrographic survey was completed during October 2022 and is shown in **Appendix B**. Surveys indicate that sand buildup is up to 0.4mAHD in some parts of the channel.

It is understood that sand material captured as part of dredging works will only include the top layer of the material deposited from tidal movements. The most recent build up of sand material has likely been caused in part by the extension of the breakwall approved as part of the Stage 1 Coffs Harbour RBR Upgrade work program as shown in **Figure 2-2**.

Once installed, the sand pumps will operate as a trial for up to 18 months. Outcomes of this trial will inform the suitability of longterm work program that will be undertaken under a different approval..

The dewatering bund will permit the sand material to dry prior to its transfer to CPQ. The dewatering bund is an existing structure and has been used as part of the existing channel dredging work program. The dewatering bund is graded towards the harbour and includes a number of existing erosion and sediment controls consistent with Blue book requirements..

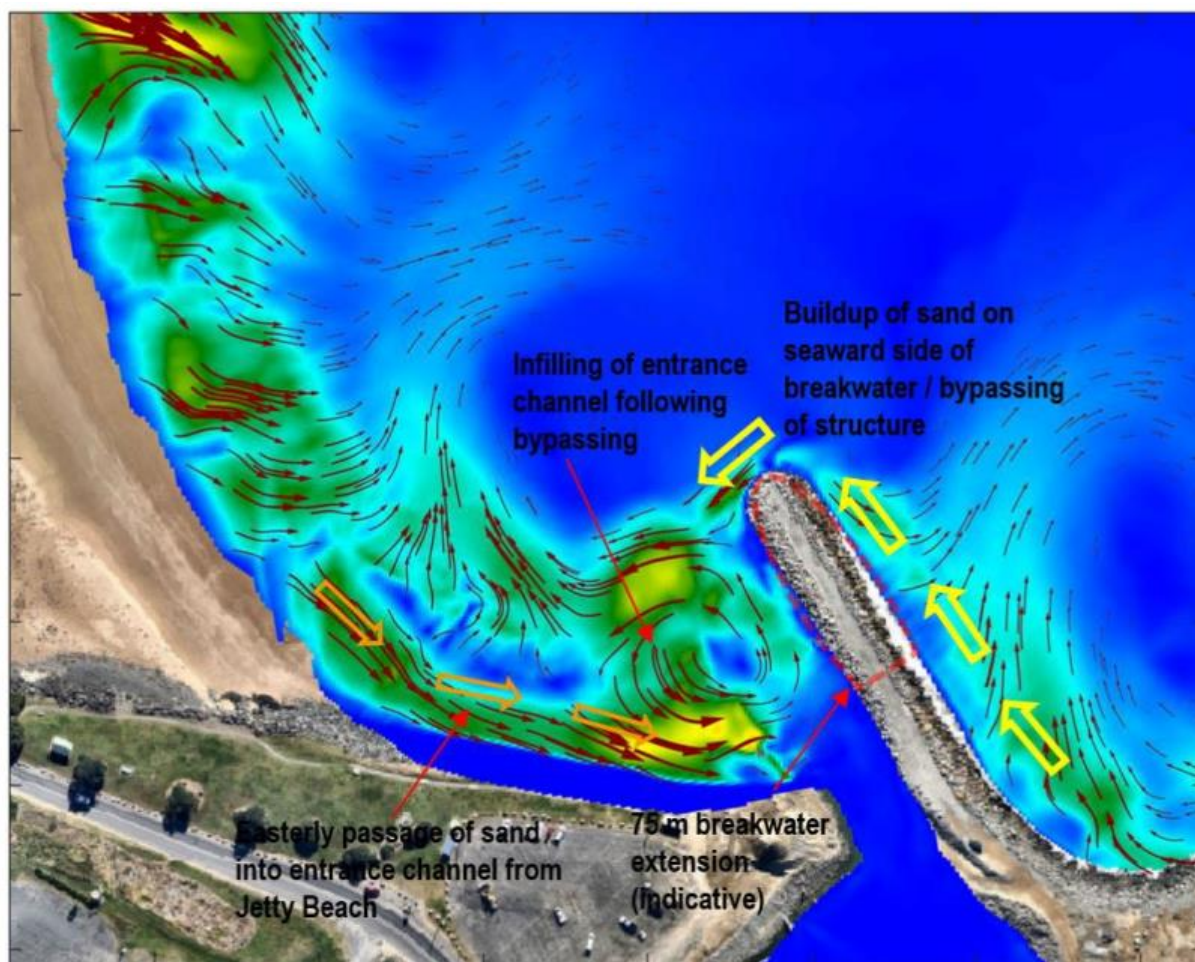


Figure 2-2: Sand flows around Boat ramp and break wall

Transfer of dewatered sand material to CPQ

Sand material removed from the channel is proposed to be transferred and stockpiled at CPQ until a sufficient volume of material is available for a beach nourishment campaign to take place. CPQ is around 400m east of the boat ramp and is an existing stockpile site for CHCC and TfNSW works within the local area. Management of this stockpile site will be undertaken in accordance with the TfNSW Stockpile Site Management Guideline. TfNSW will continue to liaise with CHCC across the duration of stockpile use at CPQ.

The Project Manager, or delegate will perform visual inspection of sand material stockpiled at CPQ to identify if screening of material is required to remove any significant quantity of rock or large objects. Stockpile controls and signage will be installed to ensure screened and unscreened material are not mixed prior dispersal.

Material sourced from the channel that does not require screening for rocks and other objects is classified as Virgin Excavated Natural Material (VENM). TfNSW will also undertake testing validate product is ENM, if required.

Transfer of sand material to Park Beach ingress points

The indicative transfer routes for sand material from CPQ to the Park Beach ingress points is shown in **Appendix A**.

Whilst the preferred Park Beach ingress point is the northern option via Fitzgerald St / Ocean Pd, a secondary option has also been considered should significant constraints arise prior to construction.

Should the secondary option for the southern ingress option be required, site establishment practices will involve:

- Close southern section of Coffs Harbour SLSC carpark closest existing access track using security fencing
- Identification and demarcation of hardstand/stockpile transfer point
- Installation of track mats or other material to permit vehicular access

The total number of vehicles movements from CPQ to the preferred Park Beach ingress point will be dependent on the vehicles' haulage capacity and volume of material available to transfer for each campaign. The total volume of sand to be transferred to Park Beach will be around 25,000m³ /year, averaged out around one campaign per month.

Campaigns will be organised dependent on volume of stockpiled sand, contractor availability, community events and school and public holidays. During campaigns, up to 60 return vehicle movements a day will be required.

Beach Nourishment activities along Park Beach

Beach nourishment proposes to take place along Park Beach for a period up to 18 months. It is understood that up to 25,000 m³/year of sand will be spread along the beach between the front dune system and the mean high-water mark to alleviate ongoing beach erosion and recession impacts. As noted in the Coffs Harbour CZMP (BMT, 2019), Park Beach recedes up to 0.9m/year.

The proposed area for sand placement along Park Beach is shown in **Appendix A**. Ongoing sand placement activities will not require any land or vegetation clearing. The likely methodology for beach nourishment activities includes:

- Identification and demarcation nominated sand placement area, completed by Project Manager or delegate
- Mobile plant (e.g. wheeled dozer or front end loader) receives sand at nominated transfer point.
- Mobile plant (e.g. wheeled dozer, front end loader or moxy) transfers sand to indicative placement area.
- Mobile plant (e.g. tracked dozer or front end loader) spreads sand across indicative placement area. Maximum emplacement depth per deposition will be 1.5m and machinery will work above the tidal level at all times.

Nourishment locations will be monitored at the start of each shift to confirm the best location for sand placement within the tidal zone to minimise build up of material along the beach and creation of artificial lobes and presence of any nesting shorebirds or other fauna species. Beach nourishment works propose to spread sand below the existing elevation of the foredune and spread sand material at layered depths in consultation with the SIMP across of the nourishment area. No in-surf deposition is proposed. Further consultation will be undertaken with Marine Parks NSW as part of the permit application process to confirm agreed nourishment depths.

Demobilisation

Following the completion beach nourishment works under this proposal, the Project Manager will consult with relevant stakeholders regarding rehabilitation and future uses of the access track, if northern ingress point is constructed.

Equipment/machinery to be used.

Equipment and machinery likely to be used as part of the proposal is included in **Table 2-2**. This list is not meant to be exhaustive nor prescriptive.

Table 2-2: Anticipated Equipment and Machinery

Activity	Phase	Equipment and Machinery
Sand Pump Trial	Construction	<ul style="list-style-type: none"> - 4x jet pumps to be buried beneath channel - High Pressure water pump contained within shipping container - Dredge pump contained within shipping container - Workshop and bunded diesel storage area contained within shipping container - Site office contained within shipping container

		<ul style="list-style-type: none">- Slurry transfer pipe- Crane- Long reach excavator- Boat and echo sounder- HDPE & Steel Piping- Ancilliary pumping infrastructure
Establishment of the Fitzgerald St / Park Beach car park and access track	Construction	<ul style="list-style-type: none">- Dozer- Excavator or Front end loader- Tipper- Chainsaw
Extraction of sand material from boat ramp channel	Operational	<ul style="list-style-type: none">- Long reach excavator (with attachments)- Suction cutter dredge barge- Sand pump and piping (HDPE/Steel) infrastructure
Beach nourishment	Operational	<ul style="list-style-type: none">- Excavator or front end loader- Moxey- Wheeled dozer- Scraper

Duration and hours of work.

All construction and operation works are anticipated to be completed during standard working hours. This includes:

- 7am to 6pm Monday to Fridays
- 8am to 1pm Saturdays
- No works on Sundays or Public Holidays

2.1.3 Proposal objectives

The objectives of the proposal include:

- Reduce risks associated with maritime navigation in and around boat ramp.
- Assist in restoration of Park Beach sand reserves

Dredging works proposed within the channel is supported by the NSW Coastal Dredging Strategy (CDS) 2019-2024 and associated programs.

Beach nourishment works proposed along Park Beach is supported by the Coffs Harbour Coastal Zone Management Plan (CZMP) (BMT, 2019) and associated programs.

The NSW CDS 2019-2024 and Coffs Harbour CZMP both note opportunities for beneficial re-use of dredged sand material for beach nourishment purposes, specifically in areas susceptible to coastal erosion such as Park Beach.

2.1.4 Ancillary facilities

Table 2-3: Ancillary facilities

Ancillary facilities		
<p>Will the proposal require the use or installation of a compound site?</p> <p>The proposal will utilise a small compound facility in proximity to the boat ramp. The compound site is on an existing disturbed site and no land or vegetation clearing will be required for the installation of a compound site.</p> <p>The compound site will remain fenced off from the public for the duration of the proposal.</p>	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>
<p>Will the proposal require the use or installation of a stockpile site?</p> <p>The proposal will require the use of an existing stockpile site located about 400m east of the boat ramp (see Figure 2-3). The site has operated as a stockpile site for works undertaken during Stage 1 of the Coffs Harbour Regional Boat Ramp Upgrade work program.</p>	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>



Figure 2-3: Indicative Stockpile site boundary

The stockpile site is located on crownland and managed by Coffs Harbour City Council (CHCC). Permission from the land holder will be sought prior to works commencing under this proposal.

The site will be used to:

- stockpile material from dredging activities
- filter and screen materials from dredging activities, if required.

Sand material from the stockpile site will be utilised in beach nourishment works identified in this scope of works.

One additional temporary stockpile/material transfer site will also be required to permit the transfer of sand material to Park Beach. The stockpile/material transfer site will be located at the preferred ingress option.

A permit from the landholder to undertake activities described in the proposal has been sought.

Both stockpile/material transfer sites are located on crownland which is managed by CHCC. The stockpile/material transfer point for the northern ingress option will require the clearing of approximately 400m² and associated site establishment works.

The stockpile/material transfer point for the southern ingress option will not require clearing as this would be located within an existing disturbed area in Coffs Harbour SLSC carpark.

Stockpile/material transfer points are shown in **Appendix A**.

Safeguards for the management of stockpile sites are provided in **Section 3**.

Are any other ancillary facilities required (e.g., temporary plants, parking areas, access tracks)?

Yes
☒

No
☐

An access track and hardstand area are proposed to be constructed as part of the northern ingress option. The access track will require the clearing of around 100m² (25m x 4m) of vegetation between the car park opposite Fitzgerald St / Ocean Pd intersection and Park Beach.

The car park may be temporarily closed during construction of the northern ingress option access track.



Photo 1: Northern Ingress Option access track



Photo 2: Northern Ingress Option Stockpile/Material Transfer Point

2.1.5 Proposed date of commencement

Subject to approval, the proposal is anticipated to commence during February 2023.

2.1.6 Estimated length of construction period

Construction activities associated with the installation of sand pump and ancillary infrastructure will occur between February – April 2023].

Construction activities associated with the establishment of the Northern Ingress Option will occur between February – April 2023].

Construction and operational activities will not occur during school holidays, public holidays, or other periods of known high patronage.

Operation of works described in this proposal will occur across up to an 18-month period.

2.2 Need and options

2.2.1 Options considered

Option 1: Do Nothing

Advantage	<ul style="list-style-type: none"> No construction or operation related impact on the surrounding environment No visual and noise disturbance, access impacts or traffic disruption
Disadvantage	<ul style="list-style-type: none"> Does not address navigational issues associated with the boat ramp usage Does not address safety risks of increased vessel interaction with adjacent break wall Does not address beach erosion issues present at Park Beach and objectives of the Coffs Harbour CZMP (BMT, 2019)

Option 2: Dredging and beach nourishment works (preferred option)

Advantage	<ul style="list-style-type: none"> Addresses current navigational risks associated with boat ramp usage Alleviated beach erosion issues present at Park Beach and objectives of the Coffs Harbour CZMP (BMT, 2019)
Disadvantage	<ul style="list-style-type: none"> Temporary construction impacts associated with traffic and some biodiversity Occasional operational impacts including noise, access, and traffic disruption

2.2.2 Justification for the proposal

The proposal will support the NSW Government's Maritime Infrastructure Plan (NSW Government, 2019) which identifies Coffs Harbour as a key regional port and investment location for the continued growth of tourism and recreational boating opportunities.

Dredging activities to enable ongoing use of the boat ramp is supported by the NSW CDS. All sand material is proposed for beneficial reuse for the purposes of beach nourishment works along Park Beach.

It is estimated that Park Beach is receding by up to 0.9m per annum (BMT, 2019). Beach nourishment activities associated with the proposal is supported by the Coffs Harbour CZMP to alleviate beach erosion and recession impacts (BMT,2019).

Any potential negative impacts would be temporary and associated with inconveniences caused as a result of construction and intermittently during operations.

The overall long-term benefits of the proposal outweigh the short-term and intermittent impacts. Management measures have been developed to avoid, minimise, and/or mitigate any potential environmental impact.

2.3 Statutory and planning framework

2.3.1 State Environmental Planning Policy (Transport and Infrastructure) 2021

The State Environmental Planning Policy (Transport and Infrastructure) 2021 (SEPP (Transport and Infrastructure)) aims to facilitate the effective delivery of infrastructure across the state, including for roads and road infrastructure facilities. Section 2.108 of the SEPP (Transport and Infrastructure) permits development on any land for the purpose of a road or road infrastructure facilities to be carried out by or on behalf of a public authority without consent.

As the proposal is appropriately characterised as development for the purposes of a road or road infrastructure facilities and is to be carried out by or on behalf of Transport, it can be assessed under Division 5.1 of the EP&A Act. Development consent from council is not required.

The proposal is not located on land reserved under the *National Parks and Wildlife Act 1974* and does not require development consent or approval under State Environmental Planning Policy (Resilience and Hazards) 2021, State Environmental Planning Policy (Precincts – Eastern Harbour City) 2021, State Environmental Planning Policy (Precincts – Central River City) 2021, State Environmental Planning Policy (Precincts – Western Parkland City) 2021, State Environmental Planning Policy (Precincts – Regional) 2021 or State Environmental Planning Policy (Planning Systems) 2021.

2.3.2 Other relevant legislation and environmental planning instruments

Coastal Management Act 2016

The objectives of the Coastal Management Act 2016 are to manage the coastal environment of NSW in a manner consistent with the principles of ecologically sustainable development for the social, cultural, and economic wellbeing of the people of the State.

Section 4 (1) of the Coastal Management Act 2016 defines coastal protection works to mean:

- a) Beach nourishment activities or works, and
- b) Activities or works to reduce the impact of coastal hazards on land adjacent to tidal waters (including but not limited to) seawalls revetments and groynes.

State Environmental Planning Policy (Resilience and Hazards) 2021

SEPP (Resilience and Hazards) 2021 (R&H SEPP) aims to promote an integrated and co-ordinated approach to land use planning in the coastal zone in a manner consistent with the objects of the *Coastal Management Act 2016*, including the management objectives for each coastal management area, by-

- a) Managing development in the coastal zone and protecting the environmental assets of the coast, and
- b) Establishing a framework for land use planning to guide decision-making in the coastal zone, and
- c) Mapping the 4 coastal management areas that comprise the NSW coastal zone for the purpose of the definitions in the *Coastal Management Act 2016*.

Division 1 Clause 2.8 of the R&H SEPP includes provisions for development on land in proximity to coastal wetlands and littoral rainforests. Development consent must not be granted to development on land identified as “proximity area for coastal wetlands” or “proximity area for littoral rainforest” on the Coastal Wetlands and Littoral Rainforests Area Map unless the consent authority is satisfied that the proposed development will not significantly impact on:

- a) the biophysical, hydrological, or ecological integrity of the adjacent coastal wetland or littoral rainforest, or
- b) the quantity and quality of surface and ground water flows to and from the adjacent coastal wetland or littoral rainforest.

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 —
 - i. identified in the relevant certified coastal management program, or
 - ii. beach nourishment, or
 - iii. the placing of sandbags for a period of not more than 90 days, or
 - iv. routine maintenance works or repairs to any existing coastal protection works, or
- b) with development consent — in any other case.

Coffs Harbour Coastal Zone Management Plan Final Report (BMT WBM, 2019) remains active as the Coffs Harbour as the Coastal Management Program (CMP) is currently under development.

Although there is no coastal management program in place for Coffs Harbour, the R&H SEPP is relevant to the proposal as it is intended to place dredged sand from the basin on Park Beach, in accordance with the Management Action Implementation Details Part 3.6 Reference BD.1.

Placement of material onto Park Beach will only be undertaken if it is confirmed that the dredged material is suitable for beach nourishment. Park Beach has been confirmed with CHCC as the preferred location for placement of the dredged material.).

Fisheries Management Act 1994

The Fisheries Management Act 1994 (FM Act) aims 'to conserve, develop and share the fishery resources of the State for the benefit of present and future generations and, in particular, to:

- conserve fish stocks and key fish habitats, and
- conserve threatened species, populations and ecological communities of fish and marine vegetation, and
- promote ecologically sustainable development, including the conservation of biological diversity, and
- promote viable commercial fishing and aquaculture industries, and
- promote quality recreational fishing opportunities, and
- appropriately share fisheries resources between the users of those resources, and
- provide social and economic benefits for the wider community of New South Wales.'

To meet these objectives, Part 7 of the FM Act outlines legislative provisions to protect fish habitat and Part 7A outlines provisions to conserve threatened species of fish and marine vegetation and their habitat.

Consultation with DPI Fisheries is required in relation to the proposed dredging in accordance with Section 199 of the FM Act.

Dredging works is proposed to be undertaken in areas which have been previously disturbed by dredging activities under a previous approval. Only material recently transported into the channel via natural coastal processes is proposed to be dredged and is unlikely to contain seagrasses or other marine vegetation.

Biodiversity Conservation Act 2016

The Biodiversity Conservation Act 2016 (BC Act) and its supporting regulations set out the environmental impact assessment framework for threatened species, threatened ecological communities and Areas of Outstanding Biodiversity Value (formerly critical habitat) for Division 5.1 activities (amongst other types of development).

Under the BC Act, an assessment of significance must be completed to determine the significance of potential impacts to threatened species, populations and/or communities or their habitat. The preparation of a Species Impact Statement (SIS) based on the provisions of the BC and FM Act is not required for this proposal.

Protection of the Environment Operations Act 1997

The Protection of the Environment Operations Act 1997 (POEO Act) focuses on environmental protection and provisions for the reduction of water, noise and air pollution and the storage, treatment and disposal of waste. The POEO Act introduces licensing provisions for scheduled activities that are of a nature and scale that have a potential to cause environmental pollution. It also includes measures to limit pollution and manage waste.

The proposal would not involve undertaking or carrying out a scheduled activity. If the controls set out in the relevant guidelines and quality assurance specifications, are implemented and monitored, there is unlikely to be any material water, noise or air pollution impact.

Appropriate waste management controls would be introduced to classify, store, transport and dispose of all construction and work-generated waste. A licence under the POEO Act is not required for the proposal however this will be reviewed periodically based on extraction volumes.

Environment and Planning Act 1979 Regulation

Maintenance dredging activities under this proposal is exempt from becoming designated development under Part 3 Section 49 of the EP&A Regulation as it is considered ancillary development to the construction of the Coffs Harbour boat ramp precinct.

Marine Estate Management Act 2014

The Marine Estate Management Act 2014 has been developed to

- a) to provide for the management of the marine estate of New South Wales consistent with the principles of ecologically sustainable development in a manner that —
 - i. promotes a biologically diverse, healthy and productive marine estate, and
 - ii. facilitates
 - economic opportunities for the people of New South Wales, including opportunities for regional communities, and
 - the cultural, social and recreational use of the marine estate, and
 - the maintenance of ecosystem integrity, and
 - the use of the marine estate for scientific research and education,
- b) to promote the co-ordination of the exercise, by public authorities, of functions in relation to the marine estate,
- c) to provide for the declaration and management of a comprehensive system of marine parks and aquatic reserves.

Section 56 of the Marine Estate management Act 2014 outlines that a determining authority must not carry out, or grant an approval to carry out, an activity on land that is in the locality of a marine park or an aquatic reserve in purported compliance with Part 5 of the EP&A act unless:

- a) the determining authority has taken into consideration the purposes of marine parks or aquatic reserves, the regulations and any advice given to it by the relevant Ministers on the impact on the marine park or aquatic reserve of the carrying out of an activity in the locality, and
- b) if the determining authority is of the opinion that the proposed activity is likely to have an effect on the plants or animals within the marine park or aquatic reserve or their habitat, the determining authority has consulted with the relevant Ministers.

The Solitary Islands Marine Park (SIMP) is located along a stretch of the NSW North Coast where the East Australian Current meets cooler waters from the south. The SIMP was the first declared marine park in NSW and covers an area of 70,000 hectares and 100 kilometres of coastline from the northern side of Muttonbird Island at Coffs Harbour north to Plover Island at the entrance to the Sandon River. The SIMP is not located within the dredging footprint of the proposal however is adjacent to Park Beach where beach nourishment activities are proposed to take place. **Figure 2-4** shows the location of the Northern Ingress Option construction footprint with respect to the SIMP boundary.

A Marine Parks permit will be obtained prior to beach nourishment activities taking place.

National Parks and Wildlife Act 1974

The National Parks and Wildlife Act 1974 (NPW Act) provides for the protection of Aboriginal heritage values, national parks and ecological values. The Act makes it an offence to harm Aboriginal objects, places or sites without approval. A Stage 1 assessment in accordance with the Procedure for Aboriginal Cultural Heritage Consultation and Investigation (PACHCI assessment - refer to **Appendix C**) confirms that the proposal has a low potential to impact upon Aboriginal cultural heritage or archaeological items.

The TfNSW Aboriginal Cultural Heritage Advisor (ACHA) has advised that a Stage 1 PACHCI is appropriate for the proposal. An Aboriginal heritage impact permit (AHIP) from OEH under Part 6 of this Act is not required for the proposal.



Figure 2-4: Solitary Islands Marine Park Boundary

Environment Protection and Biodiversity Conservation Act 1999

Under the Environment Protection and Biodiversity Conservation Act 1999 (EPBC Act) a referral is required to the Australian Government for proposed 'actions that have the potential to significantly impact on matters of national environmental significance (MNES) or the environment of Commonwealth land'. These are considered in **Appendix D** and in chapter 6 of this REF.

The assessment of the proposal's impact on MNES and the environment of Commonwealth land found that there is unlikely to be a significant impact on relevant matters or on Commonwealth land. Accordingly, the proposal has not been referred under the EPBC Act.

Crown Land Management Act 2016

The Crown Land Management Act 2016 provides for the ownership, use and management of the Crown land or a Crown road of NSW. Under Section 2.18 of the CLM Act the Minister may grant a licence over dedicated or reserved Crown land or a Crown road for the purpose of any facility or infrastructure.

The proposal area around the boat ramp, including the break wall and CPQ is subject to a combined licence granted to TfNSW by the Minister.

Additional licences will be attained for any components of the work program, including construction of the access track and beach nourishment areas, that may be located outside the existing footprint of the permit. Marine Pollution Act 2012

The object of the *Marine Pollution Act 2012* is to sets out provisions to prevent marine pollution from vessels.

Standard controls will be implemented to minimise risks of pollution to the marine environment from the operation of vessels under this approval. Controls which are to be implemented are identified in **Section 3**.

Marine Safety Act 1998

Under Section 18 of the Marine Safety Act 1998, the proposal is considered an aquatic activity as it would be undertaken on navigable waters and may temporarily restrict the availability of those waters for normal use by the public.

As such, Section 97(1) of the Marine Safety Regulation 2016 would require the work to be subject to an aquatic licence issued by Transport for NSW.

2.4 Community and agency consultation

2.4.1 SEPP (Transport and Infrastructure) consultation

Part 2.2 of the SEPP (Transport and Infrastructure) contains provisions for public authorities to consult with local councils and other public authorities prior to the commencement of certain types of development. This is detailed below:

Table 2-4: Consultation required with Council


Is consultation with Council required under sections 2.10 -2.12 and 2.14 of the SEPP (Transport and Infrastructure)?		
<p>Are the works likely to have a substantial impact on the stormwater management services which are provided by council?</p> <p>There are no known stormwater management assets located near the boat ramp, break wall stockpile or Northern Ingress Option that will be affected by the proposal.</p> <p>Stormwater services are located in proximity to the southern beach ingress point near the surf club and are shown in Figure 2-5 below. Services include 2x Surface inlet pits (S) along the southern extent of the surf club carpark and 1x Junction pit (J) further south. Stormwater captured from these pits are discharged into Coffs Creek.</p> <p>The proposal does not include excavation activities around stormwater assets. Interaction with stormwater assets will be minimised and erosion and sediment controls will be placed around assets.</p> 	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>
<p>Are the works likely to generate traffic to an extent that will strain the capacity of the existing road system in a local government area?</p> <p>During peak of beach nourishment campaigns, it is likely that up to 60 daily truck movements between CPQ and the preferred ingress option will take place. On average this across a standard 8-hour workday, this will equate to less than 8 vehicle movements an hour.</p> <p>In addition, construction and operational activities will not occur during school holidays, public holidays or other periods of known high patronage.</p>	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>
<p>Will the works involve connection to a council owned sewerage system? If so, will this connection have a substantial impact on the capacity of the system?</p>	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>

Figure 2-5: Stormwater services in proximity to the proposal

Will the works involve connection to a council owned water supply system? If so, will this require the use of a substantial volume of water?	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>
<p>Will the works involve the installation of a temporary structure on, or the enclosing of, a public place which is under local council management or control? If so, will this cause more than a minor or inconsequential disruption to pedestrian or vehicular flow?</p> <p>The proposal will involve occasional closure of the following areas depending on the chosen ingress option during beach nourishment campaigns.</p> <p><u>Northern Ingress Option</u></p> <ul style="list-style-type: none"> Public Carpark adjacent Ocean Parade and opposite Fitzgerald Street (up to 24 car parks) Public access to beach nourishment sites <p>Alternate car parking arrangements are available in vicinity of the carpark, including on and off-street options along Ocean Pd. Public access to Park Beach Reserve, Park Beach and Park Beach lookout will not be affected by the works. Temporary closure of this car park during beach nourishment works is not anticipated to cause more than a minor or inconsequential disruption to pedestrian or vehicular flow.</p> <p><u>Southern Ingress Option</u></p> <ul style="list-style-type: none"> Portion of public carpark adjacent to Coffs Harbour Surfclub (up to 64 car parks) Public access to Park Beach and Coffs Creek via Southern entrance point Public access to Park Beach along sand transit areas Public access to beach nourishment sites <p>All areas associated with the proposal which have heavy vehicle and mobile plant interaction will be demarcated and appropriate controls installed to limit interaction with members of the public.</p> <p>CHCC provided the following comments in response to the proposal:</p> <ul style="list-style-type: none"> <i>The impact of truck movements on roads along the Jetty Foreshore, Ocean Parade and in the car park. Also on other road users, particularly pedestrians</i> <i>This is of particular concern during the peak holiday period</i> <i>The impact of noise on the neighbourhood from vehicle movements in the construction site, particularly reversing alarms etc.</i> <i>That sand is deposited below the MHWL to facilitate littoral sand drift</i> <i>That TfNSW manage the migration of sand through the opening onto the reserve / car park / roads.</i> <i>That the hardstand should be protected from weather events to prevent its erosion and consequent contamination of the beach</i> <i>That the vegetation management plan identify:</i> <ul style="list-style-type: none"> <i>the details of the vegetation to be removed (specific No. & species of trees / shrubs and approx. m2 of ground covers / grasses)</i> <i>exclusion areas and methods to protect adjacent vegetation</i> <i>Impact and mitigation measures on impacted littoral rainforest that meets the Endangered Ecological Community classification.</i> <i>a comprehensive dune and vegetation rehabilitation plan with establishment & maintenance periods / key performance indicators</i> <i>The City requests a plan identifying all existing facilities within proximity of the works, noting their current condition and providing management options during the life and after completion of the work. The City requires that there be an agreed position as to what condition the infrastructure is to be maintained and restored</i> <i>The City requests a dilapidation report for the roads to be used and propose management options during the life and on completion of works. The City requires that there be an agreed position as to what condition the infrastructure is to be maintained and restored</i> <p>Beach nourishment activities which will include heavy vehicle transit between CPQ and the preferred ingress option is proposed to be undertaken intermittently e.g. 1 week/month and scheduled outside holiday season and other known periods of high patronage. Works will be undertaken during standard construction hours only.</p>	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>

<p>The proposed beach nourishment methodology is provided in Section 2. Deposition of sand will be undertaken within the tidal zone.</p> <p>Erosion and sediment controls will be installed prior to and following construction in accordance with the proposal's Erosion and Sediment Control Plan. The plan will address the management of sand migration in the access track and the hardstand area.</p> <p>A vegetation management plan will be included as a component of the proposal's Construction Environmental Management Plan which will also include rehabilitation management and monitoring responsibilities. It is noted the proposal will also need to meet the requirements of the TfNSW's No Net Loss Guidelines.</p> <p>Condition and dilapidation reports will be developed prior to the commencement of the proposal.</p>		
<p>Will the works involve more than a minor or inconsequential excavation of a road or adjacent footpath for which council is the roads authority and responsible for maintenance?</p>	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>
<p>Is there a local heritage item (that is not also a state heritage item) or a heritage conservation area in the study area for the works?</p>	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>
<p>Is the proposal within the coastal vulnerability area and is inconsistent with a certified coastal management program applying to that land?</p> <p>The Coffs Harbour Coastal Management Program (CMP) is currently in development and the coastal vulnerability area is yet to be mapped. The Coffs Harbour CZMP will continue to remain valid until the new CMP is certified.</p> <p>Activities supported by the Coffs Harbour CZMP include implementation of dredging program to attain sand material and beach nourishment activities along Park Beach (BMT, 2019).</p> <p>Development of this proposal has been undertaken in consultation with CHCC.</p>	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>
<p>Are the works located on flood liable land? If so, will the works change flooding patterns to more than a minor extent?</p> <p>Works may be undertaken on flood liable land however the nature of proposed works will not change flooding patterns to more than a minor extent.</p> <p>The boat ramp, break wall stockpile and northern ingress option areas are not located on flood liable land.</p> <p>The southern ingress option of the proposal is located within the flood planning area (light blue and the 1% AEP flood extent (refer Figure 2-6).</p> <p>Works proposed within this area include transit lane for heavy vehicles, turn around bay and temporary sand material stockpile. These works will be undertaken on occasion and will not affect flooding patterns in the local area. All works will be undertaken in existing disturbed zones. Due to the intermittent site establishment requirements of the southern ingress option, works will be scheduled to avoid periods of inclement weather.</p>	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>

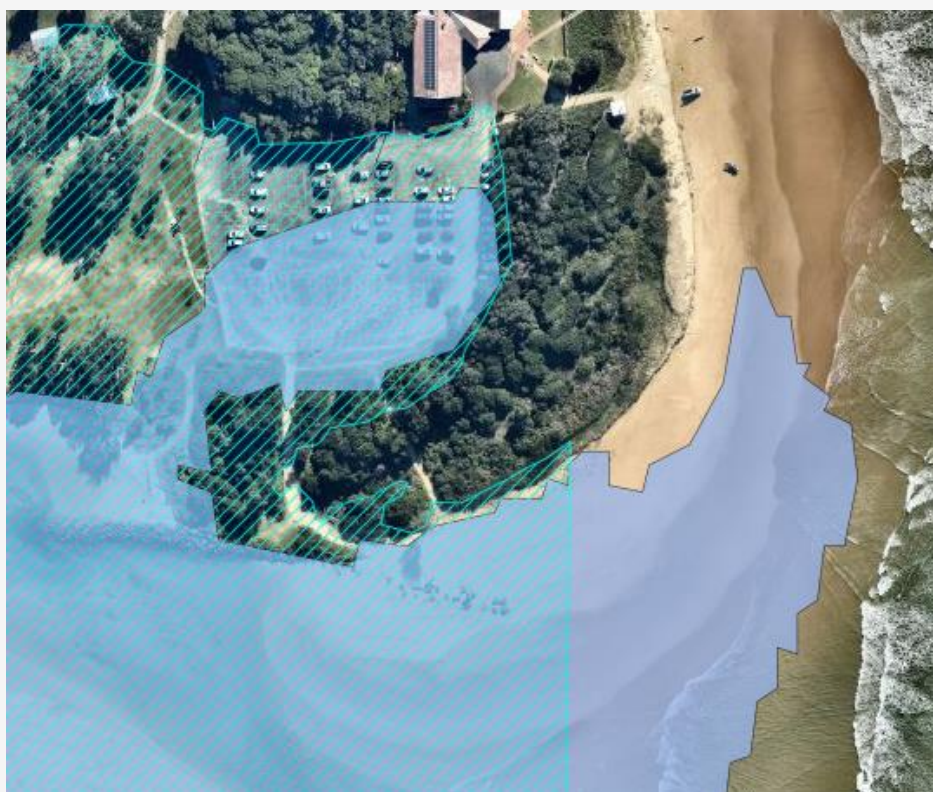


Figure 2-6: Flood liable land (Source: [CoffsHarbour Public > Planning & Environment](#) (mapimage.net))

Table 2-5: Consultation with other public authorities

Is consultation with a public authority (other than Council) required under sections 2.13, 2.15 and 2.16 of the SEPP (Transport and Infrastructure)?

<p>Are the works located on flood liable land? (to any extent)</p> <p>The southern ingress option of the proposal is located within the flood planning area (light blue and the 1% AEP flood extent (refer Figure 2-6) however the area is a carpark and public beach. The area is not located on a transit or escape route for public road uses.</p>	<p>Yes <input type="checkbox"/></p>	<p>No <input checked="" type="checkbox"/></p>
<p>Are the works adjacent to a national park, nature reserve or other area reserved under the National Parks and Wildlife Act 1974, or on land acquired under that Act?</p> <p>The Solitary Islands Marine Park (SIMP) is located along a stretch of the NSW North Coast where the East Australian Current meets cooler waters from the south. The SIMP was the first declared marine park in NSW and covers an area of 70,000 hectares and 100 kilometres of coastline from the northern side of Muttonbird Island at Coffs Harbour north to Plover Island at the entrance to the Sandon River. The SIMP is not located within the dredging footprint of the proposal however is adjacent to Park Beach where beach nourishment activities to proposed to take place. Figure 2-4 shows the location of the Northern Ingress Option construction footprint with respect to the SIMP boundary.</p> <p>While the dredging operation will be conducted outside the Solitary Islands Marine Park, the placement of dredge spoil will be within the park boundaries. As such a permit is required, under the <i>Marine Estate Management Act 2014</i> and the <i>Fisheries Management Act 1994</i> and their associated regulations, for the placement of the dredge spoil on Park Beach. A permit application form has been attached for your use. As detailed in various meetings and correspondence, to adequately assess an application to place dredge spoil on Park Beach the following information, as a minimum, needs to be provided with the permit application form.</p> <p>DPI provided the following comments in regards to the proposal:</p>	<p>Yes <input checked="" type="checkbox"/></p>	<p>No <input type="checkbox"/></p>

<ul style="list-style-type: none"> • Maps and diagrams of the proposed dredge spoil placement site; • Details of the spoil disposal method and what is likely to happen to the spoil after it is placed on the beach; • When determining the disposal method you should consider as a minimum; <ul style="list-style-type: none"> ◦ methodologies that deposit layers of sand at shallower depths and avoiding placement of deeper amounts ◦ potentially allowing for one tidal cycle before depositing another layer. This will more closely mimic natural processes and allow beach infauna a greater opportunity to adapt and recover ◦ ensuring that deposition is as far away as possible from the sensitive reefs at Little Muttonbird Island and the habitat of critically endangered <i>Nereia lophocladia</i> around Muttonbird Island and the Coffs Harbour breakwall (ie depositing north from the Surf Club) ◦ What monitoring will be conducted to track the movement of dredge spoil to ensure it is not impacting on the <i>N. lophocladia</i> populations and also Coffs Creek; • Justification as to why this method has been chosen over other methods; • Verification that the sand is clean and uncontaminated prior to deposition; • Details of how and where sand movement is to be monitored; • How potential contamination from machinery leaks and spills will be prevented and managed should it occur. <p>A permit application will be developed, submitted and approved prior to the commencement of vegetation clearing and beach nourishment activities.</p>		
Are the works on land in Zone E1 National Parks and Nature Reserves or in a land use zone equivalent to that zone?	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>
Do the works include a fixed or floating structure in or over navigable waters? The proposal includes a sand pump to be installed within navigable waters. The sand pump infrastructure to be installed within water includes: <ul style="list-style-type: none"> • 4x jet pumps • Associated piping infrastructure connecting pumps to the break wall Jet pumps will be buried up to -7.5m AHD (approximately 3.5–4.5m below the dredged seabed levels). Piping infrastructure will be connected from the jet pumps to the break wall, and it is not anticipated to affect navigation within the channel. The proposal is managed by TfNSW – Maritime.	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>
Are the works for the purpose of residential development, an educational establishment, a health services facility, a correctional facility or group home in bush fire prone land?	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>
Would the works increase the amount of artificial light in the night sky and that is on land within the dark sky region as identified on the dark sky region map?	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>
Are the works on buffer land around the defence communications facility near Morundah?	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>
Are the works on land in a mine subsidence district within the meaning of the <i>Mine Subsidence Compensation Act 1961</i>?	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>

Table 2-6: Notification of council and occupiers of adjoining land

Do Council and occupiers of adjoining land need to be notified under section 2.110 of the SEPP (Transport and Infrastructure)?		
Does the proposal include a car park intended for the use by commuters using regular bus services?	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>
Does the proposal include a bus depot?	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>
Does the proposal include a permanent road maintenance depot or associated infrastructure, such as garages, sheds, tool houses, storage yards, training facilities and workers amenities?	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>

2.4.2 Other agency and community consultation

Consultation letters were also sent to:

- Crown Lands -Department of Planning and Environment
- Biodiversity and Conservation Division (BCD) of the Biodiversity, Conservation and Science Directorate in the Environment and Heritage Group of the Department of Planning and Environment

A summary of consultation outcomes is provided in Table x.

Do Council and occupiers of adjoining land need to be notified under section 2.110 of the SEPP (Transport and Infrastructure)?
<p>Crown Lands -Department of Planning and Environment (Crown Lands)</p> <p>Crown Lands provided the following comments:</p> <ul style="list-style-type: none"> • <i>Coffs Harbour City Council (CHCC) is the appointed Crown Land Manager of Lot 102 in DP 1182248 being part Reserve 63966 for Public Recreation and Resting Place -the proposal will need the support of Council in it's capacity as the Crown Land Manager.</i> • <i>The intertidal zone and sea bed to 3 nautical miles is Crown land managed by the Minister for Lands</i> • <i>The Crown land below the Mean High Water Mark forms part of the Solitary Islands Marine Park (SIMP) - consultation with Marine Parks and a Permit will be required for works within the SIMP.</i> • <i>CHCC has a certified Coastal Zone Management Plan relevant to this proposal -the works will need to be considered by TfNSW and Council under the auspices of the CZMP.</i> • <i>The works comprise dredging and reclamation under the Fisheries Management Act –consultation with DPI Fisheries will be required.</i> • <i>A Crown Lands Licence will be required for the proposed activity –there are a number of options depending on the time frames proposed i.e. a Short Term Licence for up to 12 months or a longer term Licence, different fee structures and considerations apply.</i> • <i>A Licence application will need to be supported by a determined environmental impact assessment, evidence of statutory consultation, community engagement and any other required approvals</i> <p>Statutory consultation has occurred as part of the development of this document with respect to SEPP (Transport and Infrastructure) consultation requirements. TfNSW will attain a crown land licence and marine parks permit prior to commencement of works. Notifications will be sent in accordance with s199 Fisheries Management Act.</p> <p>Biodiversity and Conservation Division (BCD) of the Biodiversity, Conservation and Science Directorate in the Environment and Heritage Group of the Department of Planning and Environment</p> <p>BCD provided the following recommendations:</p> <ul style="list-style-type: none"> • <i>The project should include the placement of sand along a sufficient length of Park Beach to avoid creation of large artificial lobes on the beach and the transportation of sand southwards along the beach, should it be desired or needed to build the dune adjacent to the surf club.</i> • <i>An impact management and monitoring strategy should be developed and deployed as part of the project to account for any unintended impacts to coastal ecosystems and processes.</i>

Beach nourishment methodology is provided in **Section 2** and the indicative beach nourishment location is provided in **Appendix A**. The nourishment program includes an inspection regime to be undertaken at the start of shifts to identify the most appropriate nourishment locations.

As noted in the Coffs Harbour CZMP (BMT, 2019), Park Beach experiences periodic recession events as a result of the interruption of natural northerly sediment transport by the historical construction activities. Hydrographic surveys will be completed following nourishment activities to identify unintended impacts, including migration or buildup of sand material near Coffs Creek.

3. Environmental assessment

This section provides a detailed description of the potential environmental impacts associated with the construction and operation of the proposal. All aspects of the environmental potentially impacted upon by the proposal are considered. This includes consideration of the factors specified in section 171 of the Environmental Planning and Assessment Regulation 2021.

The matters of national environmental significance under the *Environment Protection and Biodiversity Conservation Act 1999* (Commonwealth) are also considered in **Section 4**. Site-specific safeguards are provided to ameliorate the identified potential impacts.

3.1 Soil

Table 3-1: Soil

Description of existing environmental and potential impacts		
<p>Are there any known occurrences of salinity or acid sulfate soils in the area?</p> <p>Installation of the jet pumps within the boat ramp channel will likely require excavation of material up to -7.5m AHD. During operation of the proposal, dredging will likely only occur to a depth of -2.5m AHD. The depth of dredging activities within the boat ramp channel is consistent with the previous approval for Coffs Harbour Regional Boat Ramp Stages 1 and 2 approval (TfNSW, 2020). Activities associated with the remainder of the proposal will not excavate beyond the natural ground surface.</p> <p>A review of acid sulfate soil (ASS) mapping indicates that the proposed dredging location is within a Class 5 area however it is adjacent to a Class 2 area. ASS is typically not found in Class 5 areas whilst Class 2 areas are likely to be found below the natural ground surface.</p> <p>Soil sampling and laboratory testing was completed as part of the Coffs Harbour Regional Boat Ramp Stages 1-2 REF Geotechnical Report (Regional Geotechnical Solutions, 2020). Sampling locations relevant to this proposal are shown in Plate 3-1.</p> <p>Samples were screened and further tested for the presence of actual or potential ASS in accordance with the ASS Management Advisory Committee Manual (EPA, 1998) requirements. Results indicate there is no actual ASS present however chromium reducible sulfur contents were in excess of 0.03%, at depths between -5 to 5.45m AHD and -6 to -6.45 m AHD at BH1 and -7 to -7.45m AHD at BH2, indicating potential ASS.</p>	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>



Plate 3-1: Coffs Harbour Regional Boat Ramp Geotechnical Investigation boreholes (RGS, 2020)

The existing ASS Management Plan for Coffs Harbour BRB Stages 1-2 REF (TfNSW, 2020) will be reviewed and revised, if required, prior to construction commencing.

Activities associated with the remainder of the proposal will not excavate beyond the natural ground surface.

Does the proposal involve the disturbance of large areas (e.g., >2ha) for earthworks?	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>
Does the site have constraints for erosion and sedimentation controls such as steep gradients or narrow corridors?	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>
Are there any sensitive receiving environments that are located in or nearby the likely proposal area or that would likely receive stormwater discharge from the proposal?	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>
Is there any evidence within or nearby the likely footprint of potential contamination?	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>
Is the likely proposal footprint in or nearby highly sloping landform?	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>
Is the proposal likely to result in more than 2.5ha (area) of exposed soil?	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>

Safeguards

Safeguards to be implemented are:

Soil management	
E1.	Resource management hierarchy principles are to be followed: <ul style="list-style-type: none"> Avoid unnecessary resource consumption as a priority Avoidance is followed by resource recovery (including reuse of materials, reprocessing, recycling and energy recovery) Disposal is undertaken as a last resort (in accordance with the Waste Avoidance & Resource Recovery Act 2001).
E2.	Erosion and sedimentation controls are to be checked and maintained on a regular basis (including clearing of sediment from behind barriers) and records kept and provided on request.
E3.	Erosion and sediment control measures are not to be removed until the works are complete, and areas are stabilised.

Soil management

- E4. Work areas are to be stabilised progressively during the works.
- E5. A progressive erosion and sediment control plan is to be prepared for the works.
- E6. The maintenance of established stockpile sites is to be in accordance with the Roads and Maritime Services Stockpile Site Management Guideline (EMS-TG-10).
- X1. Potential or actual acid sulphate soils are to be managed in accordance with the Roads and Maritime Services Guidelines for the Management of Acid Sulphate Materials 2005.

3.2 Waterways and water quality

Table 3-2: Waterways and water quality

Description of existing environmental and potential impacts		
<p>Is the proposal located within, adjacent to or near a waterway?</p> <p>Dredging activities will be located within the channel of the boat ramp of Coffs Harbour.</p> <p>Beach nourishment works are proposed to take place along Park Beach. Park Beach is located adjacent to the SIMP as described in Section 2.3. Consultation with Marine Parks has been undertaken.</p>	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>
<p>Would the proposal be undertaken over water and/or using vessels?</p> <p>Dredging activities in the short term will be undertaken via a suction-cutter dredge or long reach excavator whilst the installation of the sand pump is completed.</p> <p>Refueling activities of the cutter suction dredge, if required, will occur within double bunded equipment only.</p> <p>The sand pump will be diesel powered and located within a self-contained, bunded and secure shipping container. Refueling of the pump will occur within the shipping container. The shipping container will be located on adjacent to the channel as shown in Appendix A.</p> <p>The following measures will be adopted for all vehicles and vessels, where applicable to prevent spills and contamination from machinery leaks etc.:</p> <ul style="list-style-type: none"> • Prestart machinery checklists to be performed each day • Mobile terrestrial and plant will be refueled at least 50m from the water • There will be no refueling activities on undertaken on Park Beach • Terrestrial and marine spill kits to be onsite at all times, with the staff inducted and trained on how to use the contents • Any spill to be contained using bunding or spill kits where possible. The contaminants to be dug out and removed once contained • A fuel management plan will be developed for the proposal. 	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>
<p>Is the location known to flood or be prone to water logging?</p> <p>The boat ramp, break wall stockpile and northern beach ingress option areas are not located on land prone to flooding.</p> <p>The surf club area (southern ingress option) of the proposal is located within the flood planning area (light blue streaks) and the 1% AEP flood extent (blue polygon) (refer Figure 3-1).</p> <p>Works proposed within this area include transit lane for heavy vehicles, turn around bay and temporary sand material stockpile. These works will be undertaken on occasion.</p>	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>

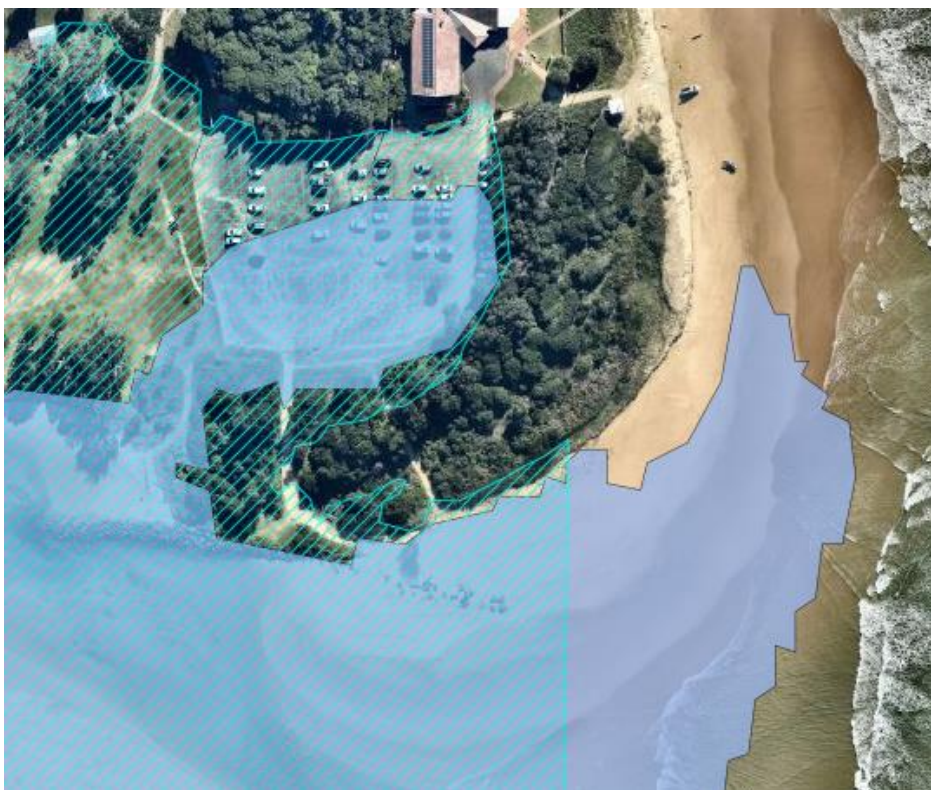


Figure 3-1: Flood Prone Land (Source: [CoffsHarbour Public > Planning & Environment](#) (mapimage.net))

Is the proposal located within or immediately adjacent to the area managed by WaterNSW covered by chapter 8 of State Environmental Planning Policy (Biodiversity and Conservation) 2021 (SEPP (Biodiversity and Conservation))?	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>
Would the proposal be undertaken on a bridge or ferry?	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>
Does the proposal occur near priority oyster aquaculture areas, any other oyster/shellfish leases or commercial fishing operations?	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>

Safeguards

Safeguards to be implemented are:

Water management	
W1.	There is to be no release of dirty water into drainage lines and/or waterways.
W2.	Visual monitoring of local water quality (i.e. turbidity, hydrocarbon spills/slicks) is to be undertaken on a regular basis to identify any potential spills or deficient silt curtains or erosion and sediment controls.
W3.	Water quality control measures are to be used to prevent any materials (e.g. concrete, grout, sediment etc.) entering drain inlets or waterways.
W4.	Measures to control pollutants from stormwater and spills would be investigated and incorporated in the pavement drainage system at locations where it discharges to the receiving drainage lines. Measures aimed at reducing flow rates during rain events and potential scour would also be incorporated in the design of the pavement drainage system.

Water management

- W6. Vessels (including barges) are only to be used at suitable tides when no less than 600mm clearance is available between the underside of the vessel and the bed of the waterway.
- W8. Silt curtains are to be installed, monitored and maintained as needed to contain any sediment.

Hazard and risk

- R2. Refueling of mobile terrestrial plant and equipment is to occur in impervious bunded areas located a minimum of 50 meters from drainage lines or waterways. Refueling of plant will not occur on Park Beach.
- R3. Refueling of marine plant and equipment and storage of hazardous materials on barges is to occur within a double-bunded areas.
- R6. An emergency spill kit is to be kept on site at all times and maintained throughout the construction work. The spill kit must be appropriately sized for the volume of substances at the work site.
- R7. If an incident (e.g. spill) occurs, the Roads and Maritime Services Environmental Incident Classification and Reporting Procedure is to be followed and the Roads and Maritime Services Contract Manager notified as soon as practicable.
- R8. Emergency contacts will be kept in an easily accessible location on vehicles, vessels, plant and site office. All workers will be advised of these contact details and procedures.
- R9. Spill kits for construction barges must be specific for working within the marine environment.
- R10. All workers will be advised of the location of the spill kit and trained in its use.
- R11. Vehicles, vessels and plant must be properly maintained and regularly inspected for fluid leaks.
- R13. In the event of a maritime spill, the incident emergency plan would be implemented in accordance with Sydney Ports Corporation's response to shipping incidents and emergencies outlined in the 'NSW State Waters Marine Oil and Chemical Spill Contingency Plan' (Maritime, 2012).
- R14. No refueling on of mobile plant will be undertaken on Park Beach
- R15. Prestart machinery checklists to be performed each day prior to start of shift

3.3 Hydrology and coastal processes

Description of existing environmental and potential impacts		
<p>Is the proposal likely to result in changes to tides/currents/waves?</p> <p>The proposal aims to reduce the volume of sand build up within the navigable channel of the boat ramp.</p> <p>Indicative mapping of current and flow conditions is shown in Figure 2-2. Changes to current and flow conditions will be localised to the immediate area of the proposal.</p>	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>
<p>Is the location subject to tidal inundation/flows, high flow currents or wave action?</p> <p>Aspects associated with flooding is discussed in Section 3.2.</p> <p>Dredging activities are located in water and will be subject to wave action and tidal movements. The proposed beach nourishment area is located on the beach and is subject to the wave action and tidal movements.</p> <p>No machinery is proposed to enter the surf zone during nourishment activities.</p> <p>Sand is proposed to be nourished along the beach only within the tidal zone and not within the surf zone. The nourishment methodology is explained in Section 2.</p>	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>
<p>Would the proposal be likely to impact on existing coastal processes or create new coastal hazards?</p> <p>As noted in the Coffs Harbour CZMP (BMT, 2019), Park Beach experiences periodic recession events as a result of the interruption of natural northerly sediment transport by the historical construction activities.</p> <p>The proposal is anticipated to positively impact existing coastal processes through the re-introduction of sand material into the coastal system that has been interrupted by harbour infrastructure. Re-introduction of sand material is anticipated to address ongoing recession impacts.</p>	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>
<p>Is the proposal likely to require the extraction of water from a local water course (not mains)?</p>	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>

Safeguards

Safeguards to be implemented are:

Water management	
H1.	Mobile plant will only operate above the surf zone. Beach nourishment activities will occur within the tidal zone and not within the surf zone.

3.4 Noise and vibration

Are there any residential properties or other noise sensitive areas near the location of the proposal that may be affected by the work (i.e., church, school, hospital)?

Table 3-3: Noise and vibration

Description of existing environmental and potential impacts				Yes	No
During construction? Receivers located nearest to proposal features are outlined below and further discussed in this table.				Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>
Proposal feature	Distance	Type	Direct Line of Sight?		
Boat Ramp Break wall	230m	Commercial - Hospitality	Yes		
Northern Ingress Option	105m	Commercial – Accommodation	Yes		
During operation? Receivers located nearest to proposal features are outlined below and further discussed in this table.				Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>
Proposal feature	Nearest Receiver	Type	Direct Line of Sight?		
Boat Ramp Break wall	250m	Commercial - Hospitality	Yes		
CPQ	500m	Commercial - Hospitality	No		
Northern Ingress Option	105m	Commercial – Accommodation	Yes		
Southern Ingress Option	75m	Commercial - Hospitality	Yes		
Is the proposal going to be undertaken only during standard working hours? Standard working hours <ul style="list-style-type: none"> Monday-Friday: 7:00am to 6:00pm Saturday: 8:00am to 1:00pm Sunday and Public Holidays: no work The work program will be reviewed should out of hours work be proposed.				Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>
Is any explosive blasting required for the proposal?				Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>
Would construction noise or vibration from the proposal affect sensitive receivers? Construction noise impacts have been considered in accordance with the Construction Noise and Vibration Guideline (Roads and Maritime Services, 2016) and associated construction and maintenance noise estimator tool (CMNE) (refer Appendix F). The 'distancebased scenario' worksheet was used with the 'Bulk Earthworks' scenario selected. Noise management levels (NMLs) were established for the proposal using the Rating Background Level (RBL) for R2 representative environment defined in the noise estimator tool. The selected ground type used in the assessment was for developed settlements (urban and suburban) and line of sight to receivers. It is noted that is vegetation present between the northern Ingress option and nearest receivers which may have potential to shield noise emissions during works however this does not meet the definition of behind solid barrier. The outcomes from the CMNE tool will require: <ul style="list-style-type: none"> Notification, phone calls and respite offer to affected receivers within 70m of the works 				Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>

- Notification to affected receivers within 180m radius of works

Boat Ramp

There are no identified affected receivers at the boat ramp.

Northern Ingress Option

There are no receivers within the 70m of the northern ingress option. There are five commercial receivers within 180m of the northern ingress option which will require notification prior to works (see **Figure 3-2**).



Figure 3-2: CMNE (construction) outputs

Would operation of the proposal alter the noise environment for sensitive receivers?

Operational noise impacts have been considered in accordance with the Construction Noise and Vibration Guideline (Roads and Maritime Services, 2016) and associated construction and maintenance noise estimator tool (CMNE) (refer **Appendix F**). The 'distance based scenario' worksheet was used with the 'Bulk Earthworks' scenario selected.

Noise management levels (NMLs) were established for the proposal using the Rating Background Level (RBL) for R2 representative environment defined in the noise estimator tool.

The selected ground type used in the assessment was for developed settlements (urban and suburban) and line of sight to receivers. It is noted that is vegetation present between the northern Ingress option and nearest receivers which may have potential to shield noise emissions during works however this does not meet the definition of behind solid barrier.

The outcomes from the CMNE tool will require:

- Notification, phone calls and respite offers to affected receivers within 70m of the works
- Notification to affected receivers within 180m radius of works

Northern Ingress Option

There are no receivers within the 70m of the northern ingress option. There are five commercial receivers within 180m of the northern ingress option which will require notification prior to works (see **Figure 3-2**). Receivers include:

- R1 – Tahitian Holiday Apartments

Yes
☒

No ☐

- R2 – Surf Beach Hotel
- R3 – Diamond Waters
- R4 – The Beach House at Paradise Waters
- R5 – Coffs Harbour BIG4 Park Beach Holiday Park

Southern Ingress Option

There are no receivers within the 70m of the southern ingress option. There are two commercial receivers within 180m of the southern ingress option which will require notification prior to works (see **Figure 3-3**). Receivers include:

- R5 – Coffs Harbour BIG4 Park Beach Holiday Park
- R6 – Coffs Harbour SLSC



Figure 3-3: CMNE (operation) outputs

Would the proposal result in vibration being experienced by any surrounding properties or infrastructure during operation?

Yes ☐ No ☒

Safeguards

Safeguards to be implemented are:

Noise and vibration

- N1. Works to be carried out during normal work hours (i.e. 7am to 6pm Monday to Friday; 8am to 1pm Saturdays). Any work that is performed outside normal work hours or on Sundays or public holidays must have measures in place to minimise noise impacts.
- N2. Noise impacts are to be minimised in accordance with Roads and Maritime Construction Noise Estimator.

Noise and vibration

- C4. The community must be notified of all work outside standard hours which have the potential to impact noise sensitive receivers. Notification zones must be determined using the Roads and Maritime Services Maintenance Noise Estimator. Notification requirements must comply with the RMS Construction Noise and Vibration Guideline.

3.5 Air quality

Table 3-4: Air quality

Description of existing environmental and potential impacts		
Is the proposal likely to result in large areas (>2ha) of exposed soils?	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>
Are there any dust-sensitive receivers located within the vicinity of the proposal during the construction period? Whilst there are no sensitive dust receivers located within proximity to the clearing area.	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>
Is there likely to be an emission to air during construction? Construction activities are limited to in water activities, around 500m ² of vegetation clearing and establishment of an access track through sandy material. Dust emissions from clearing practices will be minor due to the underlying sandy material. Standard controls, including moistening the clearing area prior to work to minimise the potential for dust generation. The proposal will also result in minor exhaust emissions from equipment and vehicles during both construction and operational phases.	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>

Safeguards

Safeguards to be implemented are:

Air quality safeguards	
A1.	Measures (including watering or covering exposed areas) are to be used to minimise or prevent air pollution and dust.
A3.	Vegetation or other materials are not to be burnt on site.
A4.	Vehicles and vessels transporting waste or other materials that may produce odours or dust are to be covered during transportation.
A5.	Stockpiles or areas that may generate dust are to be managed to suppress dust emissions in accordance with the Roads and Maritime Services Stockpile Site Management Guideline (EMS-TG-10).

3.6 Aboriginal heritage

Table 3-5: Aboriginal heritage

Description of existing environmental and potential impacts		
<p>Would the proposal involve disturbance in any area that has not been subject to previous ground disturbances?</p> <p>The proposal includes an access track and stockpile/material transfer point at the Northern Ingress Option and has not been subject to previous ground disturbance. The remaining areas of the proposal are within previously disturbed zones.</p>	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>
<p>Has an online Aboriginal Heritage Information Management System (AHIMS) search been completed?</p> <p>An AHIMS search for the proposal was completed on 1 November 2022.</p>	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>
<p>Is there potential for the proposal to impact on any items of Aboriginal heritage?</p> <p>The AHIMS search identified three known items of the Aboriginal heritage within proximity to the proposal area however all sites are outside the disturbance area. There were no sites identified in proximity to the Northern Ingress Option. Known sites in proximity to the proposal site are identified in the Procedure for Aboriginal Cultural Heritage Consultation and Investigation (PACHCI) document (refer Appendix c).</p>	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>
<p>Would the proposal involve the removal of mature native trees?</p> <p>The proposal involves the removal of up to 6 trees for the development of the Northern Ingress Option. All trees to be removed are less than 40cm DBH.</p>	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>
<p>Is the proposal consistent with the requirements of the legacy <i>Roads and Maritime Procedure for Aboriginal cultural heritage consultation and investigation</i> (PACHCI)?</p> <p>TfNSW Stage 1 Aboriginal heritage due diligence assessment was completed by TfNSW Aboriginal Community and Heritage Partner on 9 December 2022 (refer Appendix C). The assessment concluded that it is not necessary to proceed to Stage 2 of the PACHCI procedure and that the proposal may progress in accordance with this Minor Works REF.</p>	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>

Safeguards

Safeguards to be implemented are:

- B1. If Aboriginal heritage items are uncovered during the works, all works in the vicinity of the find must cease and the Transport for NSW Aboriginal Cultural Heritage Partner and regional Environment and Sustainability Manager contacted immediately. Steps in the Transport for NSW Standard Management Procedure: Unexpected Heritage Items must be followed.

3.7 Non-Aboriginal heritage

Table 3-6: Non-Aboriginal heritage

Description of existing environmental and potential impacts		
<p>Have online heritage database searches been completed?</p> <p>Searches of the following databased have been completed with results presented in below cells:</p> <ul style="list-style-type: none"> • Transport (including legacy Roads and Maritime) section 170 register. 	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>

<ul style="list-style-type: none"> • NSW Heritage database. • Commonwealth Heritage List, established under the Environment Protection and Biodiversity Conservation Act 1999 (EPBC Act). • Australian Heritage Places Inventory. • Local Environmental Plan(s) heritage items. 																				
<p>Are there any items of non-Aboriginal heritage or heritage conservation areas listed on relevant heritage databases/registers that are located within the vicinity of the proposal?</p> <p>There are two listed heritage items located in proximity to the boat ramp as shown below. Item# I901802 is located outside of the disturbance area of the proposal and is unlikely to be directly impact.</p> <p>Item #I8-1360005 is located within the boat ramp footprint however this item buried beneath ground. No excavation works are proposed within proximity to this item.</p> <p>There are no other heritage items located within proximity to the proposal area.</p> <table border="1"> <thead> <tr> <th>Item Name</th> <th>Item Number</th> <th>Address</th> <th>Lot // DP</th> <th>Significance</th> <th>Source</th> </tr> </thead> <tbody> <tr> <td>Ferguson's Cottage</td> <td>I9 01802</td> <td>1 Breakwater Road, Coffs Harbour</td> <td>Part Lot 21 DP850150</td> <td>State</td> <td>Coffs Harbour LEP 2013 / NSW Heritage inventory</td> </tr> <tr> <td>Buried trestle bridge, tramway line site and World War II gun Turret</td> <td>I8 1360005</td> <td>Jordan Esplanade, Coffs Harbour</td> <td>Lot 21 DP 850150</td> <td>Local</td> <td>Coffs Harbour LEP 2013/ NSW Heritage Inventory</td> </tr> </tbody> </table>	Item Name	Item Number	Address	Lot // DP	Significance	Source	Ferguson's Cottage	I9 01802	1 Breakwater Road, Coffs Harbour	Part Lot 21 DP850150	State	Coffs Harbour LEP 2013 / NSW Heritage inventory	Buried trestle bridge, tramway line site and World War II gun Turret	I8 1360005	Jordan Esplanade, Coffs Harbour	Lot 21 DP 850150	Local	Coffs Harbour LEP 2013/ NSW Heritage Inventory	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>
Item Name	Item Number	Address	Lot // DP	Significance	Source															
Ferguson's Cottage	I9 01802	1 Breakwater Road, Coffs Harbour	Part Lot 21 DP850150	State	Coffs Harbour LEP 2013 / NSW Heritage inventory															
Buried trestle bridge, tramway line site and World War II gun Turret	I8 1360005	Jordan Esplanade, Coffs Harbour	Lot 21 DP 850150	Local	Coffs Harbour LEP 2013/ NSW Heritage Inventory															
<p>Is the proposal likely to impact trees that form part of a heritage listing or have other heritage value?</p> <p>No significant trees within the proposal footprint.</p>	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>																		
<p>Is the proposal likely to occur in or near features that indicate potential archaeological remains?</p>	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>																		

Safeguards

Safeguards to be implemented are:

Non-Aboriginal Heritage	
H2.	If unexpected heritage items are uncovered during the works, all works must cease in the vicinity of the material/find and the steps in the Roads and Maritime Services Standard Management Procedure: Unexpected Heritage Items must be followed. Roads and Maritime Services Senior Environment Specialist -Heritage must be contacted immediately.

3.8 Biodiversity

Table 3-7: Biodiversity

Description of existing environmental and potential impacts		
Have relevant database searches been carried out?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>

<p>The following databases were searched as part of the desktop assessment</p> <ul style="list-style-type: none"> • BioNet Atlas threatened species records within a 10km radius of the project boundary (accessed 25 November 2022) • NSW State Vegetation Type Map (accessed 25 November 2022) • BioNet Vegetation Classification database (accessed 25 November 2022) • Commonwealth EPBC Act Protected Matters Search Tool (PMST) (accessed 04 November 2022) – See Appendix D • NSW DPI Fisheries Spatial Data Portal, which contains threatened fish distribution mapping, key fish habitat mapping, and Hazards and Resilience SEPP 2021 Coastal Wetland and Littoral Rainforest mapping (accessed 25 November 2022) <p>Two boundaries have been used for the biodiversity assessment:</p> <ul style="list-style-type: none"> • Proposal footprint: this is the boundary of the clearing and earthworks (direct impacts) required for the Fitzgerald Street access track • Study area: the proposal footprint with a 20 metre boundary to capture surrounding biodiversity features that may be indirectly impacted • Locality: 10 kilometre radius around the study area 																	
<p>Did the database searches identify any endangered ecological communities, threatened flora and/or threatened or protected fauna, or migratory species in or within the vicinity of the proposed works? Both Commonwealth and State listed matters must be considered.</p> <p><u>Threatened ecological communities (TECs)</u></p> <p>The NSW State Vegetation Type Map identified two PCTs likely to be present within the study area: Northern Sands Tuckeroo-Banksia Forest (PCT ID 3132) and Coastal Fore-dune Wattle Scrub (PCT ID 3788). PCT 3132 is associated with the Littoral Rainforest threatened ecological community (TEC) listed as endangered under the BC Act and critically endangered under the EPBC Act. Based on review of vegetation mapping and topography, no other TECs that occur within 10km of the proposal are expected to be present.</p> <p><u>Threatened/migratory species and populations</u></p> <p>BioNet Atlas identified 115 threatened and migratory species listed under the BC Act and EPBC Act that have been recorded within 10km of the proposal. This consisted of 31 plants species, 54 bird species, 31 mammal species, four reptile species, two invertebrate species and two amphibian species.</p> <p>The Protected Matters Search identified 77 threatened species and 56 migratory species listed under the EPBC Act that have been noted in the general area of the proposal. This consisted of 16 plants species, 55 bird species, 11 mammal species, five reptile species, four fish species, five shark species, one invertebrate species and two amphibian species.</p> <p>Considering this data and the PCTs present on the NSW State Vegetation Type Map, the study area may contain habitat for a number of threatened species.</p> <p>Following a desktop review of the vegetation and habitats present, many threatened species are unlikely to occur, or have very limited habitat such that occurrence would be rare. The species which were considered most likely to occur are threatened tree and shrub species associated with PCT 3132. Several have been recorded within a few kilometers of the proposal in similar vegetation and as such are considered to have a moderate to high likelihood of occurring in the study area (see table below).</p> <p><i>Threatened species with moderate to high likelihood of occurrence</i></p> <table border="1"> <thead> <tr> <th>Scientific and common name</th> <th>BC Act*</th> <th>EPBC Act*</th> <th>Survey period**</th> <th>Likelihood of occurrence</th> </tr> </thead> <tbody> <tr> <td>Native Guava (<i>Rhodomyrtus psidioides</i>)</td> <td>CE</td> <td>CE</td> <td>All year</td> <td>High – numerous recent BioNet records of this species are located in mapped PCT 3132 at the north end of Ocean Parade near Arthur Street (around 1km north). More records are located in similar vegetation 3km south near the airport. This species occurs in Littoral Rainforest.</td> </tr> <tr> <td>Scrub Turpentine</td> <td>CE</td> <td>CE</td> <td>All year</td> <td>Moderate – Scattered BioNet records in the locality, mostly away from the</td> </tr> </tbody> </table>	Scientific and common name	BC Act*	EPBC Act*	Survey period**	Likelihood of occurrence	Native Guava (<i>Rhodomyrtus psidioides</i>)	CE	CE	All year	High – numerous recent BioNet records of this species are located in mapped PCT 3132 at the north end of Ocean Parade near Arthur Street (around 1km north). More records are located in similar vegetation 3km south near the airport. This species occurs in Littoral Rainforest.	Scrub Turpentine	CE	CE	All year	Moderate – Scattered BioNet records in the locality, mostly away from the	<p>Yes <input checked="" type="checkbox"/></p>	<p>No <input type="checkbox"/></p>
Scientific and common name	BC Act*	EPBC Act*	Survey period**	Likelihood of occurrence													
Native Guava (<i>Rhodomyrtus psidioides</i>)	CE	CE	All year	High – numerous recent BioNet records of this species are located in mapped PCT 3132 at the north end of Ocean Parade near Arthur Street (around 1km north). More records are located in similar vegetation 3km south near the airport. This species occurs in Littoral Rainforest.													
Scrub Turpentine	CE	CE	All year	Moderate – Scattered BioNet records in the locality, mostly away from the													

(<i>Rhodamnia rubescens</i>)				littoral zone. however, this species can occur in Littoral Rainforest.
Scented Acronychia (<i>Acronychia littoralis</i>)	E	E	All year	Moderate – Several BioNet records around 2km south of the study area near Jetty Beach. This species occurs in Littoral Rainforest.
Silverbush (<i>Sophora tomentosa</i>)	E	-	All year	High – Numerous BioNet records south near Jetty Beach, with a cluster in Littoral Rainforest between Jordan Esplanade and Jetty Beach.
Rusty Plum (<i>Niemeyera whitei</i>)	V	-	All year	Moderate – Scattered BioNet records in the locality, mostly away from the littoral zone. however, this species can occur in Littoral Rainforest.

*V = vulnerable, E = endangered, CE = critically endangered

**Survey period – time of year when species is able to be surveyed as stated in the BioNet Threatened Biodiversity Data Collection

Shorebirds in the beach and intertidal zone

The proposed works include an area of the beach and intertidal zone required to transport and deposit sand (see **Appendix A**). While there is very little vegetation, apart from native grass at the base of the dune, this environment provides habitat for threatened and migratory shorebirds. No birds were observed in this indicative deposit area during the surveys; however, several species have been recorded around the Coffs Creek estuary (Southern Ingress Option), particularly the Pied Oystercatcher and Little Tern. A small group of Little Terns were observed during the inspection on 1 December 2022 roosting on the beach beside Coffs Creek at low tide with Crested Terns, White-fronted terns, and Silver Gulls. This area beside Coffs Creek appears to be a common roosting zone (according to BioNet records) and is not expected to be affected by the proposed works.

Site inspection

A survey of the Fitzgerald Street carpark (Northern Ingress Option) was undertaken by TfNSW Environment Officer and TfNSW Biodiversity Specialist on 30 November 2022 and 1 December 2022 to document the biodiversity values within the proposed project footprint.

The construction of an access track from the car park to the beach would require clearing of vegetation from the sand dune. Historically, the foredune (beachside) would have been characterised by a mixture of shrubs and grasses, with the hind dune containing a narrow band of littoral rainforest. These vegetation types still exist today in a degraded form due to disturbance from clearing for infrastructure, management of public spaces and public access. Consistent with the State Vegetation Type Map, two plant community types were identified in the study area:

- PCT 3132 Northern Sands Tuckeroo-Banksia Forest (Littoral Rainforest is listed as endangered under the BC Act and critically endangered under the EPBC Act)
- PCT 3788 Coastal Foreddune Wattle Scrub (not threatened)

The foreddune consists of a moderate condition, low, wind-swept shrubland dominated by Coastal Wattle (*Acacia longifolia*) with scattered low abundance of small Coastal Banksia (*Banksia integrifolia*). The ground layer is mixed with native grasses including Blady Grass (*Imperata cylindrica*) and Coastal Spinifex (*Spinifex sericeus*), and native climbers including Snake Vine (*Stephania japonica*) and Beach Morning Glory (*Ipomoea brasiliensis*). This vegetation contains a low-moderate abundance of exotic ground cover species such as Cobblers Pegs (*Bidens pilosa*).

Two broad condition states of littoral rainforest (PCT 3132) are present within the study area:

- Intact canopy: vegetation with an intact canopy around 10 meters in height dominated by Three-veined Cryptocarya (*Cryptocarya triplinervis*) and Tuckeroo (*Cupaniopsis anacardioides*). The middle and lower strata are mostly open due to the high canopy cover and potentially a result of modification from public access. Disturbance from public access to the beach includes rubbish and tracks. This condition state is located to the north and south of the study area and should be largely avoided by the access track location.

- Regrowth: the thinnest area of PCT 3132 directly between the car park and the beach contains a sparse open canopy dominated by spindly *Banksia integrifolia*. *Cryptocarya triplinervis* and *Cupaniopsis anacardioides* are also present in the canopy at low cover though evidence of canopy dieback suggests disturbance has created suboptimal conditions over time. The middle stratum is around two metres in height in a regrowth state, thick with *Cupaniopsis anacardioides* and *Cryptocarya triplinervis* shrubs covered in climbing natives including Cockspur Thorn (*Maclura cochinchinensis*), Kangaroo Vine (*Cissus antarctica*) and Lawyer Vine (*Smilax australis*). Beach Alectryon (*Alectryon coriaceus*) also occurs in moderate abundance on the edges of the regrowth area. Exotic species are present including a moderate cover of Morning Glory (*Ipomoea cairica* and *Ipomoea indica*) and Senna (*Senna pendula*). A low cover of Lantana (*Lantana camara*) and Bitou Bush (*Chrysanthemoides monilifera*) is present near the top of the dune. Due to the open canopy, the boundary of PCT 3132 and PCT 3788 is clear at the top of the dune and shown by the midstorey changing beachside to a dominance of *Acacia longifolia*. The proposed footprint is almost wholly contained within this condition state of PCT 3132.

Construction of the access track would require removal of around 385 m² of native vegetation. Impacts to PCTs are summarised in the below table.

This impact includes removal of 125 m² of Littoral Rainforest in the New South Wales North Coast, Sydney Basin, and Southeast Corner Bioregions (listed as an endangered ecological community under the BC Act). A test of significance has been undertaken for this impact in accordance with Section 7.3 Of the BC Act and DPE's 'Threatened Species Test of Significance Guidelines'. The assessment concludes that the proposal is unlikely to result in a significant impact to the local occurrence of Littoral Rainforest (see end of Section 3.8 for full test).

PCT 3132 also qualifies for listing under the EPBC Act critically endangered ecological community (CEEC) Littoral Rainforest and Coastal Vine Thickets of Eastern Australia. An assessment of impact significance has been undertaken in accordance with 'Significant Impact Guidelines 1.1'. The assessment concludes that the proposal is unlikely to result in a significant impact to the Littoral Rainforest CEEC (see end of Section 3.8 for full test).

Vegetation impacts

PCT	Condition	BC Act	EPBC Act	Impact
PCT 3132: Northern Sands Tuckeroo-Banksia Forest	Regrowth	Endangered Ecological Community	Critically Endangered Ecological Community	125 m ²
PCT 3788: Coastal Fore-dune Wattle Scrub	Moderate	Not listed	Not listed	260 m ²

While the desktop assessment found the study area has potential to contain several threatened flora species (see above table), none were identified during the field survey. All species in the above table that were considered are able to be surveyed at any time of the year (according to the BioNet Threatened Biodiversity Data Collection). Given the small size of the proposal footprint, it was almost completely traversable during the survey (apart from very dense vegetation). Therefore, it is highly unlikely that the proposal footprint contains any threatened flora species that would be impacted by the works.

Limited fauna habitat was observed. No nests or hollows were seen, though some canopy species did contain small trunk holes and cracks from borers and erosion, which may provide habitat for small animals. No threatened fauna species are likely to be residents of the study area, however some mobile species may utilise foraging resources on occasion. The Grey-headed Flying-fox is a common inhabitant of flowering and fruiting vegetation and most likely to occur in the study area, however given the lack of mature trees the habitat value for nectivorous and frugivorous species would be marginal. Importantly, the vegetation that will be cleared is unlikely to represent important habitat for any threatened fauna species.

While there are no records of past breeding near the study area, the Pied Oystercatcher and Little Tern lay eggs in shallow scraped-out nests in the sand amongst the grasses, rocks and other beach debris found above the high tide mark. Given the proposal footprint is next to a public access track, it is considered unlikely that either species

would breed in this location due to the constant disturbance. Additionally, since the proposed works does not involve machinery going near the Coffs Creek intertidal zone, roosting birds (in the location observed during the inspection) are unlikely to be disturbed. As such, no threatened or migratory shorebird species are likely to be impacted.

Additional safeguards have been included below, including pre-clearance and pre-operational surveys to confirm no nesting or roosting species are located within the proposal footprint.

Offsets

Clearing within PCT 3132 involves direct impacts to the Littoral Rainforest CEEC listed under the EPBC Act. This impact exceeds a TEC offset threshold in the TfNSW Biodiversity Offset Policy. As such, this permanent clearing within PCT 3132 would require offsetting or development of conservations measures in accordance with the TfNSW No Net Loss Guidelines. Offsetting may be achieved by retirement of biodiversity credits or payment into the Biodiversity Conservation Fund (BCF) administered by the NSW Biodiversity Conservation Trust (BCT) whilst conservation measures may be achieved to deliver improvements in the condition of biodiversity or improve understanding of the ecology of a species or ecological community.

In accordance with the TfNSW No Net Loss Guidelines, an equivalent number of biodiversity credits can be estimated using a ratio of 30 ecosystem credits per hectare of direct impact. As such, removal of 125 m² of Littoral Rainforest CEEC would equate to 1 ecosystem credit (i.e. $30 \times 0.0125 = 0.4$) for the offset trading group called 'Littoral Rainforest in the New South Wales North Coast, Sydney Basin and Southeast Corner Bioregions', if this was the preferred option.

Impacts requiring offsetting or conservation measures will be identified prior to the commencement of works and a Biodiversity Offset Strategy prepared and implemented.

Equivalent biodiversity credits for direct impacts

PCT	Offset trading group	Hollows	IBRA subregion	Ecosystem credits
PCT 3132: Northern Sands Tuckeroo-Banksia Forest	Littoral Rainforest in the New South Wales North Coast, Sydney Basin and Southeast Corner Bioregions	No	'Coffs Coast and Escarpment' or any adjoining subregion	1

Does the proposal involve pruning, trimming or removal of any tree/s?

The proposal does not include the removal of amenity trees.

Placement of the access track would aim to avoid impacts to larger Three-veined Cryptocarya (*Cryptocarya triplinervis*) and larger Tuckeroo (*Cupaniopsis anacardioides*).

Following efforts to avoid and minimize clearing, the access track and hardstand area associated with the Northern Ingress Option would also require removal of regrowth Tuckeroo (*Cupaniopsis anacardioides*) with stems less than 5 cm DBH. While these are technically tree species, due to their age they do not provide the range of ecological functions of a tree.

Trees to be removed are located within PCT 3132, which requires offsetting in accordance with the TfNSW Biodiversity Offset Policy (see previous question). As such no tree and hollow replacement is required for this impact. Any other trees required to be removed outside of PCT 3132 may require replacement in accordance with the TfNSW Tree and Hollow Replacement Guidelines.

Yes ☒

No ☐

Is the proposal likely to impact nationally listed threatened species, ecological communities or migratory species?

The proposal is unlikely to directly impact any threatened or migratory species listed under the EPBC Act. The only expected impacts are removal of marginal foraging resources for highly mobile species such as the Grey-headed Flying Fox. Assuming that

Yes ☒

No ☐

sand would be dispersed in the area shown in **Appendix A**, no direct impacts or disturbance to shorebird species are expected.

The proposal would require the removal of 125 m² of PCT 3132, which is associated with the EPBC Act listed critically endangered ecological community (CEEC) Littoral Rainforest and Coastal Vine Thickets of Eastern Australia. The Commonwealth listing advice only recognises vegetation which meet certain condition thresholds. When assessed against the condition thresholds, the vegetation identified as PCT 3132 (both regrowth and intact canopy variants) does satisfy the thresholds as shown in the below table. As such, the proposal would require the removal of around 125 m² of this EPBC Act listed CEEC.

An assessment of impact significance has been undertaken in accordance with 'Significant Impact Guidelines 1.1'. The assessment concludes that the proposal is unlikely to result in a significant impact to the Littoral Rainforest CEEC (see end of Section 3.8 for full test).

Assessment of PCT 3132 against Commonwealth listing advice condition thresholds

Condition threshold	PCT 3132 (regrowth)	PCT 3132 (intact)
Small patches can be resilient and viable, but the minimum size of a patch needs to be 0.1 ha; AND	The vegetation within the proposal footprint and study area is part of a contiguous patch of littoral rainforest greater than 0.1 ha	
The cover of transformer weed species (as identified in attachment A of the listing advice) 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; AND	Transformer weeds identified in PCT 3132 include: <ul style="list-style-type: none"> • <i>Chrysanthemoides monilifera</i> • <i>Ipomoea cairica</i> • <i>Lantana camara</i> • <i>Ochna serrulata</i> • <i>Senna pendula</i> These species cumulatively account for less than 70% cover in both condition variants.	
The patch must have: <ul style="list-style-type: none"> • at least 25% of the native plant species diversity characteristic of this ecological community in that bioregion (Attachment A of the listing advice); OR <ul style="list-style-type: none"> • at least 30% canopy cover of one rainforest canopy (either tree or shrub) species (Attachment A of the listing advice, excluding Banksia and Eucalyptus species that may be part of the ecological community). 	While a canopy of rainforest species is largely absent, small regrowth Tuckeroo (<i>Cupaniopsis anacardioides</i>) account for greater than 30% cover.	This condition variant contains an intact canopy greater than 30% cover dominated by Three-veined Cryptocarya (<i>Cryptocarya triplinervis</i>).
Decision	Both zones qualify for listing under the EPBC Act Littoral Rainforest and Coastal Vine Thickets of Eastern Australia critically endangered ecological community.	

Would the proposal require the removal of any other vegetation?

Native vegetation impacts are summarised in the table above. No other vegetation impacts are anticipated.

Yes ☐

No ☒

<p>Would the proposal require the removal of any tree hollows?</p> <p>A site inspection was completed on 30 November 2022. No tree hollows were identified in trees that would require removal.</p>	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>
<p>Are there any known areas of outstanding biodiversity value or areas mapped as 'littoral rainforest' or 'coastal wetland' under chapter 2 of SEPP (Resilience and Hazards) in or within the vicinity of the proposed work?</p> <p>There are no areas of outstanding biodiversity value in or near the proposal.</p> <p>'Littoral rainforest' mapped by chapter 2 of the Hazards and Resilience SEPP 2021 is located in patches along the Coffs Harbour coastline. The closest mapped patch is under 100 meters south of the proposal footprint associated with the Northern Ingress Option. Some small portions of the proposal occur within the 'proximity area for littoral rainforests.' The proximity area is a 100m buffer placed around mapped littoral rainforest. This includes a very small slither of the access track from Fitzgerald Street carpark, and the proposed truck route to transport sand from the boat ramp to park Beach. Part of the existing proximity area south of the proposal area has been previously disturbed during the construction of viewing platform overlooking Park Beach and existing carpark.</p> <p>'Coastal wetlands' mapped by chapter 2 of the Hazards and Resilience SEPP 2021 is located in patches along the Coffs Creek estuary. The closest mapped patches are on Coffs Creek about 150 meters up stream of the Orlando Street Bridge, which is around 1 kilometer from the southern extent of the proposal (following the flow of water).</p> <p>Surface and groundwater flows associated with the Northern Ingress Option should not be affected by the proposal. As noted in Section 2.1.2, depth of excavation proposed for the construction of the Northern Ingress Option is about 500mm and within the hind dune area above the groundwater level. Groundwater flows are unlikely to be impacted by the proposal.</p> <p>The disturbance area associated with the proposal's Northern Ingress Option is located in a sandy environment that has a high infiltration capacity. The access track and stockpile/material transfer point will be constructed using geo-fabric and rock permit a trafficable surface. It is not anticipated that significant quantities of surface water run-off will be generated by this proposal.</p> <p>An Erosion and Sediment Control plan will be developed for the proposal prior to vegetation removal activities commencing. Risks associated with oil and hydrocarbon interaction within the coastal system will be managed in accordance with safeguards listed in Section 3.2.</p>	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>
<p>Would the proposal provide any additional barriers to the movement of wildlife?</p> <p>The proposal will likely disturb up to a 4m corridor as part of the access track.</p>	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>
<p>Would the proposal disturb any natural waterways or aquatic habitat?</p> <p>The proposal will involve working within the marine environment, including the continued removal and dredging of sand from the Coffs Harbour Boat Ramp Channel. Dredging works continued as part of this approval are proposed to the disturb areas within the boat ramp channel which has been subject to previous dredging and construction activities.</p> <p>The proposal requires transportation of sand by trucks from the stockpiles at the Coffs Harbour South break wall to be deposited on Park Beach (as shown in Appendix A). While no waterways and aquatic habitat would be directly impacted, depositing sand on Park beach will modify the intertidal zone in that location, and cause sand movement and deposition to other areas. This is considered largely a natural process. Provided the sand deposited on Park Beach is free from contamination, the impact on natural waterways and aquatic habitat from this work is considered negligible.</p>	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>
<p>Would the proposal impact (directly or indirectly) any potential microbat roosting or breeding habitat such as on bridges and culverts?</p>	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>
<p><u>Assessments of Impact Significance – Littoral Rainforest</u></p>		

The removal of 125 m² of PCT 3132 for the access track associated with the Northern Ingress Option will directly impact the Littoral Rainforest ecological community, listed as endangered under the BC Act and critically endangered under the EPBC Act. Assessments have been undertaken to determine the significance of these impacts in accordance with Section 7.3 of the BC Act and the EPBC Act Significant Impact Guidelines 1.1.

Biodiversity Conservation Act 2016

This impact includes removal of 125 m² of Littoral Rainforest in the New South Wales North Coast, Sydney Basin and Southeast Corner Bioregions listed as an endangered ecological community (EEC) under the BC Act (hereafter referred to as the 'Littoral Rainforest EEC'). Section 7.3 of the BC Act outlines the 'test of significance' that is to be undertaken to assess the likelihood of significant impact upon threatened species or ecological communities listed under the BC Act.

This test of significance has been undertaken in accordance with the Threatened Species Test of Significance Guidelines, which outlines a set of guidelines to help applicants/proponents of a development or activity with interpreting and applying the factors of the assessment process.

The local occurrence of this EEC is taken to be the community that occurs within the proposed area of works and all contiguous vegetation. Risk of extinction is used here as the likelihood that the local occurrence of the EEC would become extinct either in the short-term or in the long-term as a result of direct or indirect impacts on the EEC from the proposal. Composition refers to the assemblage of species and the physical structure of the community.

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:

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.

Not applicable.

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

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

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

The local occurrence of the Littoral Rainforest EEC is taken to be the PCT 3132 identified in the study area and also the single contiguous mapped patch of PCT 3132 by the State Vegetation Type Map between Coffs Creek and Macauleys Headland, which is around 11 hectares in size. However the local occurrence may actually be much larger considering rainforest shrubs and trees are likely to be pollinated and seed spread by mobile species such as bats and birds over greater distances. As a conservative estimate for this assessment, the local occurrence of Littoral Rainforest EEC subject to this assessment is therefore assumed to be 11 hectares.

Direct impacts to the Littoral Rainforest EEC would be limited to clearing of 125 m² of disturbed PCT 3132. This represents removal of less than 0.01 per cent of the local occurrence of the EEC. The area that would be cleared exhibits evidence of past disturbance, including canopy die-off dominated by Coastal Banksia (*Banksia integrifolia*) and a dense understorey of around 2 metre high Tuckeroo (*Cupaniopsis anacardioides*). As such this vegetation is considered to be in a state of minor regrowth.. Over 99.9 per cent of this EEC's local occurrence will remain.

The proposed activities also carry the potential for indirect impacts to the surrounding retained higher condition Littoral Rainforest. However considering the current disturbance from public access to the beach through this vegetation, any indirect impacts are likely to be negligible. The changes would not substantially and adversely modify the composition of the EEC.

Therefore, it is highly likely that the local occurrence of the Littoral Rainforest EEC will remain viable after the works are complete and will not be placed at risk of extinction

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

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

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

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

Direct impacts to the Littoral Rainforest EEC would be limited to clearing of 125 m² of disturbed PCT 3132. As discussed above, there is unlikely to be any modification of retained vegetation as a result of the works.

While there may be some minor disruption to the ability of the EEC to move genetic material, this function is not expected to be permanently impacted following completion of works. Patches along the coast where this local occurrence exists are already fragmented, including directly adjacent to the study area by the beach access pathway. Considering the required access track would be narrow and larger canopy species will remain either side, the degree of fragmentation will be negligible and not permanent.

Due to the conservation significance of the Littoral Rainforest EEC, all remaining patches and associated habitat are likely to be important to its long-term survival. However, the proposed works will be limited to clearing of a disturbed and regenerating condition of the EEC. Therefore it is unlikely to perform the full ecological function of the EEC and be important to its long-term persistence in the locality. Removal of trees will be limited to non-rainforest species *Banksia integrifolia*. Therefore the loss of this small area is unlikely to threaten the existence of the EEC's local occurrence.

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)

The proposal will not impact on any declared area of outstanding biodiversity value.

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.

Of the 38 listed KTPs under the BC Act, seven are applicable to the Littoral Rainforest EEC and the proposed works, including:

- Clearing of native vegetation – this would be limited to the lowest condition vegetation and avoid rainforest canopy trees
- Infection of native plants by *Phytophthora cinnamomi* – machinery has potential to introduce and spread this pathogen, however this can be mitigated with standard management measures
- Introduction and Establishment of Exotic Rust Fungi of the order Pucciniales pathogenic on plants of the family Myrtaceae – machinery has potential to introduce and spread this pathogen, however this can be mitigated with standard management measures
- Invasion and establishment of exotic vines and scramblers – machinery has potential to introduce and spread weeds, however this can be mitigated with standard management measures
- Invasion, establishment and spread of *Lantana camara* – machinery has potential to introduce and spread weeds, however this can be mitigated with standard management measures
- Invasion of native plant communities by exotic perennial grasses – machinery has potential to introduce and spread weeds, however this can be mitigated with standard management measures
- Removal of dead wood and dead trees – this may be necessary, however it will likely be very limited.

Relocation of any woody material identified within the proposal area to adjacent areas will be the preferred option, where required and unable to avoid in the first instance.

Hygiene and weed control measures would reduce or avoid the impact of most KTPs with the exception of clearing of native vegetation and removal of dead wood and dead trees.

Conclusion

Considering the above information, the proposed works do not appear to pose a significant threat to the existing viability of the Littoral Rainforest EEC local occurrence which will be affected. A significant impact to the Littoral Rainforest EEC is therefore considered unlikely.

EPBC Act assessment of significance

This impact includes removal of 125 m² of Littoral Rainforest and Coastal Vine Thickets of Eastern Australia, listed as a critically endangered ecological community under the EPBC Act (hereafter referred to as the 'Littoral Rainforest CEEC').

A significance assessment has been completed for the impacts to the Littoral Rainforest CEEC from the proposal in accordance with the EPBC Act Policy Statement 1.1 Significant Impact Guidelines. Whether or not an action is likely to have a significant impact depends upon the sensitivity, value, and quality of the environment that is affected, and upon the intensity, duration, magnitude and geographic extent of the impacts. Importantly, for a 'significant impact' to be 'likely', it is not necessary for a significant impact to have a greater than 50 per cent chance of happening; it is sufficient if a significant impact on the environment is a real or not remote chance or possibility. This advice has been considered while undertaking the below assessment.

An action is likely to have a significant impact on a Critically Endangered or Endangered ecological community if there is a real chance or possibility that it will:

1. reduce the extent of an ecological community

The listing advice states that in NSW the area of occupancy of the Littoral Rainforest CEEC is estimated at around 1624 hectares. The 'local occurrence' of the Littoral Rainforest CEEC (ie the occurrence that shares genetic material) is assumed to be around 11 hectares.

Direct impacts to the Littoral Rainforest CEEC would be limited to clearing of 125 m² of disturbed PCT 3132. This would reduce the 'local occurrence' by less than 0.01 per cent and reduce the NSW area of occupancy by a much smaller amount. While technically this would reduce the extent of the CEEC in NSW and the locality the area that would be cleared exhibits evidence of past disturbance and appears to be in a sort of regrowth state. This vegetation is situated between higher condition examples of this CEEC, which are expected to be more important to the persistence of the CEEC.

2. fragment or increase fragmentation of an ecological community, for example by clearing vegetation for roads or transmission lines

While there may be some temporary disruption to the ability of the Littoral Rainforest CEEC to move genetic material, this function is not expected to be permanently impacted following completion of works. Patches along the coast where this CEEC exists are already fragmented, including directly adjacent to the study area by the beach access pathway. Considering the required access track would be narrow and larger canopy species will remain either side, the degree of fragmentation will be negligible and not permanent.

3. adversely affect habitat critical to the survival of an ecological community

Due to the conservation significance of the Littoral Rainforest CEEC, all remaining patches and associated habitat are considered habitat critical to the survival of the ecological community. However, the proposed works will be limited to clearing of a disturbed and regenerating condition of the CEEC. Therefore it is unlikely to perform the full ecological function of the CEEC and be important to its long-term persistence in the locality. Removal of trees will be limited to non-rainforest species *Banksia integrifolia*. Therefore the loss of this small area is unlikely to represent an area of habitat critical to the survival of the CEEC.

4. modify or destroy abiotic (non-living) factors (such as water, nutrients, or soil) necessary for an ecological community's survival, including reduction of groundwater levels, or substantial alteration of surface water drainage patterns

The proposed works involves clearing for an access track from the beach carpark to the beach to deposit sand. The main change to abiotic factors would be the increase in wind and salt exposure to the retained vegetation. However since the area to be cleared is already thin and lacking an intact canopy, the increase in this exposure would be minor.

5. cause a substantial change in the species composition of an occurrence of an ecological community, including causing a decline or loss of functionally important species, for example through regular burning or flora or fauna harvesting

The area of Littoral Rainforest CEEC that would be removed is currently in a state of regrowth following disturbance. The vegetation has been reduced to a narrow band by the beach carpark and contains canopy dieback and weed incursion. Therefore the loss sustained by the Littoral Rainforest would be the lowest condition vegetation and would not necessarily create any new edges through undisturbed vegetation. As such, the proposed works are not expected to cause a substantial change to the composition of the retained vegetation that would cause a decline in its functionality.

6. cause a substantial reduction in the quality or integrity of an occurrence of an ecological community, including, but not limited to:

- **assisting invasive species, that are harmful to the listed ecological community, to become established**
- **causing regular mobilisation of fertilisers, herbicides or other chemicals or pollutants into the ecological community which kill or inhibit the growth of species in the ecological community**

As previously stated, the vegetation that would be removed is already in a disturbed condition. The change in conditions as a result of the clearing is unlikely to substantially reduce the quality of the retained vegetation. Any works involving machinery access carries the potential for introducing or spreading of invasive species and pathogens. Myrtle Rust is a pathogen that infects the roots of plants in the Myrtaceae family (which includes many rainforest species) and has the potential to cause dieback. Any machinery required for the proposed works therefore has the potential to introduce and transmit weed propagules and disease to the CEEC retained.

This potential impact can be mitigated through the development and implementation of suitable control measures for vehicle and machinery hygiene, including adoption of best practice hygiene protocols in accordance with the TfNSW Biodiversity Guidelines (RTA 2011) as part of the CEMP. The project mitigation strategy and environmental management procedures would include guidance for preventing the introduction and/or spread of weeds and disease-causing agents such as bacteria and fungi.

There is also potential for chemical and contaminated spills from machinery, particularly from trucks carrying sand. This can be effectively managed through standard mitigation.

Therefore, with control measures in place, it is considered unlikely that these potential impacts would occur to an extent that caused a substantial decline in the quality or integrity of the Littoral Rainforest CEEC.

7. interfere with the recovery of an ecological community.

The 'National Recovery Plan for the Littoral Rainforest and Coastal Vine Thickets of Eastern Australia Ecological Community' outlines five strategies to achieve the overarching objective of the Recovery Plan:

- Strategy 1: Implement planning and regulatory policies and actions to protect Littoral Rainforest
- Strategy 2: Implement management strategies and actions to reduce threats to Littoral Rainforest
- Strategy 3: Restore and extend Littoral Rainforest
- Strategy 4: Engage with the broader public to increase awareness and community involvement in management and rehabilitation
- Strategy 5: Improve knowledge on the distribution and condition of Littoral Rainforest, and monitor and report on the status of the ecological community

Generally speaking the proposal would interfere with Strategy 3 due to the removal of a small area of the CEEC. However when the access track is no longer needed, the vegetation would be rehabilitated. Considering the existing disturbed condition, it would be possible to restore the CEEC to a similar or better condition state.

Conclusion

Considering the above information, the proposed works do not appear to pose a significant threat to the existing viability of the Littoral Rainforest CEEC which will be affected. A significant impact to the Littoral Rainforest CEEC is therefore considered unlikely.

In light of the above findings, conservation measures will be undertaken in accordance with TfNSW Biodiversity Policy and No Net Loss Guidelines.

Safeguards

Safeguards to be implemented are:

Biodiversity	
F1.	Removal of trees with DBH >5cm is to be restricted to only Coastal Banksia (<i>Banksia integrifolia</i>). The number of Coastal Banksia removed must be limited as much as practical.
F2.	Pre-clearing survey of access track and sand deposition area is to be undertaken of the site on the day that works commence.
F3.	An Unexpected Threatened Species Find Procedure is to be developed as part of the proposal's CEMP in accordance with Biodiversity Guidelines 2011 – Guide 1 (Pre-clearing process) to manage any unexpected, threatened fauna or flora species discovered during construction.
F5.	The potential for introduction and spread of pathogens (e.g. Chytrid, Myrtle Rust and Phytophthora) is to be managed in accordance with the Biodiversity Guidelines - Guide 7 (Pathogen Management) and DECC Statement of Intent 1: Infection of native plants by Phytophthora cinnamomi (for Phytophthora).
F6.	Declared priority weeds are to be managed according to requirements under the Biosecurity Act, 2015 and Guide 6 (Weed Management) of the Biodiversity Guidelines 2011
F7.	Any fauna handling required must be carried out in accordance with the Biodiversity Guidelines - Guide 9 (Fauna Handling).
F9.	Pruning of mature trees is to be in accordance with Part 5 of the Australian Standard 4373-2007 Pruning of amenity trees.
F12.	All activities are to be carried out to avoid spreading marine pests including: <ul style="list-style-type: none"> • Removal of weeds, animals or sediment from equipment and disposal to an appropriate waste receptacle or facility

Biodiversity

- Disposal of sewage and bilge water at an approved pump out facility
- F13. Any works within a marine park or aquatic reserve is to be carried out in accordance with the requirements of the Marine Estate Management Act 2014
- F14. Any harm to marine vegetation is to be carried out in accordance with a permit under the Fisheries Management Act 1994
- F15. In accordance with the TfNSW No Net Loss Guidelines, impacts requiring offsetting or conservation measures will be identified prior to the commencement of works and a Biodiversity Offset Strategy prepared and implemented.

3.9 Traffic and transport

Table 3-8: Traffic and transport

Description of existing environmental and potential impacts		
<p>Is the proposal likely to result in detours or disruptions to traffic flow (vehicular, cycle and pedestrian) or access during construction?</p> <p>The proposal may result in temporary short-term disruptions and delays to traffic flow across the local road network however will not require detours or long-term disruptions.</p> <p>The proposal will not require may lane closures however may require temporary traffic control works during delivery and mobilisation of plant.</p> <p><u>Boat Ramp</u></p> <p>The boat ramp may require temporary closure during the installation of the jet pumps within the channel however installation of other ancillary infrastructure, such as pumps, and piping is not anticipated to impede boat users. Timing of the works will consider school holidays, long weekends and other known times of high patronage to minimise service disruptions, wherever practicable.</p> <p>Alternate vessel launching locations are available within the local area are available on the NSW Boat Ramps database: Boat ramps map (NSW) - Roads and Maritime Services.</p> <p>Vehicles and plant likely to be required during construction activities are identified in Section 2.1. Construction vehicles will be parked off street within the work compounds.</p> <p>Pedestrian access along the recently constructed break wall will remain closed during construction activities.</p> <p>Vehicular access along Jordan Esplanade may be temporarily impeded during delivery and mobilisation of plant however will not require long term or extensive closure.</p> <p><u>Northern Ingress Option</u></p> <p>The Fitzgerald St/Ocean Parade carpark may temporarily be closed during construction activities as described in Section 2.1. Access to surrounding sidewalks, viewing platforms and Park Beach will not be impeded during construction activities. Vehicles and plant likely to be required during construction activities are identified in Section 2.1.</p> <p><u>Southern Ingress Option</u></p> <p>About 50% of the Coffs Harbour SLSC carpark may temporarily be closed during construction activities as described in Section 2.1. Pedestrian and bicycle access of surrounding sidewalks, access to Park Beach and Coffs Creek will not be impeded during construction activities. Vehicles and plant likely to be required during construction activities are identified in Section 2.1.</p>	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>
<p>Is the proposal likely to result in detours or disruptions to traffic flow (vehicular, cycle and pedestrian) or access during operation?</p>	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>

<p>The proposal may result in intermittent short-term disruptions and delays to traffic flow across the local road network for the duration of the proposal however will not detours.</p> <p>Transfers of material between the dewatering bund and CPQ will occur on demand based on the operation of dredging activities. The transfer of material to the CPQ is about 400m east along Jordan Esplanade will be completed by heavy vehicles. It is estimated that up to 60 vehicle movements will be required during times of dredging activities.</p> <p>During beach nourishment campaigns, it is likely that up to 60 truck movements will be required between CPQ and the Park Beach ingress point. The indicative vehicle route is provided in Appendix A. During beach nourishment campaigns, car parking spaces at the chosen Park Beach ingress point will be closed/ operate at reduced limited to reduce risks associated with heavy vehicle interactions.</p>		
<p>Is the proposal likely to affect any other transport nodes or transport infrastructure (e.g., bus stops, bus routes) in the surrounding area? Or result in detours or disruptions to traffic flow (vehicular, cycle and pedestrian) or access during operation?</p> <p>There are no bus stops in proximity to CPQ, boat ramp or the near the Southern Ingress option. A bus stop is located around 60m southwest of the Northern Ingress Option. Services at this bus stop will not be affected by the proposal.</p> <p>Active transport routes, including sidewalks and shared paths will not be affected by the proposal.</p>	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>

Safeguards

Safeguards to be implemented are:

Traffic	
T1.	Where possible, current traffic movements and property accesses are to be maintained during the works. Any disturbance is to be minimised to prevent unnecessary traffic delays.
T2.	Where possible, current vessel movements and public accesses to the waterway and foreshore are to be maintained during works. Any disturbance is to be minimised as much as practicable.
T3.	A traffic control plan will be prepared in accordance with the 'Traffic control at work sites manual' (RTA, 2010a) and Australian Standard 1742.3 Manual of uniform control devices

3.10 Socio-economic

Table 3-9: Socio-economic

Description of existing environmental and potential impacts		
<p>Is the proposal likely to impact on local business?</p> <p>There are no local businesses within proximity to CPQ stockpile or the carpark opposite Fitzgerald St/Ocean Parade intersection.</p> <p>The nearest business to the boat ramp is the Jetty Beach House which is located about 200m west. Access to this business will not be affected by this proposal.</p> <p>The nearest local business to the Coffs Harbour SLSC carpark is the Surf Club Restaurant & Bar which is locate about 50m north of the Southern Ingress Option. Access to this business will not be affected by this proposal. The car park has a capacity of more than 120 parking spaces. The proposal will likely require use of the western half of the carpark to transfer material onto Park Beach for beach nourishment activities.</p> <p>A number of other local businesses and community events which utilise this car park and associated beach facilities surrounding the Southern Ingress Option include:</p> <ul style="list-style-type: none"> Coffs Harbour Park Run 	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>

<ul style="list-style-type: none"> Coffs Harbour Sky diving 		
Is the proposal likely to require any property acquisition?	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>
<p>Is the proposal likely to alter any access for properties (either temporarily or permanently)?</p> <p>Access along Jordan Esplanade past the boat ramp may be temporarily affected during construction activities e.g. equipment deliveries however this will not be affected during the operation of the proposal.</p> <p>Vehicular access to the Coffs Harbour SLSC car park will be maintained at all times should the southern ingress option be preferred. Access to Park Beach, Park Beach Reserve and Coffs Creek will not be affected at this location during operation of the proposal.</p> <p>Access to the car park opposite the Fitzgerald St / Ocean Pd intersection may need to be closed on a temporary basis during both construction and operations. Alternate parking options will remain available along Ocean Pd. Pedestrian access to Park Beach, Park Beach reserve and viewing area via the existing access track will not be impeded during construction and operation of the proposal.</p>	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>
<p>Is the proposal likely to alter any on-street parking arrangements (either temporarily or permanently)?</p> <p>On-street parking arrangements will not be affected by the proposal however depending on the chosen Park Beach ingress point, the proposal will result in the temporary closure of:</p> <ul style="list-style-type: none"> Up to 64 car parking spaces at the Coffs Harbour SLSC car park Up to 24 car parking spaces at Fitzgerald St/Ocean Parade car park <p>Ongoing consultation with Coffs Harbour SLSC will occur to determine the optimal beach ingress point.</p>	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>
<p>Is the proposal likely to change pedestrian movements or pedestrian access (either temporarily or permanently)?</p> <p>Pedestrian access to Park Beach, Park Beach reserve, Coffs Creek and Coffs Harbour SLSC will not be affected by the proposal.</p>	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>
<p>Is the proposal likely to impact on any items or places of social value to the community (either temporarily or permanently)?</p> <p>The proposal will not restrict access to Park Beach or Park Beach Reserve and associated public infrastructure such as public toilets, picnic tables and barbeques etc.</p>	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>
Is the proposal likely to reduce or change visibility of any businesses, farms, tourist attractions or the like (either temporarily or permanently)?	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>
Is the proposal likely to impact trees planted by a community group, Landcare group or by council or a tree that is a memorial or part of a memorial group e.g., has a plaque?	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>
Is the proposal likely to impact trees that form part of a streetscape, an avenue or roadside planting?	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>

Safeguards

Safeguards to be implemented are:

Community consultation

- C1. Notification is to be given to affected community members prior to the works taking place. The notification is to include:

Community consultation

- Details of the proposal
- The duration of works and working hours
- Any changed traffic or access arrangements
- How to lodge a complaint or obtain more information
- Contact name and details.

Notification should be a minimum of 7 calendar days prior to the start of works.

C2. All complaints are to be recorded on complaints register and attended to promptly.

C3. Existing access for nearby and adjoining properties is to be maintained at all times during the works unless otherwise agreed to by the affected property owner.

3.11 Landscape character and visual amenity

Table 3-10: Landscape character and visual amenity

Description of existing environmental and potential impacts		
Is the proposed work over or near an important physical or cultural element or landscape? (For example, heritage items and areas, distinctive or historic built form, National Parks, conservation areas, scenic highways etc.)?	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>
<p>Would the proposal obstruct or intrude upon the character or views of a valued landscape or urban area? For example, locally significant topography, a rural landscape or a park, a river, lake or the ocean or a historic or distinctive townscape or landmark?</p> <p>The proposal may obstruct or intrude on the character of Park Beach and associated public recreation areas during construction and beach nourishment activities. Access to Park Beach and nearby public recreation areas, including Park beach reserve and the Park Beach viewing platform will not be impeded by the works.</p> <p>Operational beach nourishment activities will be undertaken periodically and on an on-demand basis as described in Section 2. Disturbance associated with the Northern Ingress Option will be revegetated following the completion of beach nourishment activities under this proposal.</p> <p>Works are anticipated to improve the character of the landscape of Park Beach through the proposed beach nourishment activities and minimise long term coastal erosion impacts.</p>	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>
<p>Would the proposal require the removal of mature trees or stands of vegetation, either native or introduced?</p> <p>The proposal would involve the removal of up to 6 mature trees within an area of about 500m² of native vegetation.</p>	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>
Would the proposal result in large areas of shotcrete visible from the road or adjacent properties?	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>
Would the proposal involve new noise walls or visible changes to existing noise walls?	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>
Would the proposal involve the removal or reuse of large areas of road corridor, landscape, either verges or medians?	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>

Would the proposal involve substantial changes to the appearance of a bridge (including piers, girders, abutments and parapets) that are visible from the road or residential areas?	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>
If involving lighting, would the proposal create unwanted light spillage on residential properties at night (in construction or operation)?	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>
Would any new structures or features to be constructed, result in over shadowing to adjoining properties or areas?	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>

Safeguards

Safeguards to be implemented are:

Visual amenity

V2. Landscaping is to be managed in accordance with Roads and Maritime Landscape guideline, 2013.

3.12 Waste

Table 3-11: Waste

Description of existing environmental and potential impacts		
Does the proposal involve dumping of dredging spoils or man-made structures at sea?	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>
All suitable material from dredging activities will be utilised as part of beach nourishment works along Park Beach.		
Does the proposal require a pump out station, effluent, biowaste disposal?	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>
Is the proposal likely to generate >200 tonnes of waste material (contaminated and /or non-contaminated material)? During operations, the proposal will remove up to 25,000 m ³ /year of sand material from the channel. Sand material removed from the channel is classified as VENM however may be classified as excavated natural materials (ENM) if material requires processing and separating due to presence of rocks or other natural material within the sand. Sand material excavated from the boat ramp channel is classified as general solid waste (non-putrescible). All sand material is proposed for beneficial reuse for the purposes of beach nourishment works along Park Beach. As noted in Section 2.3 , this activity is supported by both the NSW CDS and Coffs Harbour CZMP (BMT, 2019). Nominal quantities of general waste will be generated across the duration of the proposal and will be disposed of at a licenced waste facility.	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>
Is the proposal likely to require a licence from EPA? The proposal will not require a licence from EPA. The proposal will excavate less than the volumes prescribed in Schedule 1 of the POEO Act (i.e. less than 30,000t). Review requirement for Environmental Protection Licence for applicable scheduled activities following extraction of 15,000m ³ of sand material or within 6 months from commencement sand removal, whichever is sooner.	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>
Is the proposal likely to require the removal of asbestos?	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>

As noted in **Section 3.1**, there is a chance of encountering acid sulfate soils during the construction phase of the works. An ASS management plan will be developed to detail the appropriate management and disposal requirements of the material should it be encountered.

Safeguards

Safeguards to be implemented are:

Waste management	
M3.	Resource management hierarchy principles are to be followed: <ul style="list-style-type: none">• Avoid unnecessary resource consumption as a priority• Avoidance is followed by resource recovery (including reuse of materials, reprocessing, recycling and energy recovery)• Disposal is undertaken as a last resort (in accordance with the Waste Avoidance & Resource Recovery Act 2001).
M5.	Bulk project waste (e.g. fill) sent to a site not owned by the Roads and Maritime Services (excluding EPA licenced landfills and resource recovery facilities) is to have prior formal written approval from the landowner, in accordance with Environmental Direction No. 20 – Legal Off-site Disposal of Roads and Maritime Services Waste. This includes waste transported for reuse, recycling, disposal or stockpiling.
M8.	Waste is not to be burnt on site.
M9.	Waste material, other than vegetation and tree mulch, is not to be left on site once the works have been completed.
M10.	Working areas are to be maintained, kept free of rubbish and cleaned up at the end of each working day.

4. Consideration of State and Commonwealth environmental factors

4.1 Environmental Planning and Assessment Regulation 2021 factors

The following factors, listed in section 171(2) of the Environmental Planning and Assessment Regulation 2021, have been considered to assess the likely impacts of the proposal on the natural and built environment. This consideration is required to comply with sections 5.5 and 5.7 of the EP&A Act.

Table 4-1: Consideration of section 171 of the EP&A Regulation factors

Environmental factor	Impact
<p>a) Any environmental impact on a community?</p> <p>The proposal may result in short term traffic delays to the local community during construction activities however works aim to be completed to reduce closure of navigable channels, public roads and carparks wherever possible. Works will be scheduled outside of school holiday, public holidays and other times of known high patronage wherever possible.</p> <p>During operation of the proposal up to 60 vehicle movements will be proposed during beach nourishment campaigns. On average this is less than 8 vehicle movements per hour across a standard working day.</p> <p>The overall objective of the works is to promote ongoing navigable access within the boat ramp channel and reduce ongoing impacts associated with coastal erosion along Park Beach.</p> <p>Safeguards listed in Section 3 will be implemented to reduce impacts short term negative impacts wherever possible.</p>	<p>Short term negative Long-term positive</p>
<p>b) Any transformation of a locality?</p> <p>The proposal may transform the locality of Park Beach in the short term due to nature of works proposed for beach activities. The proposal is anticipated to provide a long-term positive impact to the locality following the completion of the beach nourishment program which aims to improve resilience of the coastal system and reduce impacts associated with long term beach recession.</p> <p>Safeguards listed in Section 3 will be implemented to reduce impacts short term negative impacts wherever possible.</p>	<p>Short term negative Long term positive</p>
<p>c) Any environmental impact on the ecosystems of a locality?</p> <p>Should the Northern ingress Option proceed, up to 500m² of TEC will be cleared for the construction of the access track and stockpile/material transfer point associated with beach nourishment activities. This includes up to 125m² of vegetation classified as PCT3132 Northern Sands Tuckeroo-Banksia Forest. PCT3132 is listed as an endangered ecological community under the BC Act and Critically Endangered Ecological Community under the EPBC Act. The access track and stockpile/material transfer point are proposed to be rehabilitation following completion of the works associated with the proposal resulting in short term negative impact.</p> <p>The proposal is anticipated to lead to long term positive impacts through the reintroduction of sand material to Park Beach via beach nourishment activities. Beach nourishment activities aim to reduce beach recession along park beach and within the wider coastal system.</p> <p>Safeguards listed in Section 3 will be implemented to reduce impacts short term negative impacts wherever possible.</p>	<p>Short term negative</p>

Environmental factor	Impact
<p>d) Any reduction of the aesthetic, recreational, scientific or other environmental quality or value of a locality?</p> <p>The proposal would result in a minor and short-term reduction in the aesthetic and recreational value of the locality as a result of construction and some operational related activities.</p> <p>The total number of beach nourishment campaigns will be reduced by only undertaking campaigns once suitable quantities of material are stockpiled.</p> <p>Dredging activities within the channel will improve recreational values associated with boating and associated activities. Beach nourishment activities are anticipated to reduce beach recession impacts along Park Beach leading to a long-term positive impact.</p>	<p>Short term negative Long term positive</p>
<p>e) Any effect on a locality, place or building having aesthetic, anthropological, archaeological, architectural, cultural, historical, scientific or social significance or other special value for present or future generations?</p> <p>The proposal would not affect any known Aboriginal sites or listed non-Aboriginal heritage items.</p> <p>Safeguards listed in Section 3 will be implemented to reduce impacts short term negative impacts wherever possible.</p>	<p>Short negative Long term positive</p>
<p>f) Any impact on habitat of any protected animals (within the meaning of the <i>Biodiversity Conservation Act 2016</i>)?</p> <p>The proposal may result in negligible to minor impacts on the habitat of protected animals from the proposal. The vegetation that will be cleared is unlikely to represent important habitat for any threatened fauna species.</p> <p>Safeguards listed in Section 3 will be implemented to reduce impacts short term negative impacts wherever possible.</p>	<p>Short term negative</p>
<p>g) Any endangering of any species of animal, plant or other form of life, whether living on land, in water or in the air?</p> <p>The proposal may result in negligible to minor impacts on the habitat of protected animals from the proposal. The vegetation that will be cleared is unlikely to represent important habitat for any threatened fauna species.</p> <p>Safeguards listed in Section 3 will be implemented to reduce impacts short term negative impacts wherever possible.</p>	<p>Short term negative</p>
<p>h) Any long-term effects on the environment?</p> <p>The proposal would result in a short-term negative impact due to clearing activities associated with the Northern Ingress Option. Following the completion of the Beach Nourishment campaigns under this proposal, the access track and stockpile/material transfer point will be replanted and rehabilitated.</p> <p>Beach nourishment activities are anticipated to reduce beach recession impacts along Park Beach and associated vegetated areas along the foredune system leading to a long-term positive impact.</p> <p>Safeguards listed in Section 3 will be implemented to reduce impacts short term negative impacts wherever possible.</p>	<p>Short term negative Long term positive</p>
<p>i) Any degradation of the quality of the environment?</p> <p>The proposal would result in a short-term negative impact due to clearing activities associated with the Northern Ingress Option. Following the completion of the Beach Nourishment campaigns under this proposal, the access track and stockpile/material transfer point will be replanted and rehabilitated.</p> <p>Beach nourishment activities are anticipated to reduce beach recession impacts along Park Beach and associated vegetated areas along the foredune system leading to a long-term positive impact.</p>	<p>Short term negative Long term positive</p>

Environmental factor	Impact
Safeguards listed in Section 3 will be implemented to reduce impacts short term negative impacts wherever possible.	
<p>j) Any risk to the safety of the environment?</p> <p>The proposal would have minimal risk to the safety of the environment due to the limited scope of works for the maintenance activities covered in this REF.</p> <p>Completion of the beach nourishment programs aims to improve resilience of the coastal system and reduce impacts associated with long term beach recession.</p> <p>Safeguards listed in Section 3 will be implemented to reduce impacts short term negative impacts wherever possible.</p>	<p>Short term negative</p> <p>Long term positive</p>
<p>k) Any reduction in the range of beneficial uses of the environment?</p> <p>The proposal aims to minimise the reduction in the range of beneficial uses of the environment during operations, including minimising the closure of public access points and public recreation areas. The proposal is anticipated to increase beneficial use of the environment as a result of the proposed beach nourishment campaign.</p> <p>Safeguards listed in Section 3 will be implemented to reduce impacts short term negative impacts wherever possible.</p>	<p>Short term negative</p> <p>Long term positive</p>
<p>l) Any pollution of the environment?</p> <p>Minor, short-term risks to water quality would be present in the event of a spill or release of material from the work sites during construction.</p> <p>Safeguards have been proposed to address the risk of pollution.</p>	<p>Negative (minor short-term and long-term)</p>
<p>m) Any environmental problems associated with the disposal of waste?</p> <p>Sand material excavated from the boat ramp channel is classified as general solid waste (non-putrescible). Sand material extracted as part of dredging activities is classified as VENM and is proposed for beneficial re-use as part of beach nourishment described in this proposal.</p> <p>Other waste products (e.g., general waste) generated during the proposal would be contained and removed for disposal to approved recycling facilities or to licenced landfill in accordance with the safeguards in Section 3 of this REF.</p> <p>An ASS management plan is proposed to be developed in the event ASS is encountered however the likelihood of this is low.</p> <p>No environmental problems are anticipated for the disposal of waste.</p>	<p>Long term positive</p>
<p>n) Any increased demands on resources, natural or otherwise which are, or are likely to become, in short supply?</p> <p>The proposal would not increase demand for resources which are, likely to become, in short supply.</p>	<p>Nil</p>
<p>o) Any cumulative environmental effect with other existing or likely future activities?</p> <p>The proposal has the potential to have cumulative environmental effects with other existing or likely future activities, however the effects would be minimal due to the limited scope of works for the activities covered in this REF, and the potential impacts on the environment would be minimised with the implementation of the safeguards given in Section 3 in this REF.</p>	<p>Short term negative</p> <p>Long term positive</p>
<p>p) Any impact on coastal processes and coastal hazards, including those under projected climate change conditions?</p> <p>A key objective of the proposal is to undertake beach nourishment and activities Park Beach which is a management action associated with the Coffs Harbour CZMP.</p>	<p>Long-term positive</p>

Environmental factor	Impact
<p>q) Any impact on applicable local strategic planning statements, regional strategic plans or district strategic plans made under the Act, Division 3.1? The nominated regional strategic plan is the North Coast 2036 regional plan. The development of the Coffs Harbour CZMP and associated management actions e.g. beach nourishment works, is aligned to Direction 3: Manage natural hazards and climate change of the North Coast 2036 Regional Plan.</p>	Long-term positive
<p>r) Any impact on other relevant environmental factors? In considering the potential impacts of this proposal all relevant environmental factors have been considered, refer to Chapter 3 of this assessment.</p>	Nil

4.2 Matters of National Environmental Significance

A copy of the EPBC Act Protected Matters Report for the proposal is provided in **Appendix D**.

Table 4-2: Matters of national environmental significance

Environmental factor	Impact
a) Any impact on a World Heritage property?	N/A
b) Any impact on a National Heritage place?	N/A
c) Any impact on a wetland of international importance (often called 'Ramsar' wetlands)?	N/A
<p>Any impact on nationally threatened species, ecological communities or migratory species? The proposal would impact on up to 125m² of PCT3121 Northern Sands Tuckeroo-Banksia Forest which is listed as a Critically Endangered Vegetation Community under the EPBC Act. An assessment of significance has been completed in accordance with the Matters of National Environmental Significance – Significant Impact Guidelines (Commonwealth) and is provided in Section 3.8.</p>	Not significant
d) Any impact on a Commonwealth marine area?	N/A
e) Does the proposal involve a nuclear action (including uranium mining)?	N/A
Additionally, any impact (direct or indirect) on the environment of Commonwealth land?	N/A

5. Summary of safeguards and environmental management measures

This section provides a summary of the site-specific environmental safeguards and management measures identified in described in chapters 3 and 4 of this REF. These safeguards will be implemented to reduce potential environmental impacts throughout construction and operation. A framework for managing the potential impacts is provided with reference to environmental management plans and relevant Transport QA specifications. Any potential licence and/or approval requirements required prior to construction are also listed.

Table 5-1: Summary of site-specific safeguards for proposed work

Factor	Impact
Soil	E1. Resource management hierarchy principles are to be followed: <ul style="list-style-type: none"> • Avoid unnecessary resource consumption as a priority • Avoidance is followed by resource recovery (including reuse of materials, reprocessing, recycling and energy recovery) • Disposal is undertaken as a last resort (in accordance with the Waste Avoidance & Resource Recovery Act 2001).
	E2. Erosion and sedimentation controls are to be checked and maintained on a regular basis (including clearing of sediment from behind barriers) and records kept and provided on request.
	E3. Erosion and sediment control measures are not to be removed until the works are complete, and areas are stabilised.
	E4. Work areas are to be stabilised progressively during the works.
	E5. A progressive erosion and sediment control plan is to be prepared for the works.
	E6. The maintenance of established stockpile sites is to be in accordance with the Roads and Maritime Services Stockpile Site Management Guideline (EMS-TG-10).
	X1. Potential or actual acid sulphate soils are to be managed in accordance with the Roads and Maritime Services Guidelines for the Management of Acid Sulphate Materials 2005.
Waterways and water quality	W1. There is to be no release of dirty water into drainage lines and/or waterways.
	W2. Visual monitoring of local water quality (i.e. turbidity, hydrocarbon spills/slicks) is to be undertaken on a regular basis to identify any potential spills or deficient silt curtains or erosion and sediment controls.
	W3. Water quality control measures are to be used to prevent any materials (e.g. concrete, grout, sediment etc.) entering drain inlets or waterways.
	W4. Measures to control pollutants from stormwater and spills would be investigated and incorporated in the pavement drainage system at locations where it discharges to the receiving drainage lines. Measures aimed at reducing flow rates during rain events and potential scour would also be incorporated in the design of the pavement drainage system.
	W6. Vessels (including barges) are only to be used at suitable tides when no less than 600mm clearance is available between the underside of the vessel and the bed of the waterway.

	<p>W8. Silt curtains are to be installed, monitored and maintained as needed to contain any sediment.</p> <p>R2. Refueling of mobile terrestrial plant and equipment is to occur in impervious bunded areas located a minimum of 50 meters from drainage lines or waterways. Refueling of plant will not occur on Park Beach.</p> <p>R3. Refueling of marine plant and equipment and storage of hazardous materials on barges is to occur within a double-bunded areas.</p> <p>R6. An emergency spill kit is to be kept on site at all times and maintained throughout the construction work. The spill kit must be appropriately sized for the volume of substances at the work site.</p> <p>R7. If an incident (e.g. spill) occurs, the Roads and Maritime Services Environmental Incident Classification and Reporting Procedure is to be followed and the Roads and Maritime Services Contract Manager notified as soon as practicable.</p> <p>R8. Emergency contacts will be kept in an easily accessible location on vehicles, vessels, plant and site office. All workers will be advised of these contact details and procedures.</p> <p>R9. Spill kits for construction barges must be specific for working within the marine environment.</p> <p>R10. All workers will be advised of the location of the spill kit and trained in its use.</p> <p>R11. Vehicles, vessels and plant must be properly maintained and regularly inspected for fluid leaks.</p> <p>R13. In the event of a maritime spill, the incident emergency plan would be implemented in accordance with Sydney Ports Corporation's response to shipping incidents and emergencies outlined in the 'NSW State Waters Marine Oil and Chemical Spill Contingency Plan' (Maritime, 2012).</p> <p>R14. No refueling on of mobile plant will be undertaken on Park Beach</p> <p>R15. Prestart machinery checklists to be performed each day prior to start of shift</p>
Hydrology and Coastal processes	H1. Mobile plant will only operate above the surf zone. Beach nourishment activities will occur within the tidal zone and not within the surf zone.
Noise and vibration	<p>N1. Works to be carried out during normal work hours (i.e. 7am to 6pm Monday to Friday; 8am to 1pm Saturdays). Any work that is performed outside normal work hours or on Sundays or public holidays must have measures in place to minimise noise impacts.</p> <p>N2. Noise impacts are to be minimised in accordance with Roads and Maritime Construction Noise Estimator.</p> <p>C4. The community must be notified of all work outside standard hours which have the potential to impact noise sensitive receivers. Notification zones must be determined using the Roads and Maritime Services Maintenance Noise Estimator. Notification requirements must comply with the RMS Construction Noise and Vibration Guideline.</p>
Air quality	<p>A1. Measures (including watering or covering exposed areas) are to be used to minimise or prevent air pollution and dust.</p> <p>A3. Vegetation or other materials are not to be burnt on site.</p>

	<p>A4. Vehicles and vessels transporting waste or other materials that may produce odours or dust are to be covered during transportation.</p> <p>A5. Stockpiles or areas that may generate dust are to be managed to suppress dust emissions in accordance with the Roads and Maritime Services Stockpile Site Management Guideline (EMS-TG-10).</p>
Non-Aboriginal heritage	<p>H2. If unexpected heritage items are uncovered during the works, all works must cease in the vicinity of the material/find and the steps in the Roads and Maritime Services Standard Management Procedure: Unexpected Heritage Items must be followed. Roads and Maritime Services Senior Environment Specialist - Heritage must be contacted immediately.</p>
Aboriginal heritage	<p>B1. If Aboriginal heritage items are uncovered during the works, all works in the vicinity of the find must cease and the Transport for NSW Aboriginal Cultural Heritage Partner and regional Environment and Sustainability Manager contacted immediately. Steps in the Transport for NSW Standard Management Procedure: Unexpected Heritage Items must be followed.</p>
Biodiversity	<p>F1. Removal of trees with DBH >5cm is to be restricted to only Coastal Banksia (<i>Banksia integrifolia</i>). The number of Coastal Banksia removed must be limited as much as practical.</p> <p>F2. Pre-clearing survey of access track and sand deposition area is to be undertaken of the site on the day that works commence.</p> <p>F3. An Unexpected Threatened Species Find Procedure is to be developed as part of the proposal's CEMP in accordance with Biodiversity Guidelines 2011 – Guide 1 (Pre-clearing process) to manage any unexpected, threatened fauna or flora species discovered during construction.</p> <p>F5. The potential for introduction and spread of pathogens (e.g. Chytrid, Myrtle Rust and Phytophthora) is to be managed in accordance with the Biodiversity Guidelines - Guide 7 (Pathogen Management) and DECC Statement of Intent 1: Infection of native plants by Phytophthora cinnamomi (for Phytophthora).</p> <p>F6. Declared priority weeds are to be managed according to requirements under the Biosecurity Act, 2015 and Guide 6 (Weed Management) of the Biodiversity Guidelines 2011</p> <p>F7. Any fauna handling required must be carried out in accordance with the Biodiversity Guidelines - Guide 9 (Fauna Handling).</p> <p>F9. Pruning of mature trees is to be in accordance with Part 5 of the Australian Standard 4373-2007 Pruning of amenity trees.</p> <p>F12. All activities are to be carried out to avoid spreading marine pests including:</p> <ul style="list-style-type: none"> Removal of weeds, animals or sediment from equipment and disposal to an appropriate waste receptacle or facility Disposal of sewage and bilge water at an approved pump out facility <p>F13. Any works within a marine park or aquatic reserve is to be carried out in accordance with the requirements of the Marine Estate Management Act 2014</p> <p>F14. Any harm to marine vegetation is to be carried out in accordance with a permit under the Fisheries Management Act 1994</p> <p>F15. In accordance with the TfNSW No Net Loss Guidelines, impacts requiring offsetting or conservation measures will be identified prior to the commencement of works and a Biodiversity Offset Strategy prepared and implemented.</p>
Traffic and transport	<p>T1. Where possible, current traffic movements and property accesses are to be maintained during the works. Any disturbance is to be minimised to prevent unnecessary traffic delays.</p>

	<p>T2. Where possible, current vessel movements and public accesses to the waterway and foreshore are to be maintained during works. Any disturbance is to be minimised as much as practicable.</p> <p>T3. A traffic control plan will be prepared in accordance with the 'Traffic control at work sites manual' (RTA, 2010a) and Australian Standard 1742.3 Manual of uniform control devices</p>
Socio-economic	<p>C1. Notification is to be given to affected community members prior to the works taking place. The notification is to include:</p> <ul style="list-style-type: none"> • Details of the proposal • The duration of works and working hours • Any changed traffic or access arrangements • How to lodge a complaint or obtain more information • Contact name and details.
Landscape character and visual amenity	<p>V2. Landscaping is to be managed in accordance with Roads and Maritime Landscape guideline, 2013.</p>
Waste	<p>M3. Resource management hierarchy principles are to be followed:</p> <ul style="list-style-type: none"> • Avoid unnecessary resource consumption as a priority • Avoidance is followed by resource recovery (including reuse of materials, reprocessing, recycling and energy recovery) • Disposal is undertaken as a last resort (in accordance with the Waste Avoidance & Resource Recovery Act 2001). <p>M5. Bulk project waste (e.g. fill) sent to a site not owned by the Roads and Maritime Services (excluding EPA licenced landfills and resource recovery facilities) is to have prior formal written approval from the landowner, in accordance with Environmental Direction No. 20 – Legal Off-site Disposal of Roads and Maritime Services Waste. This includes waste transported for reuse, recycling, disposal or stockpiling.</p> <p>M8. Waste is not to be burnt on site.</p> <p>M9. Waste material, other than vegetation and tree mulch, is not to be left on site once the works have been completed.</p> <p>M10. Working areas are to be maintained, kept free of rubbish and cleaned up at the end of each working day.</p>

5.1 Licensing and approvals

Table 5-2: Summary of licensing and approvals required

Instrument	Requirement	Timing
<i>Fisheries Management Act 1994</i> (s199)	Notification to the Minister for Primary Industries prior to any dredging or reclamation works. [Note exemption under s227 of the Fisheries Management (General) Regulation 2019]	A minimum of 28 days prior to the start of work.
<i>Marine Estate Management Act 2014</i> (ss55 and 56)	Consult with the relevant Ministers if a proposed activity is likely to affect plants or animals within a marine park or aquatic reserve or their habitat.	Prior to start of the activity.
<i>Crown Land Management Act 2016</i> (Division 3.4, 5.5 and 5.6)	Lease or licence to occupy areas of Crown land.	Prior to start of the activity.

5.2 Other requirements

Table 5-3: Other requirements

Requirement		
Environmental management plan sent to SMES for review.	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>
Development of Acid Sulfate Soil Management Plan	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>
Review requirement for Environmental Protection Licence for applicable scheduled activities following extraction of 15,000m ³ of sand material or within 6 months from commencement sand removal, whichever is sooner.	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>

6. Certification, review and decision

6.1 Certification

This minor works REF provides a true and fair review of the proposal in relation to its potential effects on the environment. It addresses, to the fullest extent possible, all matters affecting or likely to affect the environment as a result of the proposal.

Prepared by:

Signature



Name: Kai Neville

Position: Senior Environment and Sustainability Officer

Company name: Transport for NSW

Date: 22 December 2022

Minor Works REF reviewed by:

Signature



Name: Julian Burgess

Position: Project Manager

Company name: Transport for NSW

Date: 22 December 2022

6.2 Environment staff review

The Minor Works REF has been reviewed and considered against the requirements of sections 5.5 and 5.7 of the EP&A Act.

In considering the proposal this assessment has examined and taken into account to the fullest extent possible, all matters affecting or likely to affect the environment by reason of that activity as addressed in the Minor Works REF and associated information. This assessment is considered to be in accordance with the factors required to be considered under section 171 of the Environmental Planning and Assessment Regulation 2021.

The proposal described in the Minor Works REF will have some environmental impacts which can be ameliorated satisfactorily. Having regard to the safeguard and management measures proposed, this assessment has considered that these impacts are unlikely to be significant and therefore an approval for the proposal does not need to be sought under Division 5.2 of the EP&A Act.

The assessment has considered the potential impacts of the activity on areas of outstanding value and on threatened species, ecological communities or their habitats for both terrestrial and aquatic species as defined by the *Biodiversity Conservation Act 2016* and the *Fisheries Management Act 1994*.

The proposal described in the Minor Works REF will not affect areas of outstanding value. The activity described in the Minor Works REF will not significantly affect threatened species ecological communities or their habitats. Therefore, a species impact statement is not required.

The assessment has also addressed the potential impacts on the activity on matters of national environmental significance and any impacts on the environment of Commonwealth land and concluded that there will be no significant impacts. Therefore, there is no need for a referral to be made to the Australian Government Department of Agriculture, Water and the Environment for a decision by the Commonwealth Minister for the Environment on whether assessment and approval is required under the *Environment Protection and Biodiversity Conservation Act 1999*.

The Minor Works REF is considered to meet all relevant requirements.

6.3 Environment staff recommendation

It is recommended that the proposal to Coffs Harbour Dredging and Beach Nourishment Program at Coffs Harbour as described in this Minor Works REF proceed subject to the implementation of all safeguards identified in the Minor Works REF and compliance with all other relevant statutory approvals, licences, permits and authorisations.

The Minor Works REF has examined and taken into account to the fullest extent possible all matters likely to affect the environment by reason of the activity and established that the activity is not likely to significantly affect the environment or threatened species, ecological communities or their habitats.

The Minor Works REF has concluded that there will be no significant impacts on matters of national environmental significance or any impacts on the environment of Commonwealth land.

The Minor Works REF determination will remain current for five years until at which time it shall lapse if works have not been physically commenced. The pre-construction checklist must be completed prior to the commencement of any works.

Recommended by:

Signature

Lester Piggott

Name:

Lester Piggott

Position:

Acting Environment and Sustainability Manager

Date:

23 December 2022

6.4 Determination

In accordance with the above recommendation, I certify that I have reviewed and endorsed the contents of this Minor Works REF, 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 Section 170 of the EP&A Regulation, and the information is neither false nor misleading.

I determine that Transport for NSW may proceed with the activity.

Signature 

Name: Darren Wood
Position: Director – Maritime Infrastructure Delivery Office
Date: 23 December 2022

6.5 EP&A Regulation publication requirement

Table 6-1: EP&A Regulation publication requirement

Requirement		
Does this Minor Works REF need to be published under section 171(4) of the EP&A Regulation?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>

Appendix A: Proposal features



WARNING:
BEWARE OF LIVE ELECTRICITY.

WARNING:
BEWARE OF UNDERGROUND SERVICES
THE LOCATION OF UNDERGROUND SERVICES
ARE APPROXIMATE ONLY AND THEIR EXACT
POSITION SHOULD BE PROVEN ON SITE.
NO GUARANTEE IS GIVEN THAT ALL EXISTING
SERVICES ARE SHOWN.

10 5 0 10 20 30 40 1:500 AT A1
1:1000 AT A3

Rv	APPR.	DATE	REVISIONS
D	A.G.	12-12-2022	CLIENT AMENDMENTS
C	A.G.	24-11-2022	CLIENT AMENDMENTS
B	A.G.	24-10-2022	CLIENT AMENDMENTS
A	A.G.	10-10-2022	ORIGINAL ISSUE

Crossco Consulting Pty Ltd All Rights Reserved 2022.
Copyright in the whole and every part of this drawing belongs to Crossco Consulting Pty Ltd and may not be used, sold, transferred, copied or reproduced in whole or in part in any manner or form or on any media, to any person other than by agreement with Crossco Consulting Pty Ltd.

This document is produced by Crossco Consulting Pty Ltd solely for the benefit of and use by the client in accordance with the terms of the retainer. Crossco Consulting Pty Ltd does not and shall not assume any responsibility or liability whatsoever to any third party arising out of any use or reliance by third party on the content of this document.

Slurry Systems Marine
Innovations in Sand Pumping

SLURRY SYSTEMS MARINE PTY LIMITED
A.B.N. : 26 812 526 623 P.O. BOX 451, BRIBIE ISLAND, QLD 4547 AUSTRALIA
PHONE: 0413 007 387 EMAIL: lex@ssm.com.au RPED: 9533, Lex Hankervis

NSW **Transport for NSW**

Crossco Consulting Pty Ltd
ABN: 88 135 548 110
154 Macleod St
P.O. Box 858
Bairnsdale Vic 3875
Tel: (03) 51526298
Fax: (03) 51527222
Email: consult@crossco.com.au

CROSSCO
ENGINEERING & ENVIRONMENTAL CONSULTANTS

DESIGNED: SURRY SYSTEMS
DRAWN: A.M.M.
CHECKED: L.N.
APPROVED: L.N.
SCALE: 1:500

A1 DATUM: AHD

SURVEY REF: -
PLAN No: -

XREF ATTACHED: R:\2724 Slurry Systems - Coffs Harbour\ACAD\Xref\2724_BP.dwg
CAD FILE NAME: R:\2724-Slurry Systems-Coffs Harbour\ACAD\Org\REV\2724-1007.Dwg

NSW GOVERNMENT - TRANSPORT FOR NSW
SLURRY SYSTEMS MARINE PTY. LTD.
COFFS HARBOUR SAND BYPASSING

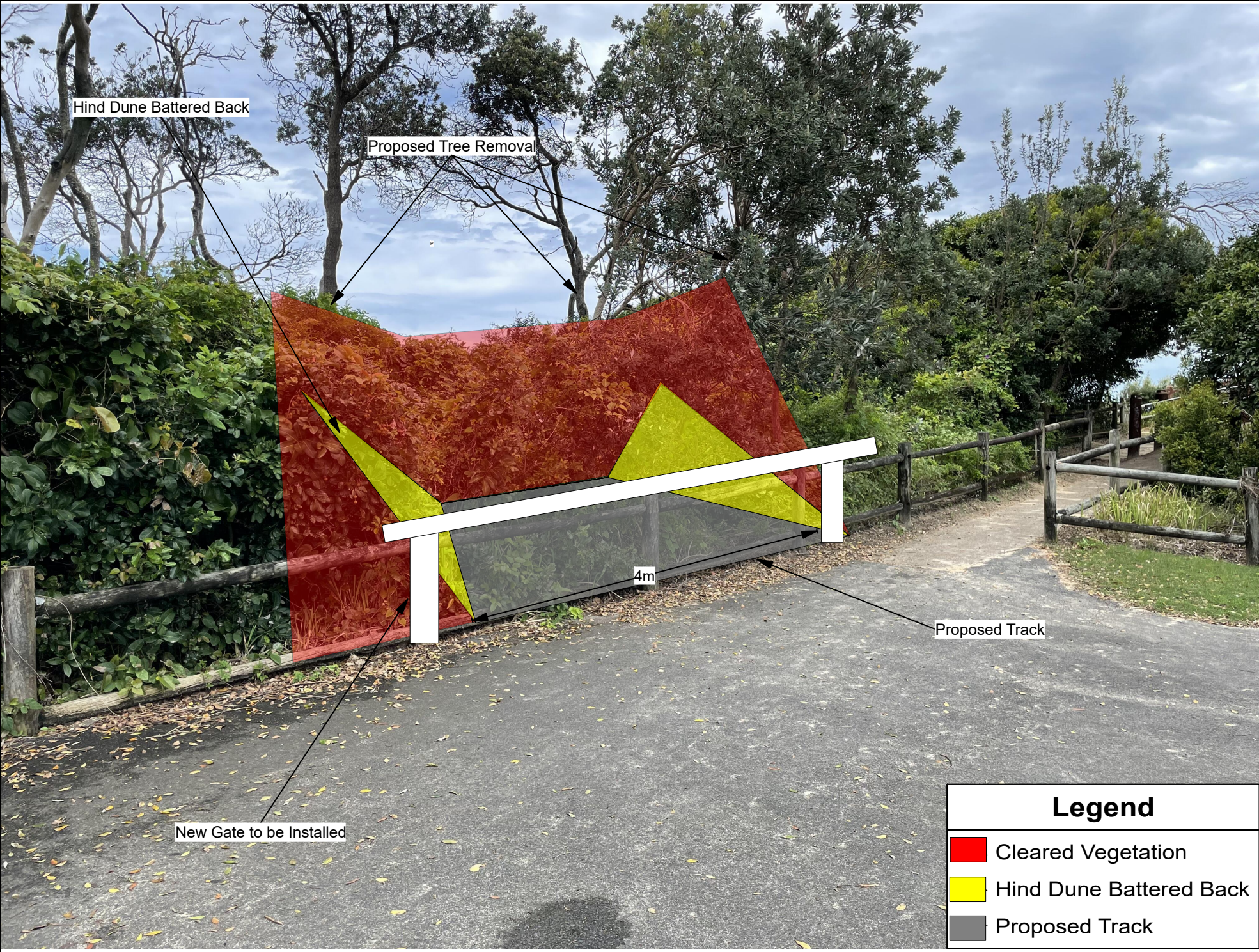
DIESEL POWERED TRIAL SITE OF WORKS

DATE: OCTOBER 2022
SHEET 8 OF 8
CROSSCO DRAWING No: **2724/1007**

D









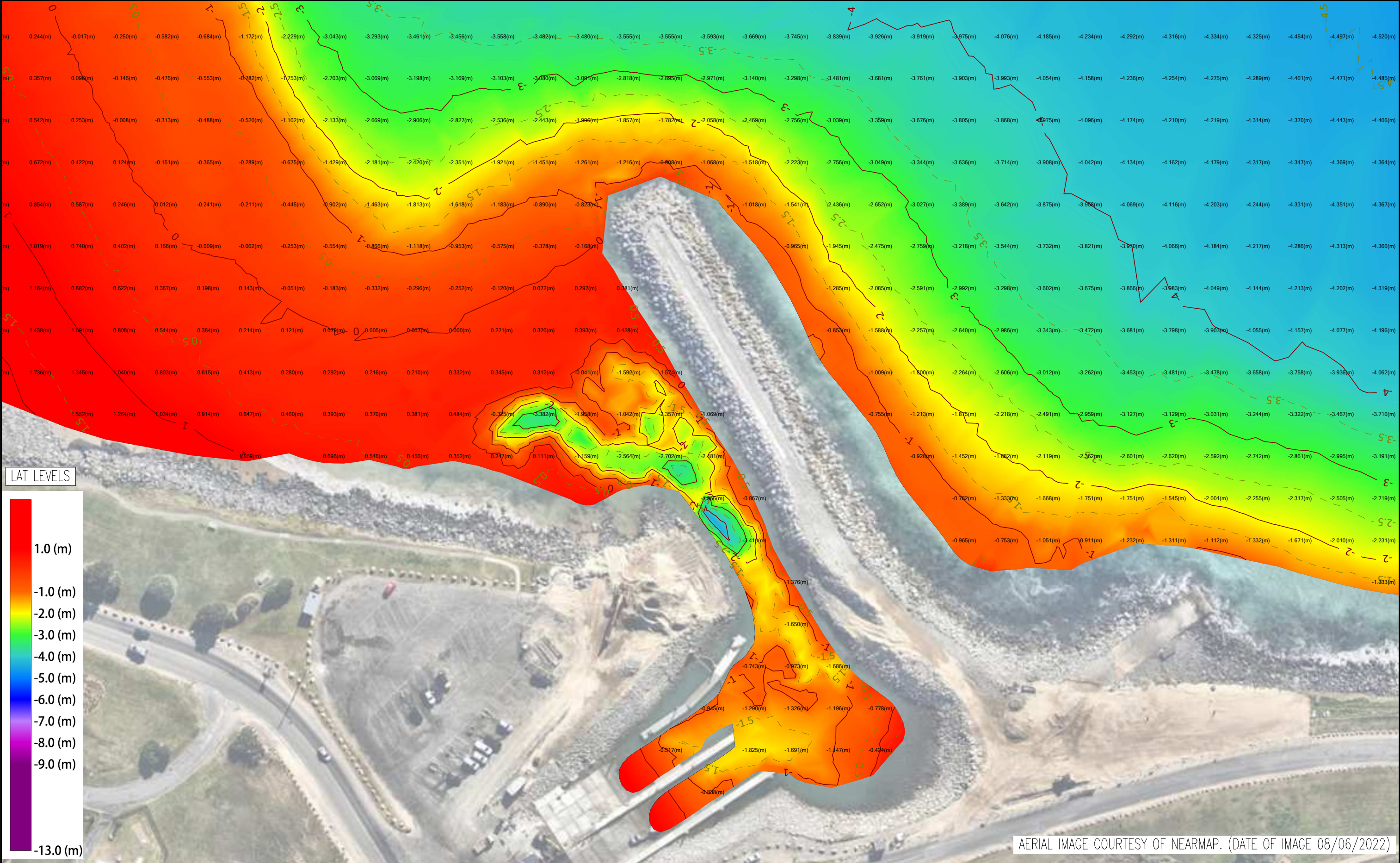
deposition area

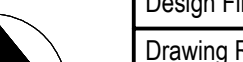


Legend

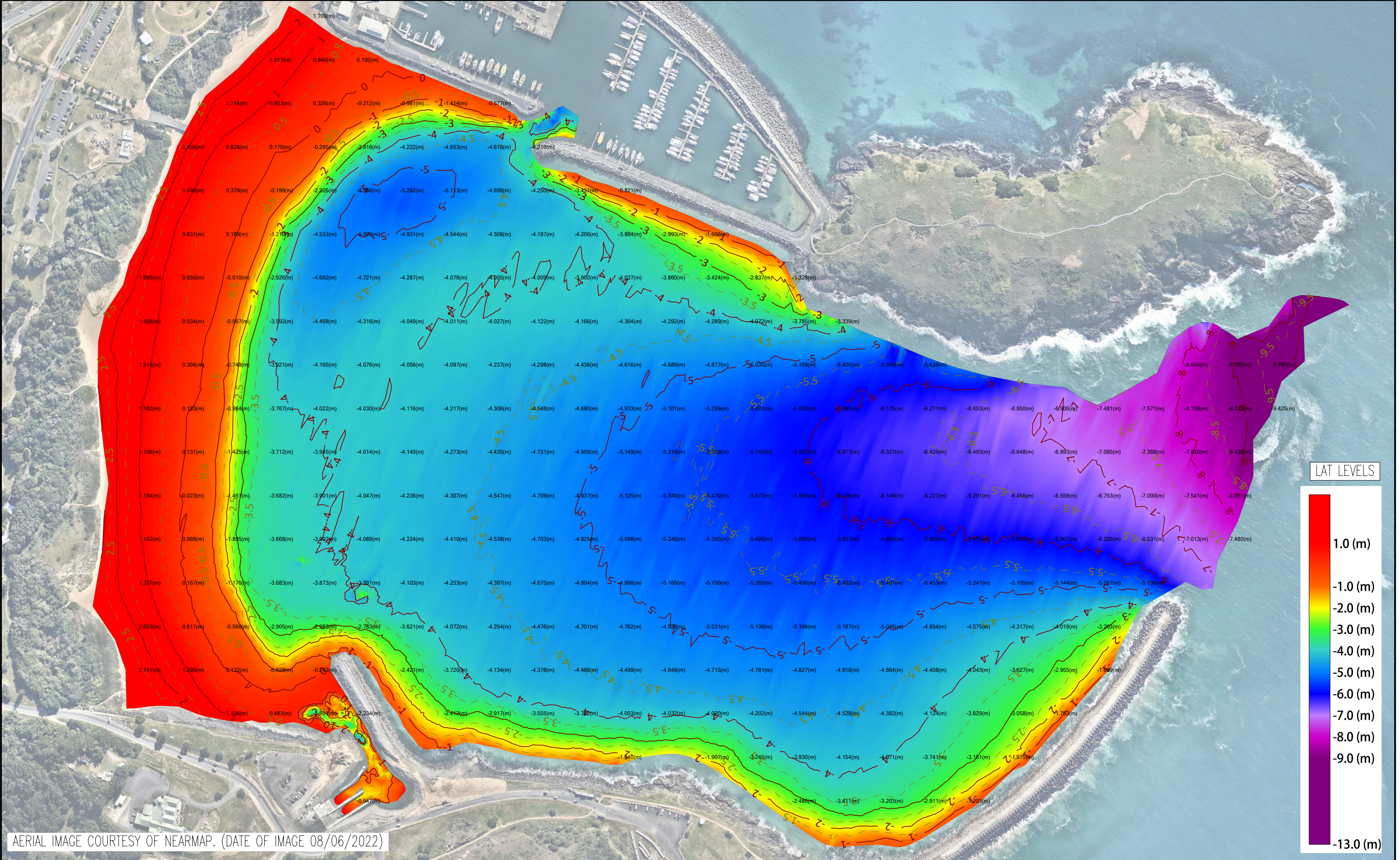
Feature



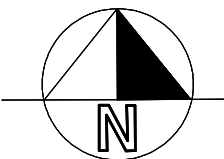

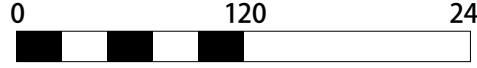
Appendix B: Hydrographic Survey (October 2022)



Client: MGN CIVIL PTY LTD	Level Datum	LAT	Azimuth	Date	27/10/2022		Design File:	SHEET 1 OF 2	 NORTH COAST SURVEYS <small>Web: northcoastsurveys.com.au Email: office@northcoastsurveys.com.au Phone: (02) 66963758</small>	
	Origin:		Coord System	MGA56 (1994)	Job No*		21134	Drawing Ref No:		
Title: HYDROGRAPHIC SURVEY PLAN COFFS HARBOUR BOAT RAMP (LAT)	NETWORK RTK		Origin:		Surveyed By		PH	Scale: 1:1000		
			NETWORK RTK		Checked By		SB			



AERIAL IMAGE COURTESY OF NEARMAP. (DATE OF IMAGE 08/06/2022)

Client: MGN CIVIL PTY LTD	Level Datum	LAT	Azimuth	Date	27/10/2022		Design File:	SHEET 2 OF 2	 NORTH COAST SURVEYS <small>Web: northcoastsurveys.com.au Email: office@northcoastsurveys.com.au Phone: (02) 66963758</small>
	Origin:		Coord System	MGA56 (1994)	Job No*	21134	Drawing Ref No:		
	NETWORK RTK		Origin:	NETWORK RTK	Surveyed By	PH	Scale:	1:4000	
Title: HYDROGRAPHIC SURVEY PLAN COFFS OUTER HARBOUR (LAT)				Checked By	SB				

Appendix C: Procedure for Aboriginal Cultural Heritage Consultation and Investigation

09 December 2022

Project Manager Lester Piggot
Organisational Unit Environment 5
Department Safety Environment & Regulation
Agency Transport For NSW

Dear Lester,

Preliminary assessment results for “Coffs Harbour Bot Ramp Dredging and Beach Nourishment” based on Stage 1 of the *Procedure for Aboriginal Cultural Heritage Consultation and Investigation* (the procedure).

The project, as described in the Stage 1 assessment, was assessed as being unlikely to have an impact on Aboriginal cultural heritage.

The assessment is based on the following due diligence considerations:

- The project is unlikely to harm known Aboriginal objects or places.
- The AHIMS search did indicate moderate to high concentrations of Aboriginal objects or places in the study area.
- The study area does not contain landscape features that indicate the presence of Aboriginal objects, based on the Heritage NSW’s ***Due diligence Code of Practice for the Protection of Aboriginal objects in NSW*** and the Transport for NSW’s procedure.
- The cultural heritage potential of the study area appears to be reduced due to past disturbance.
- There is an absence of sandstone rock outcrops likely to contain Aboriginal art.

Your project may proceed in accordance with the environmental impact assessment process, as relevant, and all other relevant approvals.

If the scope of your project changes, you must contact me and your regional environmental staff to reassess any potential impacts on Aboriginal cultural heritage.

If any potential Aboriginal objects (including skeletal remains) are discovered during the project, all works in the vicinity of the find must cease. Follow the steps outlined in the Transport for NSW’s ***Unexpected Archaeological Finds Procedure***.

For further assistance in this matter do not hesitate to contact me.

Yours sincerely,



Malcolm Saunderson
Aboriginal Cultural Heritage Officer – Region North.

Appendix D: Protected Matters Search Tool



Australian Government

Department of Climate Change, Energy,
the Environment and Water

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: 04-Nov-2022

[Summary](#)

[Details](#)

[Matters of NES](#)

[Other Matters Protected by the EPBC Act](#)

[Extra Information](#)

[Caveat](#)

[Acknowledgements](#)

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:	77
Listed Migratory Species:	56

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:	83
Whales and Other Cetaceans:	12
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:	3
Key Ecological Features (Marine):	None
Biologically Important Areas:	3
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 may occur within area
Coastal Swamp Sclerophyll Forest of New South Wales and South East Queensland	Endangered	Community may 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 known to occur within area
Botaurus poiciloptilus Australasian Bittern [1001]	Endangered	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

Scientific Name	Threatened Category	Presence Text
Calidris ferruginea Curlew Sandpiper [856]	Critically Endangered	Species or species habitat may occur within area
Calyptorhynchus lathami lathami South-eastern Glossy Black-Cockatoo [67036]	Vulnerable	Species or species habitat known to occur within area
Charadrius leschenaultii Greater Sand Plover, Large Sand Plover [877]	Vulnerable	Species or species habitat likely to occur within area
Cyclopsitta diophthalma coxeni Coxen's Fig-Parrot [59714]	Endangered	Species or species habitat may occur within area
Diomedea antipodensis Antipodean Albatross [64458]	Vulnerable	Species or species habitat likely to occur within area
Diomedea antipodensis gibsoni Gibson's Albatross [82270]	Vulnerable	Species or species habitat likely to occur within area
Diomedea epomophora Southern Royal Albatross [89221]	Vulnerable	Species or species habitat likely to occur within area
Diomedea exulans Wandering Albatross [89223]	Vulnerable	Species or species habitat 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 may occur within area
Hirundapus caudacutus White-throated Needletail [682]	Vulnerable	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 known to 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
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

Scientific Name	Threatened Category	Presence Text
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	Species or species habitat likely to occur within area
Thalassarche steadi White-capped Albatross [64462]	Vulnerable	Species or species habitat may occur within area
FISH		
Epinephelus daemeli Black Rockcod, Black Cod, Saddled Rockcod [68449]	Vulnerable	Species or species habitat likely to occur within area
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

Scientific Name	Threatened Category	Presence Text
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 may occur within area
Mixophyes iteratus Giant Barred Frog, Southern Barred Frog [1944]	Vulnerable	Species or species habitat likely to 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 known 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
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

Scientific Name	Threatened Category	Presence Text
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 known 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 known to occur within area
Arthraxon hispidus		
Hairy-joint Grass [9338]	Vulnerable	Species or species habitat likely to occur within area
Cryptostylis hunteriana		
Leafless Tongue-orchid [19533]	Vulnerable	Species or species habitat may occur within area
Endiandra hayesii		
Rusty Rose Walnut, Velvet Laurel [13866]	Vulnerable	Species or species habitat may occur within area
Leichhardtia longiloba listed as Marsdenia longiloba		
Clear Milkvine [91911]	Vulnerable	Species or species habitat likely to 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

Scientific Name	Threatened Category	Presence Text
Macadamia tetraphylla Rough-shelled Bush Nut, Macadamia Nut, Rough-shelled Macadamia, Rough-leaved Queensland Nut [6581]	Vulnerable	Species or species habitat likely to 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 known to 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 likely to occur within area
Samadera sp. Moonee Creek (J.King s.n. Nov. 1949) [86885]	Endangered	Species or species habitat may occur within area
Sarcochilus fitzgeraldii Ravine Orchid [19131]	Vulnerable	Species or species habitat may occur within area
Thesium australe Austral Toadflax, Toadflax [15202]	Vulnerable	Species or species habitat known to occur within area
Vincetoxicum woollsii listed as Tylophora woollsii [40080]	Endangered	Species or species habitat likely to occur within area
Zieria prostrata Headland Zieria [56782]	Endangered	Species or species habitat may occur within area
REPTILE		
Caretta caretta Loggerhead Turtle [1763]	Endangered	Breeding likely to occur within area

Scientific Name	Threatened Category	Presence Text
Chelonia mydas Green Turtle [1765]	Vulnerable	Breeding likely to occur within area
Dermochelys coriacea Leatherback Turtle, Leathery Turtle, Luth [1768]	Endangered	Breeding likely to occur within area
Eretmochelys imbricata Hawksbill Turtle [1766]	Vulnerable	Breeding likely 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		
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

Scientific Name	Threatened Category	Presence Text
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	Species or species habitat likely to occur within area
Diomedea epomophora Southern Royal Albatross [89221]	Vulnerable	Species or species habitat likely to occur within area
Diomedea exulans Wandering Albatross [89223]	Vulnerable	Species or species habitat 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
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

Scientific Name	Threatened Category	Presence Text
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	Species or species habitat likely to occur within area
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

Scientific Name	Threatened Category	Presence Text
Carcharodon carcharias White Shark, Great White Shark [64470]	Vulnerable	Species or species habitat known to occur within area
Caretta caretta Loggerhead Turtle [1763]	Endangered	Breeding likely to occur within area
Chelonia mydas Green Turtle [1765]	Vulnerable	Breeding likely to occur within area
Dermochelys coriacea Leatherback Turtle, Leathery Turtle, Luth [1768]	Endangered	Breeding likely to occur within area
Dugong dugon Dugong [28]		Species or species habitat may occur within area
Eretmochelys imbricata Hawksbill Turtle [1766]	Vulnerable	Breeding likely to occur within area
Eubalaena australis as Balaena glacialis australis Southern Right Whale [40]	Endangered	Species or species habitat likely to occur within area
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 known to 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

Scientific Name	Threatened Category	Presence Text
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
Sousa sahalensis as Sousa chinensis Australian Humpback Dolphin [87942]		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
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 may occur within area
Calidris acuminata Sharp-tailed Sandpiper [874]		Species or species habitat may occur within area

Scientific Name	Threatened Category	Presence Text
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 may 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
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
Pandion haliaetus Osprey [952]		Breeding known to occur within area
Tringa nebularia Common Greenshank, Greenshank [832]		Species or species habitat may 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 may occur within area

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 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
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]	Endangered	Species or species habitat may occur within area
Calidris canutus Red Knot, Knot [855]		Species or species habitat known to occur within area overfly marine area
Calidris ferruginea Curlew Sandpiper [856]		Species or species habitat may occur within area overfly marine area
Calidris melanotos Pectoral Sandpiper [858]	Critically Endangered	Species or species habitat may occur within area overfly marine area
Calonectris leucomelas Streaked Shearwater [1077]		Species or species habitat may occur within area

Scientific Name	Threatened Category	Presence Text
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	Species or species habitat likely to occur within area
Diomedea antipodensis gibsoni as Diomedea gibsoni Gibson's Albatross [82270]	Vulnerable	Species or species habitat likely to occur within area
Diomedea epomophora Southern Royal Albatross [89221]	Vulnerable	Species or species habitat likely to occur within area
Diomedea exulans Wandering Albatross [89223]	Vulnerable	Species or species habitat 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
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
Limosa lapponica Bar-tailed Godwit [844]		Species or species habitat known 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
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
Pachyptila turtur Fairy Prion [1066]		Species or species habitat known 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

Scientific Name	Threatened Category	Presence Text
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
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

Scientific Name	Threatened Category	Presence Text
Thalassarche salvini Salvin's Albatross [64463]	Vulnerable	Species or species habitat 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 may occur within area overfly marine area
Fish		
Acentronura tentaculata Shortpouch Pygmy Pipehorse [66187]		Species or species habitat may occur within area
Campichthys tryoni Tryon's Pipefish [66193]		Species or species habitat may occur within area
Corythoichthys amplexus Fijian Banded Pipefish, Brown-banded Pipefish [66199]		Species or species habitat may occur within area
Corythoichthys ocellatus Orange-spotted Pipefish, Ocellated Pipefish [66203]		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
Halicampus grayi Mud Pipefish, Gray's Pipefish [66221]		Species or species habitat may occur within area
Hippichthys cyanospilos Blue-speckled Pipefish, Blue-spotted Pipefish [66228]		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 kelloggi Kellogg's Seahorse, Great Seahorse [66723]		Species or species habitat may occur within area
Hippocampus kuda Spotted Seahorse, Yellow Seahorse [66237]		Species or species habitat may occur within area
Hippocampus planifrons Flat-face Seahorse [66238]		Species or species habitat may occur within area
Hippocampus trimaculatus Three-spot Seahorse, Low-crowned Seahorse, Flat-faced Seahorse [66720]		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
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
Micrognathus andersonii Anderson's Pipefish, Shortnose Pipefish [66253]		Species or species habitat may occur within area
Micrognathus brevirostris thortail Pipefish, Thorn-tailed Pipefish [66254]		Species or species habitat may occur within area

Scientific Name	Threatened Category	Presence Text
Microphis manadensis Manado Pipefish, Manado River Pipefish [66258]		Species or species habitat may occur within area
Solegnathus dunckeri Duncker's Pipehorse [66271]		Species or species habitat may occur within area
Solegnathus hardwickii Pallid Pipehorse, Hardwick's Pipehorse [66272]		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
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

Scientific Name	Threatened Category	Presence Text
Dugong dugon Dugong [28]		Species or species habitat may occur within area
Reptile		
Caretta caretta Loggerhead Turtle [1763]	Endangered	Breeding likely to occur within area
Chelonia mydas Green Turtle [1765]	Vulnerable	Breeding likely to occur within area
Dermochelys coriacea Leatherback Turtle, Leathery Turtle, Luth [1768]	Endangered	Breeding likely to occur within area
Eretmochelys imbricata Hawksbill Turtle [1766]	Vulnerable	Breeding likely to occur within area
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

Current Scientific Name	Status	Type of Presence
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
Sousa sahalensis as Sousa chinensis Australian Humpback Dolphin [87942]		Species or species habitat may occur within area
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	
Solitary Islands	Marine Park	NSW	
Regional Forest Agreements			[Resource Information]
Note that all areas with completed RFAs have been included.			
RFA Name		State	

RFA Name	State
North East NSW RFA	New South Wales

EPBC Act Referrals [Resource Information]			
Title of referral	Reference	Referral Outcome	Assessment Status
Controlled action			
Clarence Valley and Coffs Harbour Regional Water Supply Project	2005/2191	Controlled Action	Post-Approval
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
Sharks		
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.

[© Commonwealth of Australia](#)

Department of Climate Change, Energy, the Environment and Water

GPO Box 3090

Canberra ACT 2601 Australia

+61 2 6274 1111

Appendix E: Construction Noise Estimator Tool

Distanced Based Assessment (Construction Scenario)

Steps for Screening Assessment:

1. Schedule noisy works to occur in standard hours where possible or before 11pm and implement Standard Measures.
2. Select the representative noise area category. The worksheet titled 'Representative Noise Environ.' provides a number of examples to help select the noise area category.
3. Select the scenario. If not found in drop-down list, refer to 'Source List' and select a representative scenario with similar plant combination.
4. Is there line of sight to receiver? Select the appropriate scenario from the drop down list.

Identify and implement standard mitigation measures where feasible and reasonable. Include any shielding implemented as part of the standard mitigation measures by changing the selection in the 'Is there line of sight to receiver' drop-down list. Solid barrier can be in the form of road cutting, solid construction hoarding, acoustic curtain, timber lapped and capped fence, shipping container, site office, etc. Please note that vegetation and trees are not considered to be a form of solid barrier and any gaps would compromise the acoustic integrity of the solid barrier.

6. Determine if there are any receivers (both residential and non-residential receivers) within the affected distance for each relevant time period. Consider background noise measurements to check assumption in Step #2 if:
 - (a) there are many affected receivers and the impact duration at any one receiver is more than 3 weeks; or
 - (b) there are a few affected receivers and the impact duration at any one receiver is more than 6 weeks.

Note that consideration need to be given to the construction staging plan when determining impact duration.

7. Identify if there are any receivers within the additional mitigation measures distances and identify feasible and reasonable measures at each receiver

9. Where night works are involved, identify sleep disturbance affected distance.

9. Document the outcomes of these steps.

(Note that suitable noise management levels for other noise-sensitive businesses not identified in the Construction and Maintenance Noise Estimator should be investigated on a project-by-project basis. Please contact a Roads and Maritime noise specialist for more information)

Abbreviation	Measure
N	Notification
SN	Specific notifications
PC	Phone calls
IB	Individual briefings
RO	Respite offer
R1	Respite period 1
R2	Respite period 2
DR	Duration respite
AA	Alternative accommodation
V	Verification

Note that spot check verification of noise levels and individual briefings are not required for projects with less than 3 weeks impact duration

Please pick from drop-down list in orange cells

Noise area category		R2
RBL or LA90 Background level (dB(A))	Day	45
	Evening	40
	Night	35
LAeq(15minute) Noise Management Level (dB(A))	Day	55
	Day (OOHW)	50
	Evening	45
	Night	40
Scenario		Bulk earthworks
Is there line of sight to receiver?		Yes

Residential receiver			LAeq(15minute) noise level above background (LA90)												LAeq(15minute) 75 dB(A) or greater (Highly affected)			Sleep disturbance LAmax 65 dB(A)
			5 to 10 dB(A) Noticeable			10 to 20 dB(A) Clearly audible			20 to 30 dB(A) Moderately intrusive			> 30 dB(A) Highly intrusive						
			Affected distance (m)			Measures	Within distance (m)	Mitigation level (dB(A))	Measures	Within distance (m)	Mitigation level (dB(A))	Measures	Within distance (m)	Mitigation level (dB(A))	Measures	Within distance (m)	Mitigation level (dB(A))	Affected distance (m)
Undeveloped green fields, rural areas with isolated dwellings	Day	335							N	155	65	N, PC, RO	60	75	N, PC, RO	60	75	230
	Day (OOHW)	485				N, R1, DR	335	55	N, R1, DR	155	65	N, R1, DR, PC, SN	60	75	N, PC, RO	60	75	
	Evening	700				N, R1, DR	485	50	N, R1, DR	230	60	N, R1, DR, PC, SN	105	70	N, PC, RO	60	75	
	Night	1010	N	1010	40	N, R2, DR	700	45	N, PC, SN, R2, DR	335	55	AA, N, PC, SN, R2, DR	155	65	N, PC, RO	60	75	
	Highly Affected	60													N, PC, RO	60	75	
Developed settlements (urban and suburban)	Day	425							N	180	65	N, PC, RO	70	75	N, PC, RO	70	75	280
	Day (OOHW)	635				N, R1, DR	425	55	N, R1, DR	180	65	N, R1, DR, PC, SN	70	75	N, PC, RO	60	75	
	Evening	935				N, R1, DR	635	50	N, R1, DR	280	60	N, R1, DR, PC, SN	115	70	N, PC, RO	70	75	
	Night	1355	N	1355	40	N, R2, DR	935	45	N, PC, SN, R2, DR	425	55	AA, N, PC, SN, R2, DR	180	65	N, PC, RO	70	75	
	Highly Affected	70													N, PC, RO	70	75	
Propagation across a valley / over water	Day	575							N	230	65	N, PC, RO	70	75	N, PC, RO	70	75	370
	Day (OOHW)	880				N, R1, DR	575	55	N, R1, DR	230	65	N, R1, DR, PC, SN	70	75	N, PC, RO	70	75	
	Evening	1310				N, R1, DR	880	50	N, R1, DR	370	60	N, R1, DR, PC, SN	140	70	N, PC, RO	70	75	
	Night	1900	N	1900	40	N, R2, DR	1310	45	N, PC, SN, R2, DR	575	55	AA, N, PC, SN, R2, DR	230	65	N, PC, RO	70	75	
	Highly Affected	70													N, PC, RO	70	75	

Non-residential receiver Undeveloped green fields, rural areas with isolated dwellings		LAeq(15minute) noise level above NML											LAeq(15minute) 75 dB(A) or greater (Highly affected)		
		Standard hours			<10 dB(A)			10 to 20 dB(A)							
	Period	NML	Affected distance.(m)	Measure	Within distance (m)	Mitigation level (dB(A))	Measure	Within distance (m)	Mitigation level (dB(A))	Measure	Within distance (m)	Mitigation level (dB(A))			
Classroom at schools and other educational institutions	Day	55	335					N	155	65	N, PC, RO	60	75		
Hospital wards and operating theatres	Day	65	155								N, PC, RO	60	75		
Place of worship	Day	55	335					N	155	65	N, PC, RO	60	75		
Active recreation	Day	65	155								N, PC, RO	60	75		
Passive recreation	Day	60	230					N	105	70	N, PC, RO	60	75		
Industrial premise	Day	75	60								N, PC, RO	60	75		
Offices, retail outlets	Day	70	105								N, PC, RO	60	75		

				LAeq(15minute) noise level above NML											
OOHW				< 5 dB(A)			5 to 15 dB(A)			15 to 25 dB(A)			> 25 dB(A)		
	Period	NML	Affected distance (m)	Measure	Within distance (m)	Mitigation level (dB(A))	Measure	Within distance (m)	Mitigation level (dB(A))	Measure	Within distance (m)	Mitigation level (dB(A))	Measure	Within distance (m)	Mitigation level (dB(A))
Hospital wards and operating theatres	Evening	65	155	N	155	65	N, R1, DR	105	70	N, R1, DR	34	80	N, R1, DR, PC, SN	11	90
	Night	65	155				N, R2, NR	105	70	N, PC, SN, R2, DR	34	80	AA, N, PC, SN, R2, DR	11	90
Place of worship	Evening	55	335	N	335	55	N, R1, DR	230	60	N, R1, DR	105	70	N, R1, DR, PC, SN	34	80
	Night	55	335				N, R2, NR	230	60	N, PC, SN, R2, DR	105	70	AA, N, PC, SN, R2, DR	34	80
Active recreation	Evening	65	155	N	60	75	N, R1, DR	105	70	N, R1, DR	34	80	N, R1, DR, PC, SN	11	90
Passive recreation	Evening	60	230				N, R1, DR	155	65	N, R1, DR	60	75	N, R1, DR, PC, SN	19	85
Industrial premise	Evening	75	60				N, R1, DR	34	80	N, R1, DR	11	90	N, R1, DR, PC, SN	3	100
	Night	75	60				N, R2, NR	34	80	N, PC, SN, R2, DR	11	90	AA, N, PC, SN, R2, DR	3	100
Offices, retail outlets	Evening	70	105				N, R1, DR	60	75	N, R1, DR	19	85	N, R1, DR, PC, SN	6	95
	Night	70	105	N, R2, NR	60	75	N, PC, SN, R2, DR	19	85	AA, N, PC, SN, R2, DR	6	95			

Non-residential receiver		LAeq(15minute) noise level above NML				LAeq(15minute) 75 dB(A) or greater (Highly affected)
Developed settlements (urban and suburban)		Standard hours		10 to 20 dB(A)		

	Period	NML	Affected distance (m)	Measure	Within distance (m)	Mitigation level (dB(A))	Measure	Within distance (m)	Mitigation level (dB(A))	Measure	Within distance (m)	Mitigation level (dB(A))
Classroom at schools and other educational institutions	Day	55	425				N	180	65	N, PC, RO	70	75
Hospital wards and operating theatres	Day	65	180							N, PC, RO	70	75
Place of worship	Day	55	425				N	180	65	N, PC, RO	70	75
Active recreation	Day	65	180							N, PC, RO	70	75
Passive recreation	Day	60	280				N	115	70	N, PC, RO	70	75
Industrial premise	Day	75	70							N, PC, RO	70	75
Offices, retail outlets	Day	70	115							N, PC, RO	70	75

		OOHW			L _{Aeq(15minute)} noise level above NML											
					< 5 dB(A)			5 to 15 dB(A)			15 to 25 dB(A)			> 25 dB(A)		
		Period	NML	Affected distance (m)	Measure	Within distance (m)	Mitigation level (dB(A))	Measure	Within distance (m)	Mitigation level (dB(A))	Measure	Within distance (m)	Mitigation level (dB(A))	Measure	Within distance (m)	Mitigation level (dB(A))
Hospital wards and operating theatres	Evening	65	180				N, R1, DR	115	70		N, R1, DR	39	80	N, R1, DR, PC, SN	12	90
	Night	65	180	N	180	65	N, R2, NR	115	70	N, PC, SN, R2, DR	39	80	AA, N, PC, SN, R2, DR	12	90	
Place of worship	Evening	55	425				N, R1, DR	280	60		N, R1, DR	115	70	N, R1, DR, PC, SN	39	80
	Night	55	425	N	425	55	N, R2, NR	280	60	N, PC, SN, R2, DR	115	70	AA, N, PC, SN, R2, DR	39	80	
Active recreation	Evening	65	180				N, R1, DR	115	70		N, R1, DR	39	80	N, R1, DR, PC, SN	12	90
	Passive recreation	60	280				N, R1, DR	180	65		N, R1, DR	70	75	N, R1, DR, PC, SN	22	85
Industrial premise	Evening	75	70				N, R1, DR	39	80		N, R1, DR	12	90	N, R1, DR, PC, SN	4	100
	Night	75	70	N	70	75	N, R2, NR	39	80	N, PC, SN, R2, DR	12	90	AA, N, PC, SN, R2, DR	4	100	
Offices, retail outlets	Evening	70	115				N, R1, DR	70	75		N, R1, DR	22	85	N, R1, DR, PC, SN	7	95
	Night	70	115	N	115	70	N, R2, NR	70	75	N, PC, SN, R2, DR	22	85	AA, N, PC, SN, R2, DR	7	95	

Non-residential receiver Propagation across a valley / over water			L _{Aeq(15minute)} noise level above NML											
Standard hours			<10 dB(A)			10 to 20 dB(A)			L _{Aeq(15minute)} 75 dB(A) or greater (Highly affected)					
Period	NML	Affected distance (m)	Measure	Within distance (m)	Mitigation level (dB(A))	Measure	Within distance (m)	Mitigation level (dB(A))	Measure	Within distance (m)	Mitigation level (dB(A))			
Classroom at schools and other educational institutions	Day	55	575			N	180	65	N, PC, RO	70	75			
Hospital wards and operating theatres	Day	65	230						N, PC, RO	70	75			
Place of worship	Day	55	575			N	180	65	N, PC, RO	70	75			
Active recreation	Day	65	230						N, PC, RO	70	75			
Passive recreation	Day	60	370			N	115	70	N, PC, RO	70	75			
Industrial premise	Day	75	70						N, PC, RO	70	75			
Offices, retail outlets	Day	70	140						N, PC, RO	70	75			

			L _{Aeq(15minute)} noise level above NML											
OOHW			< 5 dB(A)			5 to 15 dB(A)			15 to 25 dB(A)			> 25 dB(A)		
Period	NML	Affected distance (m)	Measure	Within distance (m)	Mitigation level (dB(A))	Measure	Within distance (m)	Mitigation level (dB(A))	Measure	Within distance (m)	Mitigation level (dB(A))	Measure	Within distance (m)	Mitigation level (dB(A))
Hospital wards and operating theatres	Evening	65	230			N, R1, DR	140	70	N, R1, DR	39	80	N, R1, DR, PC, SN	12	90
	Night	65	230	N	230	65	N, R2, NR	140	70	N, PC, SN, R2, DR	39	80	AA, N, PC, SN, R2, DR	12
Place of worship	Evening	55	575			N, R1, DR	370	60	N, R1, DR	115	70	N, R1, DR, PC, SN	39	80
	Night	55	575	N	575	55	N, R2, NR	370	60	N, PC, SN, R2, DR	115	70	AA, N, PC, SN, R2, DR	39
Active recreation	Evening	65	230			N, R1, DR	140	70	N, R1, DR	39	80	N, R1, DR, PC, SN	12	90
Passive recreation	Evening	60	370			N, R1, DR	230	65	N, R1, DR	70	75	N, R1, DR, PC, SN	22	85
Industrial premise	Evening	75	70			N, R1, DR	40	80	N, R1, DR	12	90	N, R1, DR, PC, SN	4	100
	Night	75	70	N	70	75	N, R2, NR	40	80	N, PC, SN, R2, DR	12	90	AA, N, PC, SN, R2, DR	4
Offices, retail outlets	Evening	70	140			N, R1, DR	70	75	N, R1, DR	22	85	N, R1, DR, PC, SN	7	95
	Night	70	140	N	140	70	N, R2, NR	70	75	N, PC, SN, R2, DR	22	85	AA, N, PC, SN, R2, DR	7

