Coffs Harbour Marine Centre Upgrade

Review of environmental factors

Transport for New South Wales | December 2020

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Transport for New South Wales | December 2020

Prepared by Advisian Pty Ltd and Transport for New South Wales (TfNSW)

Advisian
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Document controls

Approval and authorisation

Title	Coffs Harbour Marine Centre Upgrade Minor Works Review of Environmental Factors
Accepted on behalf of NSW Roads and Maritime Services by:	Andrew Mogg Director, Maritime Infrastructure Delivery Office Maritime Greater Sydney Transport for NSW
Signed:	
Dated:	17 December 2020

Document status

Document status	Date	Prepared by	Reviewed by
Draft 1 (RevA)	23 Oct 2020	Katie Newton (Advisian Pty Ltd)	Harry Houridis (Advisian Pty Ltd) Greg Collins (TfNSW)
Draft 2 (RevB)	19 Nov 2020	Katie Newton (Advisian Pty Ltd)	Greg Collins (TfNSW)
Final	17 Dec 2020	Katie Newton (Advisian Pty Ltd)	NA

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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 project can proceed. For the purposes of this work Transport for New South Wales (TfNSW) 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 clause 228 of the Environmental Planning and Assessment Regulation 2000, the factors in *Is an EIS Required? Best Practice Guidelines for Part 5 of the Environmental Planning and Assessment Act 1979* (Is an EIS required? guidelines) (DUAP, 1995/1996), *Roads and Related Facilities EIS Guideline* (DUAP, 1996) the *Biodiversity Conservation Act 2016 (BC Act)*, the *Fisheries Management Act 1994* (FM Act) and the Australian Government's *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act).

In doing so the REF helps to fulfil the requirements of section 5.5 of the EP&A Act including that TfNSW 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 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

Location details	
Title	Coffs Harbour, Inner Harbour
File number	
Road name and number	Adjacent to Marina Drive
Local government area:	Coffs Harbour Local Government Area
Roads and Maritime Services region:	Northern Region

The proposal is located in the town of Coffs Harbour, located on the mid-north coast of New South Wales (NSW). It lies within the Coffs Harbour Local Government Area (LGA). The proposed works would occur over marine (intertidal and subtidal) and adjacent terrestrial foreshore lands within the Inner Harbour and adjacent to the existing Government offices, berths and the former Coffs Harbour Slipway site. These lie approximately 200 m west of the Coffs Harbour International Marina (Figure 2-1).

Images of the existing Government berths and location of proposed dredging are provided in Figure 2-2.

Surrounding land uses and local businesses include:

- Government offices and associated boat berthing facilities (e.g. NSW Marine Parks, NSW Fisheries, Water Police, Marine Rescue)
- Coffs Harbour Yacht Club (CHYC)
- Coffs Harbour International Marina
- Coffs Harbour Fisherman's Co-operative
- Commercial and recreational boat berthing facilities
- Cafes / restaurants
- Public parking facilities
- Amenities block
- Public open space, walking tracks, parkland and beaches (i.e. Jetty Beach and Park Beach)
- Muttonbird Island Nature Reserve
- Coffs Harbour Jetty

The location of these land use areas and businesses relative to the proposed works area are shown in Figure 2-3.

Figure 2-1 General location of the approximate proposed works area (Source: Nearmap 2020).

Figure 2-2 Images of existing Government berths and the proposed dredge area (Images taken July 2020).

Figure 2-3 Location of surrounding land use and local businesses relative to approximate proposed works area (Source: Nearmap 2020).

2.1.2 Description of proposed work

Roads and Maritime proposes to replace the existing pontoon moorings comprising the Marine Centre with a larger facility that would cater for deeper draft vessels and additional vessels. The Marine Centre concept design and dredge plan for the proposal are provided in **Appendix A**.

Key features of the proposal include:

- Removal of ~350 m^3 of accumulated sediments by dredging (includes allowance for over dredging);
- Demolition and disposal of the existing pontoon berths including piles;
- Demolition and disposal of two fixed 'catwalk' jetties including associated piles; and
- Design, fabrication and installation of new pontoons, gangway and services.

The proposal is anticipated to involve the following work methodology:

1. Detailed design of new Marine Centre pontoons, gangway and services;
2. Site establishment;
3. Removal of accumulated sediments by dredging;
4. Dewatering of sediments on site (i.e. on the existing hardstand);
5. Re-handling and disposal of materials off-site (the disposal location is to be determined following testing after dewatering to confirm that sediments can be treated by TfNSW as Excavated Natural Material (ENM) and used as beneficial reuse in a suitable roadside corridor. If this is not the case then disposal at a licenced waste facility will be required);
6. Demolition and disposal of the existing pontoon berths including piles;
7. Demolition and disposal of two fixed 'catwalk' jetties including associated piles;
8. Design, fabrication and installation of new pontoons, gangway and services; and

9. Site disestablishment.

Anticipated construction plant and equipment would likely include:

- Marine based piling rig with rock augering equipment;
- Work boat;
- 'Franna' crane;
- Excavator land based;
- Excavator on barge;
- Hopper barge;
- Workboat / tug;
- Front end loader (transient);
- Dump truck (transient);
- Silt curtain and pollution control equipment; and
- Miscellaneous tools (welding and cutting steelwork, timber and concrete saw, drill / auger).

The materials selected to be used for the proposed works, and estimated volumes, would depend on the detailed design solution. Construction vehicles would enter and exit the site via established roads.

There is no vegetation on the site and therefore, no removal of vegetation (native or otherwise) would be required.

Depending on tenders, one or two contractors would be engaged to undertake the work.

All works would be conducted within the recommended standard hours for construction work, as outlined in the DECCW Interim Construction Noise Guideline (DECCW 2009), as follows:

- Monday to Friday 7am – 6pm
- Saturday 8am – 1pm
- No work on Sunday or public holidays.

2.1.3 Objectives of works

The project objectives are to:

- Address the poor condition of existing moorings;
- Facilitate larger and more vessels;
- Provide temporary berths for visiting and seized vessels;
- Improve existing operational safety; and
- Improve existing environmental safety.

2.1.4 Ancillary facilities

Ancillary facilities		
Will the proposal require the use or installation of a compound site? Yes. The contractor(s) would use the existing boat maintenance facility hardstand which would be vacated during the construction phase. This site (approximately 2,500 m^2 and shown in **Appendix A**) would be used for dewatering of dredged material and for storage of all materials to be incorporated into the works, as well as contractors amenities and office. The compound site would not intrude on any public land or impact on any public parking, accessways or road use.	☑ Yes	☐ No
Will the proposal require the use or installation of a stockpile site? Yes. As described above.	☑ Yes	☐ No
Are any other ancillary facilities required (e.g. temporary plants, parking areas, access tracks)? No, these are not required.	☐ Yes	☑ No

2.1.5 Proposed date of commencement

The contract(s) is expected to be let in November/December 2020.

2.1.6 Estimated length of construction period

The contract(s) is expected to be completed in June 2021.

2.2 Need and options

2.2.1 Options considered

The options considered for the proposal included:

Do Nothing

This option is not preferred as it would mean that the project objectives above would not be met.

Preferred Option

The preferred option for the demolition and reconstruction of the Government Marine Centre Berths has been described in this REF (Section 2.1). The proposed site for the new berths is immediately adjacent to the existing Government berths, Government offices and former slipway site, which is also proposed to be upgraded. As such it is ideally situated for purpose.

The proposed works would be undertaken on land appropriately zoned for working waterfront industries (i.e. IN4 – Working Waterfront under Coffs Harbour Local Environment Plan (LEP) Land Zoning Map Sheet LZN_006D, see Figure 2-4).

Alternative Options

No alternative options have been considered as there are no apparent alternative sites with suitable protection for vessels in the locality.

2.2.2 Justification for the proposal

The proposal is required to:

- Address the deteriorated condition of existing moorings and increasing maintenance costs;
- Meet the demands of additional vessels including larger vessels; and
- Improve operational efficiency and safety of users.

The project would ensure that the existing site can continue to be used into the future to meet the needs of essential front-line services (e.g. Water Police, Marine Parks, NSW DPI Fisheries).

The project has been planned to fit strategically with other current and future development at the site including improvements to the existing boat maintenance facility and a potential fuel/sewage pump out facility (note that these potential future developments are not being assessed under the current REF).

2.3 Statutory and planning framework

2.3.1 State Environmental Planning Policy (Infrastructure) 2007 (ISEPP)

State Environmental Planning Policy (Infrastructure) 2007 (ISEPP) aims to facilitate the effective delivery of infrastructure across the state. Transport for New South Wales (TfNSW) is planning to undertake the proposed activity under the provisions of the Crown Lands Management Act 2016 and ISEPP. Under Division 13, Clause 68(4) of ISEPP, “Development for the purpose of wharf or boating facilities may be carried out by or on behalf of a public authority without consent on any land.” Therefore, the proposed activity is to be carried out as development permitted without consent and is subject to the preparation of an environmental impact assessment under Part 5, Division 5.1 of the Environmental Planning and Assessment Act 1979 (EP&A Act).

Under Part 5 of the EP&A Act, the determining authority, which is responsible for deciding whether to approve or proceed with an ‘activity’ (as defined in Section 110 of the EP&A Act) must examine and consider to the fullest extent possible all matters which are likely to affect the environment if the activity goes ahead (Section 111 of EP&A Act). In addition, Clause 228 of the Environmental Planning and Assessment Regulation 2000 (EPA Regulation) sets out the factors which must be considered concerning the impact of an activity on the environment.

The REF will assist the determining authority’s determination of whether the activity “is likely to significantly affect the environment” (Section 112 of the EP&A Act). If a significant affect is identified an Environmental Impact Statement (EIS) would need to be prepared and considered before approval may be granted. An EIS may not be required subject to the requirements of Section 7.8 of the Biodiversity Conservation Act (BC Act) 2016.

Further, it is noted that a referral to the Commonwealth Department of the Environment and Energy (DoEE), before taking an action that could have a significant impact on a Matter of National Environmental Significance (MNES) protected by the Environment Protection and Biodiversity Conservation Act (EPBC

Act) 1999 may be required. Through the EPBC Act Referral process, the DoEE may require the DOI to prepare an EIS based on the Project having a significant impact on MNES.

2.3.2 Other relevant legislation and environmental planning instruments

Coffs Harbour Local Environmental Plan (2013)

Local Environmental Plans (LEPs) guide planning decisions for local government areas. They do this through zoning and development controls, which provides a framework for the way land can be used. LEPs are the main planning tool to shape the future of communities and also ensure local development is done appropriately.

Coffs Harbour Local Environmental Plan 2013 currently applies to all land in the Coffs Harbour Local Government Area (LGA). Coffs Harbour LEP 2013 (LEP 2013) was made on 27 September 2013 and was prepared in accordance with the Standard Instrument - Principle Local Environmental Plan that applies across NSW. An associated Development Control Plan (DCP) applies to all land that LEP 2013 applies to.

The proposed works would be undertaken on land zoned as *IN4 – Working Waterfront* under Coffs Harbour Local Environment Plan (LEP) Land Zoning Map Sheet LZN_006D (see Figure 2-4).

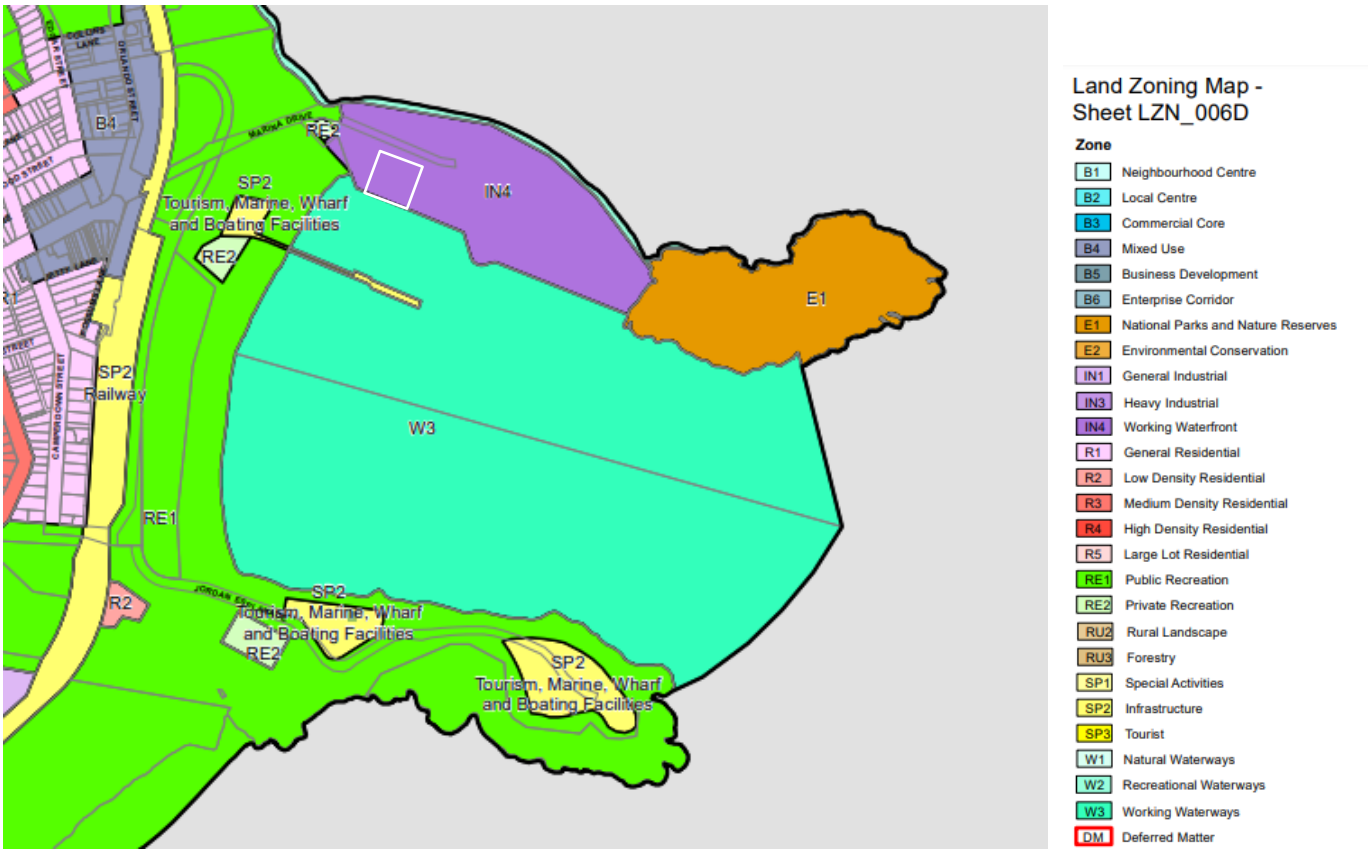

Figure 2-4 Excerpt from Coffs Harbour LEP Land Zoning Map Sheet LZN_006D (proposed works area = red square).

Environment Protection and Biodiversity Conservation Act 1999

The *Environment Protection and Biodiversity Conservation Act* (EPBC Act) 1999 is administered by the Commonwealth Department of Environment and Energy (DoEE). Under the EPBC Act, all actions which are likely to have a significant impact on Matters of National Environmental Significance (MNES) are

referred to the Commonwealth Environment Minister and subjected to a rigorous assessment and approvals process. The EPBC Act 1999 identifies nine MNES:

1. World heritage properties.
2. National heritage places.
3. Ramsar wetlands of international significance.
4. Nationally listed threatened species and ecological communities.
5. Listed migratory species.
6. Commonwealth marine areas.
7. The Great Barrier Reef Marine Park.
8. Nuclear actions.
9. The protection of water sources from coal seam gas development and large coal mining development.

An EPBC Act 1999 Protected Matters Search was undertaken for the proposal (see **Appendix B**). The proposed works will not have any significant impact on any MNES under the EPBC Act 1999 if the proposed safeguards are adopted. In addition, no areas of Critical Habitat listed under the EPBC Act occur in the study area so will not be impacted by the proposal.

Environmental Planning and Assessment Act 1979

The *Environmental Planning and Assessment Act* (EP&A Act) 1979 forms the statutory basis for planning and environmental assessment in NSW. The EP&A Act 1979 ensures that consent authorities duly consider environmental concerns and the potential impacts of a proposed development on threatened species, populations and ecological communities listed under the NSW *Biodiversity Conservation Act* 2016 and the NSW *Fisheries Management Act* (FM Act) 1994. Section 5A (7-part test) of the EP&A Act assesses whether the impact of a proposal on the above groups will be significant.

This assessment is undertaken to determine whether the proposed works will have a significant impact on the environment, threatened species, populations, ecological communities and their habitats. It also assesses the type, nature and severity of potential environmental impacts in accordance to state planning legislation and allows the determining authority to decide whether a significant environmental impact will occur by:

- Identifying all environmental issues relevant to the proposal;
- Assessing the significance of potential adverse environmental issues; and
- Outlining measures to minimise these impacts.

Potential impacts on the environment, threatened species, populations, ecological communities and their habitats have been considered in this REF. No significant impacts on these are expected to occur as a result of the proposal if the proposed safeguards are adopted.

The Environmental Planning and Assessment Regulation 2000

Clause 228 of the *Environmental Planning and Assessment Regulation* (EP&A Regulation) 2000 lists the factors which are to be considered concerning the impact of an activity on the environment as:

1. Any environmental impact on a community.
2. Any transformation of a locality.
3. Any environmental impact on the ecosystems of the locality.
4. Any reduction of the aesthetic, recreational, scientific or other environmental quality or value of a locality.

5. 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.
6. Any impact on the habitat of protected fauna (within the meaning of the *National Parks and Wildlife Act* (NPW Act) 1974).
7. Any endangering of any species of animal, plant or other form of life, whether living on land, in water or in the air.
8. Any long-term effects on the environment.
9. Any degradation of the quality of the environment.
10. Any risk to the safety of the environment.
11. Any reduction in the range of beneficial uses of the environment.
12. Any pollution of the environment.
13. Any environmental problems associated with the disposal of waste.
14. Any increased demand on resources (natural or otherwise) that are, or are likely to become, in short supply.
15. Any cumulative environmental effect with other existing or likely future activities.

These factors have been addressed in Section 4.1 of this report.

Fisheries Management Act 1994

The *Fisheries Management Act* (FM Act) 1994 applies to all state waters. The FM Act 1994 lists threatened species of fish and marine vegetation, endangered populations and ecological communities, critical habitats and key threatening processes. All aquatic vegetation including mangroves, saltmarsh, seagrass and seaweeds are also protected under the FM Act.

The FM Act requires that an assessment of significance (7-part test) be applied to species of fish and marine vegetation (i.e. seagrasses, mangroves and seaweeds), and populations or ecological communities listed under its Schedules that may be affected by a proposed action, development or activity. If a significant impact on a threatened species is likely, a Species Impact Statement (SIS) must be completed and the concurrence of, or consultation with NSW Fisheries is required. When a proposal is likely to harm aquatic vegetation a Part 7 Permit to Harm Marine Vegetation must be obtained.

Aquatic vegetation has been discussed in Section 3.7.1 and threatened species listed under the FM Act in Section 3.7.2 and **Appendix C**. There is the potential for short term minor impacts on marine fauna and some small-scale impacts on small areas of macroalgae growing on artificial structures within the immediate construction area, however, these are not considered significant given their scale and the safeguards which would be adopted for the proposal. No seagrass, saltmarsh or mangroves would be disturbed as they do not occur within the proposed construction area. In summary, the proposal is not expected to have any significant impact on any sensitive marine habitats (i.e. aquatic vegetation or subtidal rocky reefs) or fauna listed under the FM Act. In addition, no areas of Critical Habitat listed under the FM Act occur in the study area so will not be impacted by the proposal.

NSW DPI has advised on 18 November 2020 that a Permit to Harm Marine Vegetation would not be required for the proposal (i.e. for the proposed harm to macroalgae).

Biodiversity Conservation Act 2016

The *Biodiversity Conservation Act* (BC Act) 2016 came into force on 25 August 2017, repealing the *Threatened Species Conservation Act* (TSC Act) 1995. The purpose of the BC Act 2016 is to maintain a healthy, productive and resilient environment for the greatest well-being of the community, now and into the future consistent with the principles of ecologically sustainable development (ESD). Part 7 of the BC Act

2016 contains the biodiversity assessment and approvals provisions for which developments or activities are assessed.

The BC Act outlines the protection of threatened species, communities and critical habitat in NSW. In the aquatic environment seabirds, waders, aquatic retiles, aquatic mammals and insects, endangered aquatic ecological communities and key threatening processes are addressed. Searches for threatened species listed under the BC Act which are known to occur in the study area were made via the BioNet Atlas of NSW Wildlife.

Threatened species listed under the BC Act are addressed in Section 3.7.2 and **Appendix D**. While some temporary, short-term and minor impacts on listed marine fauna that may occur in the study area are possible, the proposed works are not expected to have any long term or significant impact on any threatened fauna or ecological communities listed under the BC Act given the safeguards which would be adopted. In addition, no Areas of Outstanding Biodiversity Value (AOBVs) listed under the BC Act occur in the area so will not be impacted by the proposal.

Protection of the Environment Operations Act 1997

The *Protection of the Environment Operations Act* (POEO Act) 1997 is the main piece of legislation which provides environmental protection. The POEO Act also grants Environmental Protection Licences (EPLs) with conditions and regulates such activities that have the potential to cause environmental harm.

Under Schedule 1 of the POEO Act the following items are scheduled activities which require a EPL:

- Maintenance of vessels 25 metres or longer;
- Maintenance of more than 5 vessels longer than 5 metres (excluding rowing boats, dinghies and other small craft) at any time; or
- Storage of more than 80 vessels (excluding rowing boats, dinghies and other small craft) at any time.

Therefore, the proposed Marine Centre is not considered a Scheduled Activity under the POEO Act, 1997.

National Parks and Wildlife Act 1974

The *National Parks and Wildlife Act* (NP&W Act) 1974 seeks to regulate and protect native flora and fauna in NSW and provides the statutory framework for public conservation reserves administered by the Minister for the Environment. Protected areas, set aside for conservation under the NP&W Act 1974, are managed by the National Parks and Wildlife Service (NPWS). These areas play a critical role in protecting biodiversity as well as natural and cultural heritage. An important component of the State's reserve system are Marine Protected Areas (MPA's). These include many National Parks and Nature Reserves with marine or estuarine components, as well as Aquatic Reserves and Marine Parks managed by the Marine Estate Management Authority.

Protected areas under the NP&W Act include are addressed in Section 3.7.6. The study site is located in close proximity to Mutton Bird Island Nature Reserve and the Solitary Islands Marine Park, however, these protected areas are not located within the proposed construction works area and are not expected to be impacted by the proposed works if all appropriate safeguards are adopted.

Marine Parks Act 1997

The *Marine Parks Act* 1997 sought to establish a comprehensive system of marine parks in NSW. It provides regulations for the management, protection and conservation of marine parks. The location of gazetted marine parks in relation to the proposed works is discussed in 3.7.6. The Solitary Islands Marine Park is located immediately north of Coffs Harbour (but does not include the inner or outer harbour areas). The study site is not located within the boundaries of this Marine Park. The proposed works are not expected to have any impact on the marine park if the safeguards outlined in this REF are adopted.

Coastal Management Act 2016

The *Coastal Management Act* 2016 (CM Act) replaced the *Coastal Protection Act* 1979 and establishes a new strategic framework and objectives for managing coastal issues in NSW. The CM Act defines the coastal zone as comprising four coastal management areas: coastal wetlands and littoral rainforests area; coastal vulnerability area; coastal environment area; and coastal use area.

State Environmental Planning Policy (Coastal Management) 2018 (Coastal Management SEPP) commenced on 3 April 2018. The Coastal Management SEPP consolidated and repealed SEPP No. 14 – Coastal Wetlands, SEPP No. 26 – Littoral Rainforests and SEPP No. 71 – Coastal Protection. The Coastal Management SEPP gives effect to the objectives of the CM Act from a land use planning perspective.

The site is situated within land identified by the Coastal Management SEPP as a coastal environment area and coastal use area. [Note: Interactive mapping available at: ***http://www.planning.nsw.gov.au/Policy-and-Legislation/Coastal-management***]

Under Section 8(2) of the CM Act, the management objectives for the coastal environment area are:

(a) 'to protect and enhance the coastal environmental values and natural processes of coastal waters, estuaries, coastal lakes and coastal lagoons, and enhance natural character, scenic value, biological diversity and ecosystem integrity,

(b) to reduce threats to and improve the resilience of coastal waters, estuaries, coastal lakes and coastal lagoons, including in response to climate change,

(c) to maintain and improve water quality and estuary health,

(d) to support the social and cultural values of coastal waters, estuaries, coastal lakes and coastal lagoons,

(e) to maintain the presence of beaches, dunes and the natural features of foreshores, taking into account the beach system operating at the relevant place,

(f) to maintain and, where practicable, improve public access, amenity and use of beaches, foreshores, headlands and rock platforms.'

Under Section 9(2) of the CM Act, the management objectives for the coastal use area are:

(a) 'to protect and enhance the scenic, social and cultural values of the coast by ensuring that:

(i) the type, bulk, scale and size of development is appropriate for the location and natural scenic quality of the coast, and

(ii) adverse impacts of development on cultural and built environment heritage are avoided or mitigated, and

(iii) urban design, including water sensitive urban design, is supported and incorporated into development activities, and

(iv) adequate public open space is provided, including for recreational activities and associated infrastructure, and

(v) the use of the surf zone is considered,

(b) to accommodate both urbanised and natural stretches of coastline.'

The proposed activity is consistent with the objectives for the coastal environment and coastal use areas as it would not have any adverse impacts on the coastal environment and is an appropriate development in the location, especially considering it constitutes an upgrade to an existing facility with the same end use.

State Environmental Planning Policy (Coastal Management) 2018

State Environmental Planning Policy (Coastal Management) 2018 updates and consolidates the repealed SEPPs being SEPP 14 (Coastal Wetlands), SEPP 26 (Littoral Rainforests) and SEPP 71 (Coastal Protection) and integrates Clause 5.5 of the Standard Instrument – Principal Local Environmental Plan. The Coastal Management SEPP gives effect to the objectives of the Coastal Management Act 2016 by specifying how development proposals are to be assessed if they fall within the "coastal zone" which is comprised of four types of coastal management areas.

The location of coastal wetlands and littoral rainforests in relation to the study area is described in 3.7.5. No coastal wetlands or littoral rainforests occur within the immediate vicinity of the proposed works and with the adoption of the safeguards outlined in this REF, areas located nearby are not expected to be impacted by the proposed works.

State Environmental Planning Policy (SEPP) No. 62 Sustainable Aquaculture

SEPP 62 applies to any development which has the potential to adversely affect the existing or future oyster aquaculture development(s) and/or area(s). The main aim of SEPP 62 is to encourage sustainable aquaculture by allowing the permissibility of aquaculture development in certain zones under the standard instrument. SEPP 62 sets out minimum site location and operational requirements for permissible aquaculture and establishes an environmental assessment regime for aquaculture development. No oyster aquaculture areas occur within Coffs Harbour (inner or outer harbour and nearby coastal zone) and would not be impacted by the proposed works.

Fisheries NSW Policy and Guidelines for Fish Habitat Conservation and Management (DPI 2013)

The Fisheries NSW Policy and Guidelines for Fish Habitat Conservation and Management (Update 2013) aims to conserve fish habitat for native fish species in marine, estuarine and freshwater environments. It provides an informative guide on the various legislation, policies and guidelines relating to fish habitat conservation and management. It also provides information on the importance of fish habitats and how impacts can be mitigated, managed or offset.

The Policy and Guidelines for Fish Habitat Conservation and Management state that the term 'fish'', under the FM Act 1994 means "marine, estuarine or freshwater fish or other aquatic animal life at any stage of their life history. However, it excludes whales, mammals, reptiles, birds and amphibians which are managed under other legislation". Fish habitat conservation and management underpins the sustainable management of NSW's fisheries.

The study area has been assessed considering the occurrence of aquatic vegetation and key fish habitat types present (Section 3.7.1), listed 'fish' under the FM Act which have the potential to occur (Section 3.7.2) and potential impacts on these. No significant impacts on key fish habitat or listed 'fish' species under the FM Act are expected to occur from the proposal, especially if the safeguards outlined in this REF are adopted.

NSW Heritage Act 1997

The Heritage Act 1977 contains the provisions for listing sites or places on the State Heritage Register and the protection of relics. There are no sites or places listed on the State Heritage Register or covered by an Interim Heritage Order within the proposed works area. Any sites nearby would not be impacted by the proposal.

Section 170 of the Heritage Act 1977 requires State Government Agencies to establish and keep a Heritage and Conservation Register (S170 Register). The site is not listed on any S170 Register.

The Heritage Act defines a "relic" as follows:

"relic means any deposit, artefact, object or material evidence that:

(a) relates to the settlement of the area that comprises New South Wales, not being Aboriginal settlement, and

(b) is of State or local heritage significance."

There are no known relics that have been identified as having state or local heritage significance either within the proposed works area or in the vicinity of the area that would be impacted by the proposal. The closest heritage item listed under Schedule 5 of the Coffs Harbour Local Environmental Plan 2013 is the "Coffs Harbour Jetty" (Item No. I20), located approximately 200 m to the south. This will not be impacted by the proposal. Heritage search results are provided in **Appendix E**.

No approvals or permits under the Heritage Act 1977 are expected to be required, especially considering the previous land use at the site which is the same as the proposed future use.

Native Title Act 1993

The Native Title Act 1993 provides for the recognition and protection of native title for Aboriginal peoples and Torres Strait Islanders. The NTA recognises native title for land over which native title has not been extinguished and where persons can prove continuous use, occupation or other classes of behaviour and actions consistent with the traditional cultural possession of those lands. It also makes provision for Indigenous Lands Use Agreements (ILUA) to be formed as a framework for notification of Native Title Stakeholders for certain future acts on lands where native title has not been extinguished.

Searches of the National Native Title Register, Register of Native Title Claims and Register of Indigenous Land Use Agreements were undertaken on 15 October 2020 for the Coffs Harbour LGA. These searches returned no relevant native title determinations, claims or land use agreements.

2.4 Community and agency consultation

2.4.1 ISEPP consultation

Part 2 of the ISEPP 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:

Is consultation with Council required under clauses 13-15 of the infrastructure SEPP?		
Are the works likely to have a substantial impact on the stormwater management services which are provided by council? No impact on Council stormwater services would occur.	☐ Yes	☑ No
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? No. There would be some construction related traffic coming into the site to bring in construction equipment and also to remove demolition material and excavated sediments. However, the amount of additional traffic	☐ Yes	☑ No

Is consultation with Council required under clauses 13-15 of the infrastructure SEPP?		
required is not expected to strain the capacity of the existing road service.		
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? No new connections to the Council owned sewage system would occur.	☐ Yes	☑ No
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? The proposed works may involve the use of water from the Council water supply system for various construction related activities (e.g. sediment / dust control, washing of equipment, drinking water for contractors) but this volume would is not considered to be substantial. Connection to the water supply would be at the existing facility.	☐ Yes	☑ No
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? No temporary structures would be erected, or works would be undertaken, in a public place, therefore the proposed works would not disrupt pedestrian or vehicular traffic.	☐ Yes	☑ No
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? No. No excavation of a road or footpath is proposed as part of the proposed upgrade works.	☐ Yes	☑ No
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? If yes, does a heritage assessment indicate that the potential impacts to the heritage significance of the item/area are more than minor or inconsequential? No – Refer to Section 3.5 and Section 3.6 for a description of Non Aboriginal Heritage and Aboriginal Heritage in the study area. No heritage items occur in the proposed works area and would not be impacted by the proposal.	☐ Yes	☑ No
Does the proposal include a car park intended for the use by commuters using regular bus services? No. A car park does not form part of the proposed works.	☐ Yes	☑ No
Does the project propose a bus depot? No. A bus depot does not form part of the proposed works.	☐ Yes	☑ No
Does the project propose a permanent road maintenance depot or	☐ Yes	☑ No

Is consultation with Council required under clauses 13-15 of the infrastructure SEPP?		
associated infrastructure, such as garages, sheds, tool houses, storage yards, training facilities and workers amenities? No. A road maintenance depot and/or associated infrastructure is not proposed.		
Is the proposal within the coastal vulnerability area and is inconsistent with a certified coastal management program applying to that land? The proposal is not affected by the Coffs Harbour Coastal Zone Management Plans (CZMP's). The project would have no impact on coastal processes, shoreline recession or coastal inundation.	☐ Yes	☑ No/NA
Are the works located on flood liable land? If so, will the works change flooding patterns to more than a minor extent? The proposal site does not lie within flood liable land. The proposal would not result in changes to existing surface levels on the site or change potential flooding patterns.	☐ Yes	☑ No

Is consultation with a public authority (other than Council) required under clause 15 and 16 of the Infrastructure SEPP?		
Are the works located on flood liable land? (to any extent) (ISEPP 15AA) If so, do the works comprise more than minor alterations or additions to, or the demolition of, a building, emergency works or routine maintenance. The proposal site does not lie within flood liable land. The proposal would not result in changes to existing surface levels on the site or change potential flooding patterns. The proposed works do not constitute more than minor alterations or additions to existing structures located within a coastal marine harbour.	☐ Yes	☑ No/NA
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*?* Muttonbird Island Nature Reserve occurs nearby to the study site (~500 m to the east). However, the terrestrial reserve is not located within the proposed works area and would not be impacted by the proposal either directly or indirectly, if all appropriate safeguards are adopted. The Biodiversity and Conservation Division (BCD) of the Department of Planning, Infrastructure and Environment (DPIE) (formerly part of the Office of Environment and Heritage) was consulted with and all relevant matters are addressed in this REF.	☑ Yes	☐ No
Are the works on land in Zone E1 National Parks and Nature Reserves or in a land use zone equivalent to that zone? No. The proposed works are on land zoned as IN4 – Working Waterfront	☐ Yes	☑ No

Is consultation with a public authority (other than Council) required under clause 15 and 16 of the Infrastructure SEPP?		
under Coffs Harbour Local Environment Plan (LEP) Land Zoning Map Sheet LZN_006D (see Figure 2-4).		
Are the works adjacent to an aquatic reserve or a marine park declared under the *Marine Estate Management Act 2014*? The Solitary Islands Marine Park occurs north of the northern breakwater of Coffs harbour Inner Harbour. However, the Marine Park is not located within the proposed works area and would not be impacted by the proposal if all appropriate safeguards outlined in this REF are adopted. Solitary Islands Marine Park and DPI Fisheries were consulted as part of the REF consultation process and all relevant matters are addressed in the REF.	☑ Yes	☐ No
Is the proposal in the foreshore area as defined by the *Sydney Harbour Foreshore Authority Act 1998* (now known as the *Place Management NSW Act 1998*)? No. The proposal would not occur within Sydney Harbour.	☐ Yes	☑ No
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? No. The proposed works are intended for the use of NSW Government vessels (e.g. NSW Marine Parks, NSW Fisheries, Water Police, Marine Rescue) and do not occur in bush fire prone land.	☐ Yes	☑ No
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? (Note: the dark sky region is within 200 kilometres of the Siding Spring Observatory). No. The proposed works are not located in this region. Coffs Harbour and Siding Spring are located ~ 500 km from each other.	☐ Yes	☑ No
Are the works on buffer land around the defence communications facility near Morundah? (Note: refer to Defence Communications Facility Buffer Map referred to in clause 5.15 of Lockhardt LEP 2012, Narrandera LEP 2013 and Urana LEP 2011). No. The works are not located in this area.	☐ Yes	☑ No
Are the works on land in a mine subsidence district within the meaning of the *Mine Subsidence Compensation Act 1961*? No. The proposed works are not located in a mine subsidence district.	☐ Yes	☑ No

2.4.2 Other agency and community consultation

Consultation with Council and non-council authorities regarding the proposed activity is required for consideration in the REF in accordance with the following Clauses of ISEPP Division 1:

- ISEPP Division 1, Clause 15A (Consultation with councils - development with impacts on certain land within the coastal zone) and;
- ISEPP, Division 1, Clause 16 (Consultation with non-council authorities) - For the purposes of subclause (1), the following development is specified development and the following authorities are specified authorities in relation to that development:
    - Development adjacent to land reserved under the *National Parks and Wildlife Act* 1974 or to land acquired under Part 11 of that Act - the Office of Environment and Heritage (OEH).
    - Development adjacent to an aquatic reserve or a marine park declared under the *Marine Estate Management Act* 2014 - the Department of Industry.
    - Development comprising a fixed or floating structure in or over navigable waters - Roads and Maritime Services (RMS).

Consultation was undertaken with the following local stakeholders and government agencies.

- Coffs Harbour City Council (Council)
- NSW Environment Protection Authority (EPA)
- Biodiversity and Conservation Division (BCD) of the Department of Planning, Infrastructure and Environment (DPIE) (formerly part of the Office of Environment and Heritage)
- NSW Crown Lands (Grafton Office)
- NSW Department of Primary Industries (DPI) Fisheries
- Solitary Islands Marine Park
- NSW Police (Marine Area Command)
- NSW Roads and Maritime Services (RMS)
- Coffs Harbour Local Aboriginal Land Council (LALC)
- Coffs Harbour Fisherman's Co-op
- Coffs Harbour International Marina
- Coffs Harbour Yacht Club

Consultation letters with Concept Design Plans were sent via email to all of the above stakeholders on 23 September 2020, requesting a response within 21 days (by 14 October 2020). All original stakeholder responses received by the time of writing are provided in **Appendix F**. A summary of stakeholder concerns and/or requirements for the proposal are outlined below. Sections of the REF where these have been addressed (where applicable) are also provided.

Coffs Harbour City Council

Table 2-1 provides a summary of concerns/requirements raised by Coffs Harbour City Council.

Table 2-1 Consultation with Coffs Harbour City Council.

Concerns / Requirements	Area of REF Addressed
Council shares a concern with the Solitary Islands Marine Parks Office in that contamination known to exist at the former slipway may be present in the sand immediately adjacent to the former site. Council would not support potentially contaminated sand being placed on beaches adjacent to the Marine Park.	Considering the consultation undertaken with Council, beach disposal has since been dismissed as a potential disposal option. No longer applicable.
Looking at the dredging plan the Council owned Long reach Excavator (21 m reach) would be able to excavate berths 3 & 4 however unable to excavate the full extent of berth 8.	Noted that use of the Council excavator is not suitable. Alternative arrangements would be made by the selected Contractor.

NSW Environment Protection Authority

Table 2-2 provides a summary of concerns/requirements raised by the NSW EPA.

Table 2-2 Consultation with the NSW Environment Protection Authority.

Concerns / Requirements	Area of REF Addressed
<u>Dredged Sediment Assessment:</u> The information provided states that 'The dredge material is able to be classed as ENM'. Any proposed reuse of ENM must be conducted in accordance with the Excavated Natural Material Order and Exemption 2014. Importantly, dredged sediments are not considered as ENM under the Order. The EPA recommends that dredged sediments be classified in accordance with the waste classification guidelines, which will help the proponent determine the most appropriate disposal pathway. I note that the reported levels of TBT within these sediments indicates that disposal as general solid waste is likely to be the minimum requirement.	Advice to Advisian from the TfNSW Environmental Officer – Sustainably was as follows below. Sediment is proposed to be dewatered and retested once dried to confirm its classification as ENM. *"I looked at the ENM and VENM definitions and then below definition for dredging spoil. Looking at the definition they do call the dredging spoil as:* *"Spoil from dredging activities. Dredging is defined as the excavation of natural material to provide and/or increase the dimensions of a waterway, or ensure that existing channels, berths or harbour works areas are maintained at their design specifications."* **https://www.epa.nsw.gov.au/your-environment/waste/waste-facilities/waste-reporting/waste-reporting-definitions** *My thoughts on this is that as the definition includes the wording natural material, then if dried out, tested and it meets the ENM testing criteria, then the project could use the ENM Order and Exemption and beneficially reuse the sand material in the road corridor or other suitable location where the material would be beneficial."* TBT levels in the sediment mean that the sediment can be classed as General Solid Waste. Refer to sediment quality results (Section 3.1.1). Sediments have been classed in accordance with the NSW EPA waste classification guidelines as far as possible with the analysis undertaken to date (refer to

	Section 3.1.1). Additional post dewatering testing to confirm whether dried sediments can be classed as ENM, or their classification under the EPA Guidelines, would be needed.
Sediment Dewatering & Water Quality: To ensure the protection of water quality, the proponent needs to clearly demonstrate how water quality impacts will be prevented at both the dredge site and sediment dewatering area, including: • Demonstrate how an appropriate level of treatment and control will be implemented that ensures wastewater from the sediment dewatering process meets ANZECC water quality trigger values. • Demonstrate how sediment fines will be managed to prevent turbidity impacts; • Demonstrate how fuel, hydraulic fluids, chemicals, etc involved with site activities will be managed to prevent spillage and subsequent water quality impacts; • Any use of flocculants or coagulant associated with the dewatering process will need careful consideration to prevent water quality impacts from these additives; • Detail the management practices or operating procedures that will be implemented to ensure water quality issues are detected and promptly acted upon to prevent impacts; and • Implementation of a water quality monitoring program for the duration of the project.	Safeguards to protect water quality during dredging and sediment dewatering are outlined in Section 3.2 and 5. Some finer details of the safeguards to be adopted will be determined by the selected Contractor(s) following engagement and outlined in a CEMP for the project.
Waste Management: The proponent needs to clearly demonstrate how all wastes generated through the life of the project will be managed and lawfully disposed of.	Waste management is outlined in Section 3.12 and Section 5. Some finer details of the waste management practices to be adopted will be determined by the selected Contractor(s) following engagement and outlined in a CEMP for the project.
Noise: All practical measures should be implemented to mitigate the impacts of noise on receivers. This includes taking into account the following recommended hours of operation: • Monday to Friday – 7:00am to 6:00pm • Saturday – 8:00 am to 1 pm; and • No work on Sundays or Public Holidays	Safeguards to mitigate noise are outlined in Section 3.3 and Section 5. The recommended hours of operation referred to would be adopted. Some finer details of the noise management practices to be adopted will be determined by the selected Contractor(s) following engagement and outlined in a CEMP for the project.
Air Quality: The potential risks to human health from exposure to airborne particulates (from uncontrolled dust emissions) must be assessed and managed. This is of particular importance given the position of the site within a high public use area. The proponent must minimise the generation of dust and prevent dust leaving the site.	Safeguards to mitigate against air quality impacts are outlined in Section 3.4 and Section 5. Some finer details of the air quality management practices to be adopted will be determined by the selected Contractor(s) following engagement and outlined in a CEMP for the project.
Pollution Incident Notification:	This Pollution Incident Notification requirement is noted

The proponent should note and be aware of its responsibility to notify each relevant authority of any pollution incident, in accordance with Section 148 of the Protection of the Environment Operations Act 1997.	and has been included in the safeguards for the proposal (see Section 5). TfNSW will also comply with the TfNSW Incident Management System. Links to the RMS and TfNSW Reporting Procedures are below: ***https://www.rms.nsw.gov.au/documents/about/access-to-information/ems-tp-07.pdf*** ***https://www.transport.nsw.gov.au/sites/default/files/media/documents/2017/environmental-incident-classification-reporting-9tp-pr-105.pdf***
Development of Construction Environmental Management Plan (CEMP): It is essential that a CEMP or similar be developed that provides clear detail on the management of all environmental risks associated with the proposal, including but not limited to the issues outlined above.	It is noted that a CEMP is required for the proposed works and preparation of this document would be a requirement of the selected Contractor(s) at the tender stage. The CEMP would need to include all safeguards outlined in this REF document along with other project specific details.

Department of Planning, Infrastructure and Environment (DPIE) (Biodiversity and Conservation Division; BCD)

Table 2-3 provides a summary of concerns/requirements raised by the BCD of DPIE (formerly NSW OEH).

Table 2-3 Consultation with the Department of Planning, Infrastructure and Environment (DPIE).

Concerns / Requirements	Area of REF Addressed
The REF EARs provided by the BCD are limited to Aboriginal cultural heritage, biodiversity, NPWS estate, acid sulphate soils, flooding, stormwater and coastal erosion. The REF should include details of all direct and indirect impacts of the proposal on these matters. A full list of requirements for each of these matters has been provided by BCD.	It is considered that all matters listed by the BCD have been addressed in sufficient detail in the REF (where appropriate to the proposal) with potential direct and indirect impacts discussed (refer to Section 3 for background and assessment of each matter raised).
The REF should consider prioritisation of the use of any dredged sand for beach nourishment should it be suitable in terms of sediment size, colour and free from contamination, which preliminary results indicate it is.	Consultation with Council, Marine Parks and DPI Fisheries has resulted in requests that dredge spoil is not used for beach nourishment due to historical contamination in the inner harbour. As such this disposal option is no longer being considered despite the BCDs general endorsement of this option.

NSW Crown Lands

Table 2-4 provides a summary of concerns/requirements raised by NSW Crown Lands.

Table 2-4 Consultation with NSW Crown Lands.

Concerns / Requirements	Area of REF Addressed
Crown Lands main matter of consideration is the proposed management of the dredge spoil material. If the material is to be taken off site for use by a third party it will require an extractive Licence and royalties to be paid. Similarly, if the material is to be used for beach	TfNSW (the proponent) are Crown Land Managers for Coffs Harbour area for the Marina. Therefore, third party use is not being considered and an extractive Licence and royalties are not required. Beach disposal is no longer being considered as a

nourishment the department will need to be satisfied the material is suitable for deposition in a public place and require a Licence for the deposition activities.	disposal option following consultation with Council, Marine Parks and NSW DPI. These details have been provided in reply emails to Crown Lands.
Can you please also advise what sort of a tenure is proposed for the users of the site once the works are completed.	TfNSW have advised that the existing tenure will continue for government emergency agencies vessels such as Police, Fisheries, Maritime and Border Security. This detail has been provided in a reply email to Crown Lands.

DPI Fisheries and Solitary Islands Marine Park

Table 2-5 provides a summary of concerns/requirements from NSW DPI Fisheries and Solitary Islands Marine Park relating to the *Fisheries Management Act* 1994 and *Marine Estate Management Act* 2014.

Table 2-5 Consultation with DPI Fisheries and Solitary Islands Marine Park.

Concerns / Requirements	Area of REF Addressed
NSW DPI Fisheries does not support the use of dredge spoils for future beach nourishment within the Solitary Islands Marine Park by Coffs Harbour City Council. Justification - dredge site was classified as "probably contaminated" based on historical sediment quality data and historical site usage. Sediment sampling locations within the inner harbour although consistent with the recommendations of the NAGD (for small dredging projects, up to 50,000 m^3), still has the potential to have missed contaminates. Marine Park management is supportive on the beneficial reuse by either TfNSW (e.g. road corridor) and private property (as clean fill).	Beach disposal has since been dismissed as a potential disposal option.
Vessel location. Referring to the Coffs Harbour Marine Centre Dredging, Dredge Plan (Attachment A – Dredge Plan and Concept Design). For the stake of explaining this, Vessel 5 is in position one, Vessel 9 is in position two, Vessel 1 is in position 3 and so on. A recommendation would be to remove vessel 9 from position two and replace it with vessel 1, leaving position one free. Position one would be used as a loading and unloading, emergency and refuelling bay for vessels 1, 2, 5 and 6. Vessel 9 may use position nine when free, if position nine is being use, Vessel 9 may use position one on a temporary basis. This works on two levels; 1. WHS – removes the need for employees to carry heavy loads along the jetty to the load and unload vessel i.e. dive equipment, seized fishing gear, research equipment, etc 2. Environmental – removing the need to carry fuel, 20L jerry cans along the jetty to refuel vessels with outboards (that is if no fuel bunker is put in). Certain vessels can use over 200L in a day and it's only a	TfNSW has considered this aspect of the submission and will not be implementing it as it conflicts with project objectives. It is suggested that users should use a trolley for conveying fuel and heavy items. An effort was made to create a design where all 4 small vessels were interchangeable – the result is that the 7m wide double berth would need to become about 9m. This pushes the footprint another 2m to the east so that would mean the large seized vessel east end would no longer fit unless catwalk 3 was also demolished (which is not appropriate for the fishing co-op).

matter of time before an accident occurs.	
Council advised that they shared a concern with the Solitary Islands Marine Parks in that contamination known to exist at the former slipway may be present in the sand immediately adjacent to the former site. Council would not support potentially contaminated sand being placed on beaches adjacent to the Marine Park.	Beach disposal has since been dismissed as a potential disposal option. No longer applicable.

NSW Police (Marine Area Command)

Table 2-6 provides a summary of concerns/requirements from NSW Police (Marine Area Command).

Table 2-6 Consultation with NSW Police (Marine Area Command).

Concerns / Requirements	Area of REF Addressed
From the subsequent proposal, no major issues or changes have been flagged. However, one facet of the design has been noted by Sergeant Simon. It has been proposed that two (2) wharf pylons be placed between the off-shore class 2 Water Police vessel and the DPIs 22m off-shore patrol vessel, in their allotted berth. From the attached image of the proposed design, these vessels are assigned as vessels “4” and “3” respectively and the pylons have been added for a visual reference. These have been requested to assist with berthing and securing the vessels, and to alleviate any issues encountered whilst berthing in adverse weather conditions. Understandably, these pylons may have already been factored into the design and are/will be indicated on later diagrams, however we wanted to raise the concerns early on in the development. Suggested pile locations were provided by NSW Police.	The concept design drawings have been updated to include the newly suggested location for these piles (as provided by NSW Police) (refer to **Appendix A**).

NSW Roads and Maritime Services

Table 2-7 provides a summary of concerns/requirements from NSW Roads and Maritime Services (RMS).

Table 2-7 Consultation with NSW Roads and Maritime Services.

Concerns / Requirements	Area of REF Addressed
The previous Marine Centre Upgrade REF Consultation with RMS in 2018 raised the following items which should be adopted for the proposal: Any works impacting on navigation during the construction phase must seek Roads and Maritime support 21 days prior to works commencing. A full scope of works including dates is to be provided to ***NavigationAdviceNorth@rms.nsw.gov.au***.	This requirement has been added to the safeguards list for access.

Coffs Harbour Local Aboriginal Land Council (LALC)

Table 2-8 provides a summary of concerns/requirements from Coffs Harbour Local Aboriginal Land Council (LALC).

Table 2-8 Consultation with Coffs Harbour LALC.

Concerns / Requirements	Area of REF Addressed
The LALC have no significant cultural concerns as far as the proposal goes as is mapped.	Noted there are no significant Aboriginal cultural concerns for the proposal. Aboriginal cultural heritage (including AHIMS search results) is discussed in Section 3.6.
Advised that further consultation with the LALC be undertaken if the sediment material from dredging is to be used for beach replenishment purpose to ensure landscape/cultural values are protected.	Beach nourishment has since been dismissed as a potential disposal option.

Coffs Harbour Fisherman's Co-operative

Table 2-9 provides a summary of concerns/requirements from Coffs Harbour Fisherman's Co-operative.

Table 2-9 Consultation with Coffs Harbour Fisherman's Co-operative.

Concerns / Requirements	Area of REF Addressed
A phone call was received from the manager of the co-op with a concern that the dredge plans provided during consultation seem to show that more catwalks than agreed on with TfNSW will be removed. The co-op has agreed on two (2) catwalks and say the dredge area includes more than two (2).	Confirmed with TfNSW and the co-op via email that only two (2) catwalks will be removed as originally advised. This will result in the loss of four (4) co-op berths. However, one (1) additional catwalk will be impacted (i.e. access restrictions) during dredging work (for 2-4 weeks).

Coffs Harbour International Marina

Table 2-10 provides a summary of concerns/requirements from Coffs Harbour International Marina.

Table 2-10 Consultation with Coffs Harbour International Marina.

Concerns / Requirements	Area of REF Addressed
No concerns with the current proposal were raised.	NA

Coffs Harbour Yacht Club

Table 2-11 provides a summary of concerns/requirements from Coffs Harbour Yacht Club.

Table 2-11 Consultation with Coffs Harbour Yacht Club.

Concerns / Requirements	Area of REF Addressed
The Yacht Club notes that the club's on water activities will not be impinged by this proposal and therefore makes no comment.	NA

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 the guidelines Is an EIS required? (DUAP 1999). The factors specified in clause 228(2) of the Environmental Planning and Assessment Regulation 2000 and the Matters of National Environmental Significance (MNES) under the Federal *Environment Protection and Biodiversity Conservation Act 1999* are also considered in section 5. Site-specific safeguards are provided to ameliorate the identified potential impacts.

3.1 Soils and/or sediments

Description of existing environmental and potential impacts		
Are there any known occurrences of salinity or acid sulfate soils in the area? Sediment testing at the site in July 2020 (Advisian 2020) has confirmed that no actual acid sulphate soils (AASS) or potential acid sulphate soils (PASS) occur within the proposed works area and will not be disturbed by dredging. Refer to additional information in Section 3.1.1. Salinity of soils is not relevant; the location is in the marine environment which is saline by nature.	☐ Yes	☑ No
Does the proposal involve the disturbance of large areas (e.g. >2ha) for earthworks? No earthworks are proposed. Dredging of marine sediment from subtidal lands will occur within an area of approximately 800 m^2 based on current plans.	☐ Yes	☑ No
Does the site have constraints for erosion and sedimentation controls such as steep gradients or narrow corridors? No natural constraints exist for the control of erosion and sediments. Sediment and erosion control devices would be located on land and within the waterway to mitigate runoff from dewatering activities as well as the spread of suspended sediment within the waterway during dredging and other water based construction works.	☐ Yes	☑ No
Are there any sensitive receiving environments that are located in or nearby the likely proposal footprint or that would likely receive stormwater discharge from the project? NA. There will be no stormwater discharge associated with the proposal.	☐ Yes	☑ No
Is there any evidence within or nearby the likely footprint of potential contamination? Yes, historical contamination of the inner harbour and slipway site is known. However, full site remediation was undertaken in 2016. In addition, a contamination assessment of marine sediments to be disturbed via dredging as a result of the current proposal was undertaken for TfNSW in July 2020 (testing for acid sulphate soils and other potential contaminants of concern in accordance with the National Assessment Guidelines for Dredging (NAGD	☑ Yes	☐ No

Description of existing environmental and potential impacts		
2009) and the NSW Acid Sulphate Soil Guidelines (Ahern et al. 1998)). This report has been submitted to TfNSW. Based on the recent sampling results, copper and tributyltin (TBT) were the only contaminants of concern under the NAGD, with low levels detected. Potential acid sulphate soils (PASS) or actual acid sulphate soils (AASS) were not detected. Disposal to ocean was determined to be a potential option for the dredged sediment and levels of TBT place the sediment as General Solid Waste for land based disposal. Classification of sediments under the NSW EPA Waste Classification Guidelines has been taken following consultation utilising the data collected in July 2020. Additional testing of the dewatered and dried sediments is proposed to be undertaken by the Contractor to determine classification of sediments under the NSW EPA Waste Classification Guidelines and whether they can be classed as excavated natural material (ENM) following the dewatering process and used for beneficial reuse in a TfNSW roadside corridor. With the adoption of appropriate safeguards to prevent the spread of suspended sediment during dredging, water based construction and dewatering no issues associated with contaminated sediments are expected to occur. Short-term increases in turbidity within the immediate construction footprint (i.e. within erected silt curtains) and sedimentation impacts on unvegetated soft sediment and rocky habitats of the breakwater wall within this construction zone would be expected but are not considered significant considering the nature of the marine habitat occurring within this immediate area. Sedimentation of habitats in the greater Coffs Harbour area are not expected. Further detail regarding sediment quality data is provided in Section 3.1.1. Further detail regarding aquatic habitats to be disturbed in the construction footprint is provided in 3.7.1.		
Is the likely proposal footprint in or nearby highly sloping landform? The proposal footprint lies within the Inner Harbour of Coffs Harbour. The harbour does not include a highly sloping landform. Muttonbird Island nearby contains a highly sloping terrestrial area which is not within the proposal footprint and will not be impacted by the proposal, nor will it impact the proposal or any construction activities.	☐ Yes	☑ No
Is the proposals likely to result in more than 2.5ha (area) of exposed soil? No soil will be exposed. Dredging of marine sediment over an area of approx. 800 m^2 is proposed. This area is fully subtidal and is not exposed to air. In addition, the seafloor in this location is already comprised of soft sediment with no aquatic vegetation or reef cover. Land based dewatering will occur on a concrete handstand and would not expose any terrestrial soils.	☐ Yes	☑ No

Description of existing environmental and potential impacts

A summary of sedimentation impacts relating to the proposal are as follows:

- Potential sedimentation of intertidal and subtidal marine habitats within the immediate construction area resulting from the settlement of sediments which become mobilised during dredging, dewatering, removal of existing structures, installation of new piles or from the general activities of water based construction vessels. Due to the general lack of marine vegetation (with exception of some small macroalga on artificial structures) in the immediate works area, impacts of demolition and construction on sensitive marine habitats are not expected to occur. The only marine organisms and vegetation which may potentially be affected would be sessile organisms such as oysters, limpets and barnacles and filamentous algae / small amounts of small brown macroalgae (Note - this does not include the critically endangered species *Nereia lophocladia,* which was not identified in the current study or by previous consultants (e.g. Elgin 2015) within the harbour area) inhabiting artificial structures in the inner harbour.
- Short term reductions in subtidal light availability may result from temporary increased turbidity levels caused by dredging, dewatering, demolition activities, pile installation and from the action of construction vessels. This would not impact on any seagrasses and very little macroalgae (only small amounts attached to artificial structures as noted above) in the immediate construction area.

3.1.1 Sediment quality data

Acid Sulphate Soils

The Acid Sulfate Soil Risk Map for Coffs Harbour indicates that the study site lies within an area classed as X2 – Disturbed Terrain (Figure 3-1). Disturbed terrain may include filled areas which often occur during reclamation of low lying swamps for urban development. Other disturbed terrain includes areas that have been mined or dredged or have undergone heavy ground disturbance through general urban development or construction of dams and levees. Acid sulfate soil risk maps do not provide site specific information and variations in the nature and distribution of acid sulfate soils can occur. Therefore, if dredging or excavation of sediments are to occur at a site it is recommended that targeted sampling of sediments is undertaken to assess the actual probability of acid sulphate soils occurring.

Sediment testing was undertaken at the site in the footprint of proposed dredging (with results presented in the (Coffs Harbour Marine Centre Sediment Contamination Assessment, Advisian 2020). No actual acid sulfate soils (ASS) or potential acid sulphate soils were detected (PASS). Therefore, no issues associated with ASS will occur as a result of the proposed works.

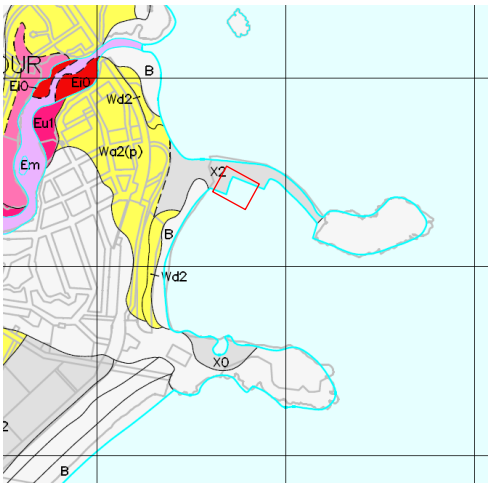

Figure 3-1 Excerpt from the Acid Sulphate Soil Risk Map for Coffs Harbour showing the location of the study area.

Sediment Contamination Assessment 2020

Transport for New South Wales (TfNSW) commissioned Advisian to undertake a sediment contamination assessment for proposed dredging within the Inner Harbour of Coffs Harbour as part of proposed Coffs Harbour Marine Centre Upgrade works. This study was undertaken to assess the physical and chemical properties of marine sediments within the proposed dredge area. Assessment was undertaken in accordance with the National Assessment Guidelines for Dredging (NAGD; CoA 2009) and the NSW Acid Sulphate Soil Guidelines (Ahern et al. 1998). Sediment sampling was undertaken from a specialised sampling vessel on 8th July 2020. Sediments were sampled by method of hand push core, piston core or vibrocore (as required). Sampling locations are shown in Figure 3-2.

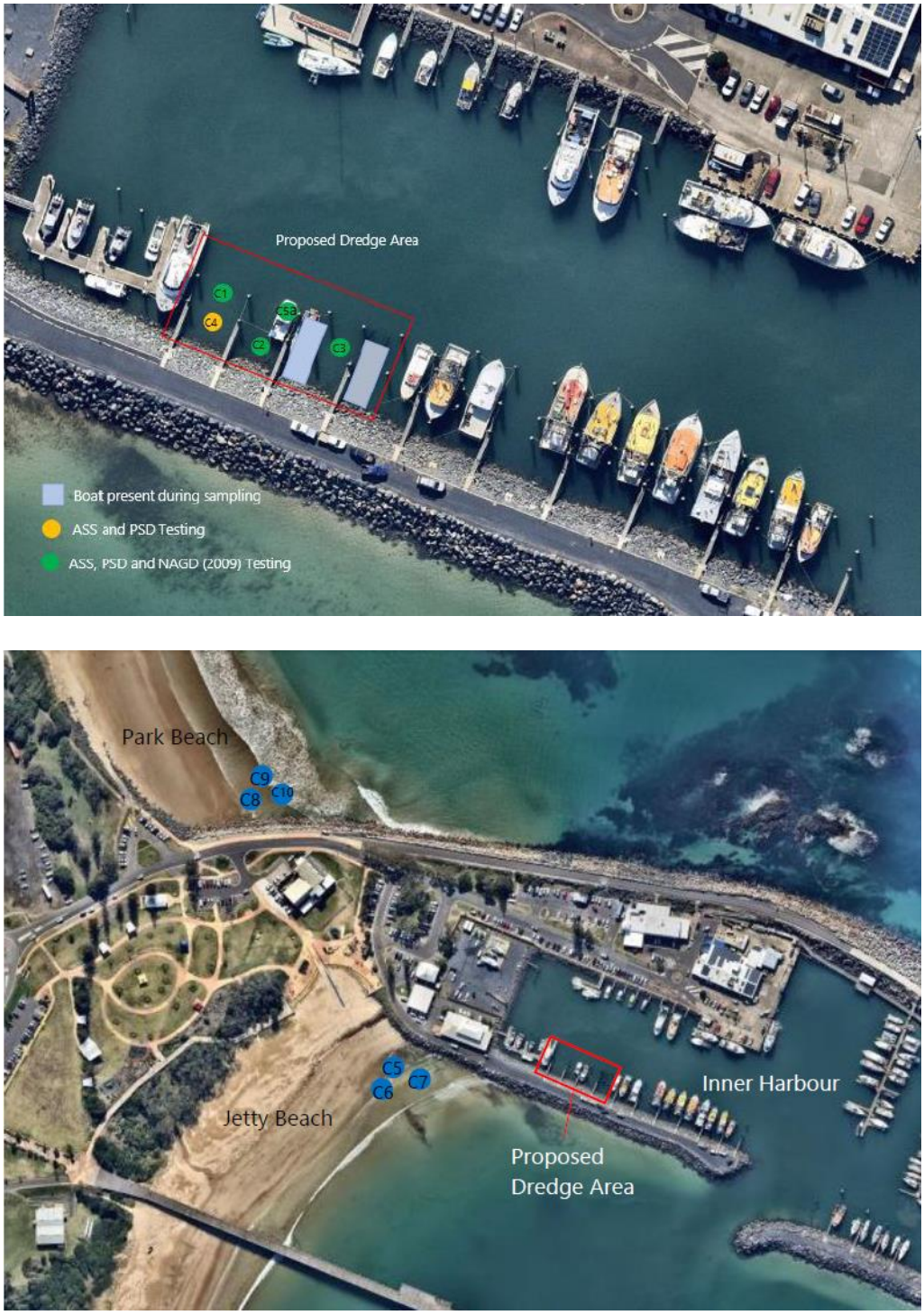

Figure 3-2 Location of sediment sampling sites at Coffs Harbour, July 2020.

A summary of sediment quality results is as follows:

- Most sediment was found to be fine to medium grain size (in the <150 µm to 300 µm size class). Although sediments from the proposed dredge area had a similar distribution of sand, they also contained a slightly larger proportion of fine sediment in the <75 µm class than the beach sediments collected (i.e. from Jetty Beach and Park Beach).

- Field screening and SPOCAS testing showed that the sediments were not actual acid sulphate soils (AASS) or potential acid sulphate soils (PASS).

- Total metal concentrations were generally low across all sites. Only copper exceeded the NAGD screening level in two of the nine samples tested. All other metals were below their respective NAGD screening levels. The copper (Cu) screening level was exceeded at C1a and C5a resulting in a 95% UCL concentration of 65.1mg/kg which is only slightly higher than the NAGD screening level of 65mg/kg.

- TBT and other organotin compounds were present in all samples tested. Concentrations were variable between sites and also varied with depth. Generally speaking, TBT concentrations were highest in sub-surface samples (>0.5m depth) although concentrations at C1 were highest in the surface sample. TBT concentrations were between 0.7 – 37.8 µgSN/kg for non-normalised data. Concentrations were between 3.3 – 87.9 µgSN/kg for data normalised to TOC. TBT concentrations exceeded the NAGD screening level of 9 µgSN/kg in four of the nine samples tested and seven of the nine samples following normalisation by organic carbon. The NSW EPA Guidelines require that TBT (non-normalised concentration) is below 70 µgSN/kg to be classified as General Solid Waste. The results show that in regard to TBT, the sediments meet this requirement (with highest non-normalised values of 37.8 µgSN/kg).

- Total petroleum hydrocarbons (TPH) were present in all samples tested but were present in very low concentrations. Hydrocarbons present were in the C15 to C36 range and were generally highest in the surface layer of sediment. All concentrations were less than the screening level of 550mg/kg.

- Polycyclic aromatic hydrocarbons (PAH) concentrations were also present in low concentrations in all samples, except in the deepest layer of sediment at C1. All other PAH concentrations were variable between sites and sample depths. The highest (normalised) concentration of PAH recorded was from C3b (3,000µg/kg) compared to the screening level of 10,000µg/kg.

- All other organic contaminants tested including BTEX, OCP, OPP and PCB were all below the limits of reporting in all samples tested.

- Concentrations of radionuclides were below the limits of reporting in all samples tested.

- Elutriate testing of sediments from Coffs Harbour (for TBT and copper) confirmed that marine water quality trigger values are unlikely to be exceeded and that release of contaminants from sediment during dredged material disposal is possible but unlikely to exceed trigger values. The very low concentrations of metals in the elutriate test results also indicate that porewaters are unlikely to be a significant pathway for the exposure of benthic species to metal contaminants.

- The results from the dilute acid extraction of metals (for copper) confirmed that copper has bioavailability potential, however concentrations were below NAGD Screening Levels in two of the three tests and the third test exceeded the screening value by a small margin.

A summary of sediment quality data for the site and core images / logs are provided in **Appendix G**.

NSW EPA Waste Classification Guidelines

Following consultation with the NSW EPA, the proposed dredge sediment was classified in accordance with the NSW EPA Waste Classification Guidelines as far as possible with the laboratory testing undertaken (which was in accordance with the NAGD (2009) and the NSW ASS Guidelines (Ahern et al. 1998)). Note that this assessment is not comprehensive and additional testing of dewatered sediments would be needed for full confirmation under the EPA Waste Classification Guidelines.

The EPA Waste Classification Guidelines (the Guidelines) (2014) are a step-by-step process for generators to classify the wastes they produce. There are six basic steps for classifying waste, as set out in the Guidelines. In brief, these steps are:

1. Establish if the waste is classified as special waste.
2. If the waste is not classified as special waste, establish whether the waste is classified as liquid waste.
3. If the waste is not classified as special waste or liquid waste, establish whether the waste is a type that is 'pre-classified'.
4. If the waste is not classified as special, liquid or pre-classified waste, establish if the waste has certain hazardous characteristics and therefore is classified as hazardous waste.
5. If the waste has not been classified after steps 1 to 4, it should be chemically assessed to determine whether it is hazardous, restricted solid or general solid waste. If the waste has not been classified after steps 1 to 4 and is not chemically assessed under step 5, it must be classified as hazardous waste.
6. If the waste is chemically assessed under Step 5 as general solid waste, a further assessment is available to determine whether the waste is general solid waste putrescible or non-putrescible. The assessment determines whether the waste is capable of significant biological transformation. If the waste is classified as general solid waste under Step 5 and this assessment is not undertaken, it must be classified as general solid waste (putrescible).

These guidelines have been applied to the marine sediment which was collected for testing under the NAGD (2009) for the proposal, as outlined below.

Step 1: Is the waste special waste?

'Special waste' is a class of waste that has unique regulatory requirements. The potential environmental impacts of special waste need to be managed to minimise the risk of harm to the environment and human health.

Special waste means any of the following:

- Clinical and related waste.
- Asbestos waste.
- Waste tyres.
- Anything classified as special waste under an EPA gazettal notice.

No clinical (or related) material, asbestos, or anything classified as special waste under an EPA gazettal notice was encountered as part of the sediment assessment. No waste tyres or waste tyre debris was found in any of the sediment cores sampled and tested. However, if any waste tyres are found on the seabed in areas not captured by the sediment core sampling during dredging, they would be removed and disposed of prior to dewatering and disposal. Therefore, it is concluded that the sediment waste would not be classified as special waste.

Step 2: Is the waste liquid waste?

Under the Guideline, liquid waste means any waste (other than special waste) that:

- Has an angle of repose of less than 5 degrees above horizontal.
- Becomes free-flowing at or below 60 degrees Celsius or when it is transported.
- Is generally not capable of being picked up by a spade or shovel.
- Is classified as liquid waste under an EPA gazettal notice.

Once dewatered, and prior to disposal, the dredged sediment waste would be solid and therefore would not be considered to be liquid waste at the disposal stage.

Step 3: Is the waste pre-classified?

If the waste is neither special nor liquid waste, establish whether the waste has been pre-classified by the EPA. Some commonly generated waste types have been pre-classified as hazardous waste, general solid waste (putrescible) or general solid waste (non-putrescible). These pre-classifications are contained in the definitions of those classifications in Schedule 1 of the POEO Act.

A full list of the pre-classified waste types are outlined in the Guidelines, but can generally be put into the following broad categories:

- Hazardous waste.
- Restricted solid waste.
- General solid waste (putrescible).
- General solid waste (non-putrescible).

For the purposes of waste classification, and in accordance with the sediment contamination results from July 2020, the sediment waste may be able to be classified as General Solid Waste (non-putrescible). The material may be able to be accepted for roadside disposal as Excavated Natural Material (ENM) (which is naturally occurring rock and soil (including materials such as sandstone, shale, clay and soil) that has:
a) Been excavated from the ground
b) Contains at least 98 per cent (by weight) natural material
c) Does not meet the definition of Virgin Excavated Natural Material (VENM).

ENM does not include material that has been processed or contains acid sulphate soils or potential acid sulphate soils (testing has confirmed these are not present).

ENM can be re-used offsite provided all conditions attached to the EPA's resource recovery order and exemption are complied with. Generator responsibilities are specified in the Excavated Natural Materials Order 2014. They include that prior to re-use of ENM off-site the generator certifies that the ENM complies with the relevant conditions of the ENM order and provide the off-site consumer with:

- A written statement of compliance, certifying that the excavated natural material complies with the conditions of the excavated natural material order 2014
- Copies of all test results (see below)
- A copy of the excavated natural material exemption 2014, or a link to the EPA website where the ENM exemption can be found.

However, as the sediment assessment undertaken for the proposal was undertaken in accordance with the National Assessment Guidelines for Dredging (NAGD) and was therefore not specifically assessed for the purposes of classifying waste under the NSW EPA Guideline, further testing after dewatering would be required to confirm the above. Subsequent steps from the Guidelines have been undertaken below to allow for a worst-case scenario for the waste classification.

Step 4: Does the waste possess hazardous characteristics?

If waste has not been classified under steps 1 to 3, it must be classified as 'hazardous waste' if it is a dangerous good under any of the following classes or divisions of the Transport of Dangerous Goods Code:

- Class 1: Explosives – the waste does not constitute this.
- Class 2: Gases (compressed, liquefied or dissolved under pressure) – the waste does not constitute this.
- Division 4.1: Flammable solids (excluding garden waste, natural organic fibrous material and wood waste, and all physical forms of carbon such as activated carbon and graphite) – the waste does not constitute this.
- Division 4.2: Substances liable to spontaneous combustion (excluding garden waste, natural organic fibrous material and wood waste, and all physical forms of carbon such as activated carbon and graphite) – the waste does not constitute this.
- Division 4.3: Substances which when in contact with water emit flammable gases – the waste does not constitute this.
- Class 5: Oxidising agents and organic peroxides – Additional testing may be required.
- Division 6.1: Toxic substances – see below. Additional testing may be required.
- Class 8: Corrosive substances – the waste does not constitute this.

The sediments proposed to be dredged did not indicate the presence of ASS or potential ASS. The sediment testing undertaken in accordance with the NAGD (2009) included testing for some toxic substances as defined in the Transport of Dangerous Goods Code, such as TBT, TPH, PAH, BTEX, OCP, OPP. Results for these substances were either below the laboratory LORs or below the NAGD (2009) Guidelines. However, additional testing of contaminants listed and not yet tested should be undertaken following dewatering to confirm.

Step 5: Determining a waste's classification using chemical assessment

Waste generators must chemically assess their waste in accordance with Step 5 to determine the waste's classification where it has not been classified under Steps 1–4 of the Guidelines. If the waste generator does not undertake chemical assessment of the waste, the waste must be classified as hazardous waste. Waste classified as hazardous waste cannot be disposed of in NSW and must be treated prior to disposal.

As previously stated, for the purposes of classifying the dredged material waste under the Guideline, it is considered that the waste would likely be classified as general solid waste (non-putrescible). However, additional chemical assessment of the dredged material should be undertaken following the dewatering process.

Safeguards

Safeguards to be implemented to prevent impacts associated with in-water sediment disturbance or land based dewatering activities include:

1. A silt boom/curtain must be installed around any active in-water work areas that may disturb the seabed (e.g. dredging, piling, demolition). The installation of the silt boom may be progressive to contain areas of current works, however before construction, a plan of deployment and progression must be prepared by the Contractor to align with the schedule of works; the plan must ensure that:
    - Installation of the silt curtain/boom is to occur before starting physical works.
    - Installation is undertaken during high tide periods from a boat. The device must be designed to rise and fall with the tide to prevent disturbance.
    - The silt boom and curtain must be weighted appropriately with sufficient length to reach from the surface to the bed level regardless of tidal fluctuations before starting work.

- Inspection of the device is undertaken on a daily basis after ebbing tides, with additional inspection following any storm events. Visual monitoring of turbidity inside and outside of the device must occur at all times during work.
- Results of daily observations of the integrity of the silt curtain are required to be recorded and maintained. Records are required to be kept on the site and to be made available for inspection by persons authorised by TfNSW.
- Decommissioning is to be carried out by boat during a high tide period.

2. Decommissioning can only be undertaken once construction activities are above seabed level (that is, no activities which disturb the seabed are to occur without the curtain in place).
3. Before removing the silt curtain device, conditions within the curtain will be assessed visually to verify that sediment has settled resulting in similar water turbidity to that outside the curtain (that is, the curtain must not be decommissioned until the water inside and outside correspond visually).
4. Visual monitoring of local water quality (i.e. turbidity, hydrocarbon spills/slicks) is to be undertaken at all times during work to quickly identify any potential spills or deficient silt curtains or erosion and sediment controls.
5. Work positioning barges, excavators and pile driving equipment must be scheduled to occur during calm conditions to prevent excessive sedimentation impacts and minimise any safety risks.
6. Erosion and sediment control measures on land (i.e. during dewatering of dredged sediments) are to be implemented and maintained to:
   - Prevent sediment moving off-site and sediment laden water entering any water course, drainage lines, or drain inlets.
   - Reduce water velocity and capture sediment on site.
   - Minimise the amount of material transported from site to surrounding pavement surfaces.
   - Divert clean water around the site.
7. Erosion and sediment control measures are to be implemented in accordance with the Landcom/Department of Housing Managing Urban Stormwater, Soils and Construction Guidelines (the Blue Book)).
8. 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.
9. Work areas are to be stabilised progressively during the works.
10. A progressive Erosion and Sediment Control Plan (ESCP) is to be prepared for the works. This would be required from the Contractor(s).
11. The maintenance of sediment stockpile sites is to be in accordance with the Roads and Maritime Services Stockpile Site Management Guideline (EMS-TG-10).

3.2 Waterways and water quality

Description of existing environment and potential impacts		
Is the proposal located within, adjacent to or near a waterway? The proposal will be undertaken within the Inner Harbour of Coffs Harbour. Ancillary works and dewatering of dredged sediment will occur adjacent to the waterway on the existing hardstand. This is a coastal marine location. Additional information regarding water quality and local water quality guidelines is provided in Section 3.2.1.	☑ Yes	☐ No

Description of existing environment and potential impacts		
Is the location known to flood or be prone to water logging? The proposal does not lie within any flood prone areas and will not be located on any flood prone lands. The proposal is located within a marine area. Sea level rise predictions (i.e. 0.4 m by 2050, Coffs Harbour Coastal Management Plan, WBM BMT, May 2018) over the 25-year design life will not cause inundation of the site or affect the operations of the proposal. The proposal is not affected by the Coffs Harbour Coastal Zone Management Plans (CZMP's). The proposal will have no impact on coastal processes, shoreline recession or coastal inundation.	☐ Yes	☑ No
Is the proposal located within or immediately adjacent to the area managed by Sydney Catchment Authority covered by State Environmental Planning Policy (Sydney Drinking Water Catchment) 2011? The site does not lie within any maps of the Sydney Water Drinking Water Catchment: ***http://www.legislation.nsw.gov.au/mapindex?type=epi&year=2011&no=28***	☐ Yes	☑ No
Would the proposal be undertaken on a bridge or ferry? No bridges or ferry's exist in the Inner Harbour.	☐ Yes	☑ No
Is the proposal likely to require the extraction of water from a local water course (not mains)? No water extraction is required for the proposed activity.	☐ Yes	☑ No
Potential water quality impacts related to the proposal are as follows: • Accidental spills or leaks of fuels and oils from construction vehicles, vessels and other land or marine based equipment. • Incorrect (accidental or deliberate) disposal of general rubbish generated during construction into the waterway. • Incorrect (accidental or deliberate) disposal of construction waste into the waterway. • Direct disturbance of bottom sediments through piling and vessel activities resulting in localised increases in turbidity. • Stormwater and waste water impacts during construction and operation of the facility. • The potential impacts of water pollution on marine habitats and fauna are described in Section 3.7.		

3.2.1 Water quality data and guidelines

Inner Harbour Water Quality

No water quality monitoring at the site was required or undertaken for the purposes of this REF. During the sediment sampling and marine field survey (July 2020) water clarity was high within the proposed dredging location, with good visibility from the surface to the seafloor. However, it has been noted (Elgin and Associates 2015) that water clarity in the inner harbour is often poor. This is likely due to a combination of the soft sediment seafloor, regular boating activity (recreational vessels, commercial fishing boats and Government vessels) and potentially poor flushing / mixing in this upper reach of the harbour.

The inner harbour water quality would also be influenced by the presence of recreational and commercial vessels and associated marina infrastructure and associated water quality impacts (e.g. use of fuel/oils and

potentials for spills, bottom disturbance through vessel movements, general washing and hull cleaning activities, antifoul impacts).

Water Quality Guidelines

The following water quality guidelines apply to the marine waters near the study site and should be referenced for any water quality monitoring which is required during demolition or construction activities. In particular, guidelines relating to turbidity should be adopted.

Australian and New Zealand Guidelines for Fresh and Marine Water Quality (2018).
http://www.waterquality.gov.au/anz-guidelines

Department of Environment and Conservation (2005). Marine Water Quality Objectives for NSW Ocean Waters – North Coast.
https://www.environment.nsw.gov.au/resources/water/mwqo/northcoast05581.pdf

Safeguards

Safeguards to be implemented for water quality are:

1. All fuels, chemicals and hazardous liquids would be stored away from drainage lines, within an impervious bunded area in accordance with Australian Standards, EPA Guidelines and Transport for NSW's Chemical Storage and Spill Response Guidelines (TfNSW, 2019).
2. Adequate water quality and hazardous materials procedures (including spill management procedures, use of spill kits and procedures for refuelling and maintaining construction vehicles/equipment) would be implemented in accordance with relevant EPA guidelines and the Transport for NSW Chemical Storage and Spill Response Guidelines (TfNSW, 2019j) during the construction phase.
3. 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.
4. Spill kits for construction barges must be specific for working within the marine environment.
5. All staff would be made aware of the location of the spill kits and be trained in how to use the kits in the case of a spill.
6. The proponent should note and be aware of its responsibility to notify each relevant authority of any pollution incident, in accordance with Section 148 of the Protection of the Environment Operations Act 1997.
7. During construction the Contractor must apply the following measures to reduce impacts on water quality. Measures include (but are not limited to):
    - All construction equipment and vessels will be inspected by qualified personnel prior to the commencement of work to reduce the risk of hydrocarbon spills or leaks.
    - Vehicles, vessels and plant must be properly maintained and regularly inspected for fluid leaks.
    - No vehicle or vessel wash-down would occur on-site.
    - Portable toilets will be positioned securely within approved compound areas and emptied on a regular basis using a licensed service provider and human waste disposed of to a local sewerage treatment plant.
    - Non-toxic/biodegradable environmentally friendly/water based drilling muds/lubricants will be used for pile driving activities.
    - The lowest volume of hydrocarbons (oil, grease, petrol and diesel) practicable will be stored on-site.
    - Chemical storage areas will be bunded and chemicals will be stored in accordance with the products Safety Data Sheet (SDS) and AS 1940 on board construction vessels and land-based construction areas only.

- Vessels (self-propelled and unpowered) will have adequate on-board communication, containment, drainage, bunding and monitoring systems to prevent discharges of unauthorized effluents.

8. There is to be no release of dirty water into drainage lines and/or waterways.
9. Visual monitoring of local water quality (i.e. turbidity, hydrocarbon spills/slicks) is to be undertaken at all times during active works to identify any potential spills or deficient silt curtains or erosion and sediment controls.
10. Water quality control measures are to be used to prevent any materials (e.g. concrete, grout, sediment etc) entering drain inlets or waterways.
11. 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.
12. Excess debris from cleaning and washing is removed using hand tools.
13. Vessels (including barges) are only to be used at suitable tides when no less than 600 mm clearance is available between the underside of the vessel and the bed of the waterway.
14. Silt curtain/s are to be installed prior to and around the area of works that may disturb the seabed.
15. Silt curtains are to be installed, monitored and maintained as needed to contain any sediment.
16. All erosion and sediment control safeguards as described in Section 3.1 must be adopted to prevent water quality issues associated with the spread of suspended sediments.
17. In the event of a maritime spill, the incident emergency plan would be implemented in accordance the response to shipping incidents and emergencies outlined in the 'NSW State Waters Marine Oil and Chemical Spill Contingency Plan' (Maritime, 2012).
18. 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.
19. 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.

3.3 Noise and vibration

Description of existing environmental and potential impacts		
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):		
During construction? There are no residential properties located in close enough proximity to the proposal site to be impacted, nor do any schools, churches or hospitals occur within close proximity. However, local businesses including cafes / restaurants, the Coffs Harbour Yacht Club, the Coffs Harbour Fisherman's Co-op and Coffs Harbour International Marina do occur nearby and the potential to be impacted during construction. The location of these businesses in relation to the proposed works are shown in Figure 2-3. Potential construction noise impacts associated with the proposal are related to: • Demolition of the existing Government berths. • Piling for the new Government berths. • Construction of the new Government berths. • Dredging activities and placement of spoil to land for dewatering.	☑ Yes	☐ No

Description of existing environmental and potential impacts		
• General construction noise. • Excavation noise associated with movement of dewatered dredge spoil into trucks for transport. • Construction vehicle noises (e.g. trucks, excavators, diggers, small vehicles). • Vessel noises (e.g. piling and dredge barges, excavators and smaller support vessels). The addition of these noise sources to the general ambient noises in the area will have a short-term negative impact on local businesses and recreational users of this area. However, these impacts are not considered to be significant considering the number of recreational and commercial vessels currently using the waterway and wharf areas. Additionally, the noise impacts of some additional construction vehicles will only be minor considering the usual vehicular traffic here which includes small trucks and forklifts used regularly at the co-op. Many of the nearby commercial businesses would be busiest during weekend and holiday periods and much of the recreational use of this area would also occur during these periods. These times would generally be avoided, reducing the potential impacts from noise. Considering the timing and proposed hours of operation, noise attenuation provided by distance and similar levels of noise emitted from ambient noise sources, the residents of Coffs Harbour are not expected to be adversely inconvenienced from the additional noise emitted by the proposed activity.		
During operation? There are not expected to be any additional noise or vibration impacts during operation which do not already exist for the current Government Marine Centre and Berths. There is no proposed change in use associated with the proposal.	☐ Yes	☑ No
Is the proposal going to be undertaken only during standard working hours? Yes, the proposal would be undertaken within the standard working hours of: • Monday - Friday: 7:00am to 6.00pm • Saturday: 8.00am to 1.00pm • Sunday and Public Holidays: no work It is also suggested that busiest holiday periods (e.g. summer school holidays and Easter school holidays) are avoided if possible.	☑ Yes	☐ No
Is any explosive blasting required for the proposal? No blasting is required.	☐ Yes	☑ No
Would construction noise or vibration from the proposal affect sensitive receivers? Potential noise impacts associated with the project have the potential to impact	☑ Yes	☐ No

Description of existing environmental and potential impacts		
on nearby commercial business, dining establishments and recreational users as previously described. No schools, hospitals, churches or residential properties occur nearby.		
Would operation of the proposal alter the noise environment for sensitive receivers? This might include, but not be limited to, altering the line or level of an existing carriageway, changing traffic flow, adding extra lanes, increasing traffic volume, increasing the number of heavy vehicles, removing obstacles that provide shielding including changing the angle of view of the traffic, changing the type of pavement, increasing traffic speeds by more than 10km/hr or installing audio-tactile line markings. Operation of the proposal will not differ significantly than the existing use.	☐ Yes	☑ No
Would the proposal result in vibration being experienced by any surrounding properties or infrastructure during operation? It is expected that nearby businesses may encounter some vibration and noise impacts during piling.	☑ Yes	☐ No
The TfNSW Construction Noise Estimator has been used in lieu of a specialist acoustic assessment report (typical for smaller construction jobs). The Distance Based Assessment "Noisiest Plan" scenario has been used (as specific details of all equipment models etc is not yet available for other estimations). We are assuming that the noisiest plan would be the piling rig. Full estimator results are included in **Appendix J**. These results require the implementation of safeguards including 'notification', 'phone calls' and 'respite offer' for non-residential receivers for daytime activities (these are included below). Potential noise impacts associated with the proposal have been described in the ensuing sections. No additional impacts are expected.		

Safeguards

Safeguards to be implemented for noise and vibration are:

1. Works are to be undertaken within the hours of operation outlined in the DECCW Interim Construction Noise Guideline (DECCW 2009) (***http://www.epa.nsw.gov.au/resources/noise/09265cng.pdf***). Any work performed outside normal work hours or on Sundays or public holidays must have measures in place to minimise noise impacts. The recommended standard hours for construction work are as follows:
    - Monday to Friday 7am – 6pm
    - Saturday 8am – 1pm
    - No work on Sunday or public holidays
2. Timing and duration of works should also be planned as follows:
    - The duration of construction works should be planned for as short a time frame as necessary and possible to reduce potential noise impacts.
    - Timing of the works should consider and avoid peak holiday use periods where possible (including summer and Easter holidays) to minimise impacts on tourism and recreational users.
3. Noise impacts are to be minimised in accordance with Roads and Maritime Construction Noise Estimator.
4. Additional noise and vibration mitigation measures should be adopted as follows (and as applicable):

- Allowing adequate distance that rollers and other vibration producing equipment can come to adjacent buildings,
- Using non vibration producing equipment, to minimise or prevent vibration impacts,
- Enclosing engines with sound absorption material, and
- Ensuring properly maintained / functioning mufflers are fitted to plant and equipment.

5. Where there are complaints received about noise or vibration from an identified work activity, review and implement where feasible and reasonable, actions additional to those described above to minimise noise or vibration output.
6. Notification - Residents, community and commercial operators in the area should be made aware of the scope and timing of the proposed works so that they can plan accordingly. This may be done through direct consultation with commercial operators and local businesses, notices in the local newspaper, local shops, community noticeboards and through Council. Notification should detail proposed work activities, dates and hours, impacts and mitigation measures, indication of work schedule and a contact telephone number. Notification will be a minimum of 7 calendar days prior to the start of work.
7. Phone calls detailing relevant information made to identified/affected stakeholders, who have provided their contact details, within seven calendar days of proposed work. Phone calls provide affected stakeholders with personalised contact and tailored advice, with the opportunity to provide comments on the proposed work and specific needs. Where the resident cannot be telephoned then an alternative form of engagement should be used.
8. Respite Offers should be considered where there are high noise and vibration generating activities near receivers. As a guide work should be carried out in continuous blocks that do not exceed 3 hours each, with a minimum respite period of one hour between each block. The actual duration of each block of work and respite should be flexible to accommodate the usage of and amenity at nearby receivers. The purpose of such an offer is to provide residents with respite from an ongoing impact.
9. Noise Level Guidelines which must be referred to by the Contractor(s) and included into the CEMP include:
    - DEC 2006 – Assessing Vibration: A Technical Guideline. Department of Environment and Conservation. February 2006.
    - DECC 2009 – Interim Construction Noise Guidelines. Department of Environment and Climate Change. July 2009.
    - DECCW 2001 – NSW Road Noise Policy. Department of Environment, Climate Change and Water. March 2011.
    - EPA 2000 – NSW Industrial Noise Policy. Environment Protection Authority. January 2000.
10. All Contractors are to receive an environmental induction. The induction must at least include:
    - Project specific and relevant standard noise and vibration mitigation measures.
    - Relevant licence and approval conditions.
    - Permissible hours of work.
    - Any limitations on high noise generating activities.
    - Location of nearest sensitive receivers.
    - Construction employee parking areas.
    - Designated loading/unloading areas and procedures.
    - Site opening/closing times (including deliveries).
    - Environmental incident procedures.

3.4 Air Quality

Description of existing environmental and potential impacts		
Is the proposal likely to result in large areas (>2ha) of exposed soils? No. The only exposed 'soils' will be those associated with dredge spoil dewatering.	☐ Yes	☑ No
Are there any dust sensitive receivers located within the vicinity of the proposal during the construction period? Yes, local businesses as previously described are located within proximity of the proposed works (refer to Figure 2-3). Dust would only have the potential to be generated during sediment dewatering activities, i.e. once dredged sediments are dried and on land. Safeguards to prevent the spread of dried sediments would be adopted.	☑ Yes	☐ No
Is there likely to be an emission to air during construction? General construction vessel and vehicle exhaust emissions are expected to occur. Impacts to air quality would primarily occur from exhaust emissions from the use of diesel powered construction vessels and fugitive refuelling emissions. Fugitive refuelling emissions are predicted to be minor as a result of works at the site. No other significant emissions for part of the proposal.	☑ Yes	☐ No
Other potential impacts on air quality: • Operational air quality impacts are expected to be similar to current air quality impacts (i.e. possible engine exhaust from Government vessels). These impacts are expected to be minor and inconsequential in relation to the existing surrounding and existing land uses at the site.		

Safeguards

Safeguards to be implemented for air quality are:

1. Air quality during construction will be considered and addressed within the CEMP and must include methods to manage work during strong winds or other adverse weather conditions as required.
2. Plant and machinery would be regularly checked and maintained in a proper and efficient condition. Plant and machinery would be switched off when not in use, and not left idling.
3. Measures (including minor watering or covering exposed areas) are to be used to minimise or prevent air pollution and dust during dewatering activities.
4. Works (including the spraying of paint and other materials) are not to be carried out during strong winds or in weather conditions where high levels of dust or air borne particulates are likely.
5. Materials are not to be burnt on site.
6. Vehicles and vessels transporting sediment, waste or other materials that may produce odours or dust are to be covered during transportation.
7. 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).

3.5 Non-Aboriginal heritage

Description of existing environmental and potential impacts		
Have online heritage database searches been completed? • Roads and Maritime section 170 register • NSW Heritage database • Commonwealth EPBC heritage list • Australian Heritage Places Inventory • Local Environmental Plan(s) heritage items. Yes. Refer to Section 3.5.1 for a summary of results.	☑ Yes	☐ No
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? Yes. Refer to Section 3.5.1 for more detail. In summary, there are a number of cultural heritage items within the general vicinity of the proposal, but these are not within the proposed construction area. The closest is the Coffs Harbour Jetty (located in the Outer Harbour and ~180 m away). There are not anticipated to be any impacts to any of these culturally significant items given their distance from the construction site. No items of cultural heritage that are located within the vicinity of the site will be impacted by the proposal.	☑ Yes	☐ No
Are there any items of potential non-Aboriginal heritage significance which are not listed on relevant heritage databases/registers that are in the vicinity of the proposal? No. In addition, given the site use history as well as the site remediation which occurred in 2016, unexpected finds of such nature are not likely.	☐ Yes	☑ No
Is the proposal likely to occur in or near features that indicate potential archaeological remains? No. A search of the Australasian Underwater Cultural Heritage Database returned 1 result for historic shipwrecks in the vicinity of Coffs Harbour. The shipwreck, “Red Alert” was a fishing vessel which sunk on 25th July 2005. The shipwreck is located 13 km offshore of the proposal site and is therefore not anticipated to be impacted by the proposal. No other known archaeological remains occur within the vicinity of the proposal area. Given the site use history as well as the site remediation which occurred in 2016, unexpected finds of such nature are not likely.	☐ Yes	☑ No
No potential heritage impacts not listed above are expected.		

3.5.1 Non-aboriginal heritage

A desktop review for items of non-aboriginal heritage located within or within the vicinity of the study area was undertaken on 27th August 2020 via a search of the following data sources:

1. Coffs Harbour Local Environment Plan (LEP)
2. NSW State Heritage Register (***http://www.environment.nsw.gov.au/heritageapp/heritagesearch.aspx***),
3. Australasian Underwater Cultural Heritage Database (***https://dmzapp17p.ris.environment.gov.au/shipwreck/public/wreck/search.do***)
4. Commonwealth EPBC Act 1999 Protected Matters Search Tool (***https://www.environment.gov.au/epbc/protected-matters-search-tool***).

State Heritage Inventory

The State Heritage Inventory is a list of heritage items in NSW including Aboriginal Places and European cultural heritage items listed under the State Heritage Register, Interim Heritage Orders, State Agency Heritage Registers, Regional and Local Environmental Plans (REPs and LEPs).

A search of the State Heritage Inventory found one culturally significant item listed under the State Heritage Register and the NSW Heritage Act within the Coffs Harbour LGA (see **Appendix E**). This is Fergusons Cottage which is located on the southern breakwater of Coffs Harbour at 1 Breakwater Road (see location in Figure 3-3). Details of this heritage item are included in **Appendix E**. This item will not be impacted by the proposed works in any way.

Coffs Harbour Jetty (Item No. I20) is also listed under Schedule 5 of the Coffs Harbour Local Environmental Plan 2013 and is located approximately 200 m to the south of the site (see location in Figure 3-4). This item will not be impacted in any way by the proposed works.

Other heritage items in the vicinity of the proposal are given in Table 3-1.

Table 3-1 Other heritage items in the vicinity of the proposal.

Item Name	Listing	Approximate Distance
Buried trestle bridge, tramway line site and World War II gun turret	LEP (Item No. I8)	980 m
Ferguson Cottage	SHI (Item No. 4306073) LEP (Item No. I9)	990 m
Coffs Harbour Jetty	LEP (Item No. 120)	180 m
Coffs Harbour State High School	LEP (Item No. I17)	665 m
Jetty Post Office	LEP (Item No. I19)	660 m
Former police station and courthouse	LEP (Item No. I14)	870 m
Residence	LEP (Item No. I23)	975 m
Butter factory	LEP (Item No. I16)	1,040 m
Butter factory pool remains and park	LEP (Item No. I22)	1,045 m
Jetty theatre	LEP (Item No. I18)	820 m
Residence	LEP (Item No. I11)	815 m

Figure 3-3 State heritage curtilage (Source: State Heritage Register 2020).

Figure 3-4 Local heritage items (Source: Coffs Harbour LEP 2013).

In summary, there are a number of cultural heritage items within the vicinity of the proposal, including the Coffs Harbour Jetty (LEP Item No. I20), however there are not anticipated to be any impacts to these items, given their distance from the site. Therefore, no items of cultural heritage that are located within the immediate vicinity of the site will be impacted by the proposal.

Protected Matters Search Tool (EPBC Act 1999)

The EPBC Act 1999 lists Matters of National Environmental Significance (MNES) including World Heritage Properties, National Heritage Properties, Commonwealth Land, Commonwealth Heritage Places and State and Territory Reserves. An EPBC Act Protected Matters Search for heritage items was undertaken on 25th August 2020 for a 1 km radius around the study site (see **Appendix B**). Results were as follows:

- No cultural MNES, including World Heritage Properties or National Heritage Places are listed within a 1 km radius of the study site.
- No Commonwealth Heritage Places are listed within a 1 km radius of the study site.
- No Commonwealth Land is listed within a 1 km radius of the study site.

No cultural heritage items listed under the EPBC Act 1999 will be impacted by the proposed works.

Underwater Cultural Heritage Database - Archaeological remains

A search of the Australasian Underwater Cultural Heritage Database returned 1 result for historic shipwrecks in the vicinity of Coffs Harbour. The shipwreck, “Red Alert” was a fishing vessel which sunk on 25th July 2005. The shipwreck is located 13 km offshore of the proposal site and is therefore not anticipated

to be impacted by the proposal. No other known archaeological remains occur within the vicinity of the proposal area.

Safeguards

Safeguards to be implemented for non-aboriginal heritage are:

1. If work results in unexpected archaeological finds, all work must stop in the vicinity of the material/find. TfNSW are to be notified and the 'Unexpected Heritage Items Procedure' in the Standard Management Procedure: Unexpected Heritage Items (2015) is to be followed.
2. If work results in unexpected archaeological finds the Roads and Maritime Services Senior Environment Specialist - Heritage must be contacted immediately.

3.6 Aboriginal heritage

Description of existing environmental and potential impacts		
Would the proposal involve disturbance in any area that has not been subject to previous ground disturbances? No. The proposal is located within a working harbour which has undergone historical dredging and excavation as well as a recent full site remediation of the land wand subtidal areas. Proposed dredging will be undertaken within existing berth areas where sediment infilling has occurred overtime. The landforms adjacent to the harbour which may be used for ancillary works are fully altered (e.g. rock revetment, existing access roads and a concrete hardstand area).	☐ Yes	☑ No
Have online AHIMS search been completed? Yes. AHIMS basic searches were completed with no items identified in close proximity to the proposal site. Extensive searches were not considered to be required based on these results. Refer to Section 3.6.1 for further details.	☑ Yes	☐ No
Is there potential for the proposal to impact on any items of Aboriginal heritage? No. Considering the search results, consultation with the Coffs Harbour LALC and the site use history this is not expected.	☐ Yes	☑ No
Would the proposal involve the removal of mature native trees? No. There are no trees (mature or immature) at the site which would need to be removed for the proposed works to occur.	☐ Yes	☑ No
Would the proposals impact on any features that may indicate any potential archaeological remains? No. Considering the search results, consultation with the Coffs Harbour LALC and the site use history this is not expected.	☐ Yes	☑ No

Description of existing environmental and potential impacts		
Is the proposal consistent with the requirements of the Roads and Maritime Procedure for Aboriginal cultural heritage consultation and investigation (PACHCI)? Yes. Appropriate background database searches were undertaken and consultation with the Coffs Harbour LALC was undertaken. Refer to Section 3.6.1 for further details.	☑ Yes	☐ No
No other impacts on any items of Aboriginal Heritage not listed above are expected from the proposal.		

3.6.1 Aboriginal Heritage

Traditional Owners

The Gumbaynggirr are the traditional owners of the land at the study site. Gumbaynggirr lands extend over an estimated 2,300 square miles (6,000 km^2) covering an area of the Mid North Coast from the Nambucca River to as far north as the Clarence River (Grafton), west to the Great Dividing Range and eastward to the Pacific coast. The Gumbaynggirr people have occupied this area since the Yuludarla or the Dreaming. The Gumbaynggirr have the largest midden-shell deposit in the Southern Hemisphere.

Consultation with the Coffs Harbour LALC

The Aboriginal people of this region are represented by the Coffs Harbour & District Local Aboriginal Land Council (LALC). Consultation with the LALC was undertaken as part of this REF (refer to Section 2.4.2).

The LALC responded "*We have no significant cultural concerns as far as your proposal goes as is mapped. I would only advise that you again consult with us, if you were to plan the sediment material from dredging be used for beach replenishment purpose to ensure landscape/cultural values are protected*".

Beach nourishment as a disposal option has now been dismissed as a disposal option so no further action in relation to Aboriginal Heritage is considered to be required for the proposal.

AHIMS Search Results

A desktop review of Aboriginal Heritage was undertaken on 27th August 2020 via the Aboriginal Heritage Information Management System (AHIMS) Web Services (***http://www.environment.nsw.gov.au/licences/AboriginalHeritageInformationManagementSystem.htm***) (Office of Environment and Heritage 2020).

A basic search of the area shown in Figure 3-5 (with a 200 m buffer from Latitude, Longitude: -30.3019, 153.1368 to Latitude, Longitude -30.2987, 153.1533) indicates that there are four (4) Aboriginal sites recorded within or near this search area. These items are not shown on the map in the basic search output.

Figure 3-5 Basic AHIMS Search #1 (Source: OEH 2020).

A subsequent basic AHIMS Search was undertaken to determine whether the items identified in the area given above occurred within the immediate vicinity of the proposal. This search was undertaken for the area shown in Figure 3-6 (from Lat, Long -30.3042, 153.1428 to Lat, Long -30.3023, 153.1439 with a buffer of 200m). This subsequent search did not turn up any results for Aboriginal sites.

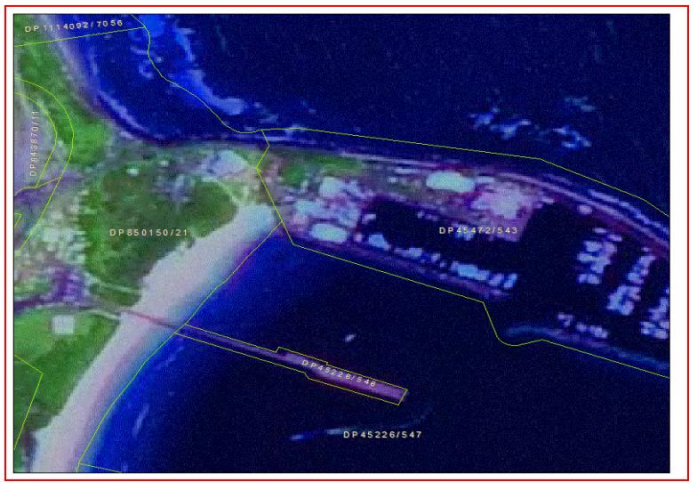

Figure 3-6 Basic AHIMS Search #2 (Source: OEH 2020).

Considering the basic AHIMS search results, as well as the LALC consultation response (refer to Section 2.4.2) an extensive AHIMS search was not considered to be required for the proposal.

Native Title Search Results

Searches of the National Native Title Register, Register of Native Title Claims and Register of Indigenous Land Use Agreements were undertaken on 15th October 2020 for the Coffs Harbour LGA. These searches returned no relevant native title determinations, claims or land use agreements with results as follows:

Search on National Native Title Register

- None

Search on Register of Native Title Claims

- None

Search on Register of Indigenous Land Use Agreements

- None

Safeguards

Safeguards to be implemented for aboriginal heritage are:

1. All construction staff would undergo an induction in the recognition of Indigenous cultural heritage material. This training would include information such as the importance of Indigenous cultural heritage material and places to the Indigenous community, as well as the legal implications of removal, disturbance and damage to any Indigenous cultural heritage material and sites.
2. If Aboriginal heritage items are uncovered during the works, all works in the vicinity of the find must cease and the Roads and Maritime Services Aboriginal Cultural Heritage Officer and Regional Environment Manager contacted immediately. Steps in the Roads and Maritime Standard Management Procedure: Unexpected Heritage Items must be followed.
3. If unexpected Aboriginal heritage items are uncovered the Contractor(s) would immediately notify the TfNSW Project Manager and TfNSW Environment and Planning Manager so they can assist in co-ordinating next steps which are likely to involve consultation with an Aboriginal heritage consultant, Heritage NSW and the Local Aboriginal Land Council.
4. If human remains are found, work would cease, the site secured and the NSW Police and Heritage NSW notified. Where required, further archaeological investigations and an Aboriginal Heritage Impact Permit would be obtained prior to works recommencing at the location.

3.7 Biodiversity

Description of existing environmental and potential impacts		
Have relevant database searches been carried out? Yes, the following database searches were undertaken in August 2020: • EPBC Act 1999 – Protected Matters Search (**Appendix B**) • NSW FM Act 1994: NSW DPI Schedules 4 and 5 (**Appendix C**) • BC Act 2016: BioNet Atlas of NSW Wildlife (**Appendix D**) • DPI's WeedWise website – search for aquatic weeds (N.B. terrestrial weeds are not relevant to the proposed works)(**Appendix H**) A summary of results are provided in Section 3.7.1 (FM Act, BC Act, EPBC Act) and Section 3.7.3 (WeedWise).	☑ Yes	☐ No
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 Federal and State listed matters must be considered. Yes. A summary of results for species listed under the FM Act, BC Act and EBC Act are provided in Section 3.7.1.	☑ Yes	☐ No
Is the proposal likely to impact nationally listed threatened species, ecological communities or migratory species? Minor, short term and indirect impacts only are expected and these listed fauna and are not expected to be significant. Potential construction related impacts on marine fauna can be summarised as:	☑ Yes	☐ No

Description of existing environmental and potential impacts		
• Direct impacts of demolition / construction • Entanglement / ingestion of marine debris • Impacts of floating plant and cable strike • Vessel strike • Impacts of water pollution • Lighting impacts • Noise impacts • Invasive marine species Additional details on each of these matters is provided at the end of this table.		
Would the proposal require the removal of any other vegetation? A small amount of marine macroalgae occurring on existing artificial structures (e.g. piles) within the waterway which are planned for removal will be directly impacted (via removal) or may be affected by short-term sedimentation impacts. No terrestrial vegetation occurs at the site and will not be removed.	☑ Yes	☐ No
Would the proposal affect any tree hollows or hollow logs? No hollows or logs occur within the construction area and will not be affected.	☐ Yes	☑ No
Are there any known areas of outstanding biodiversity value or areas mapped as 'littoral rainforest' or 'coastal wetland' in the Coastal Management SEPP in or within the vicinity of the proposed work? No AOBVs (under the BC Act) or areas of Critical Habitat (under the FM Act or EPBC Act) occur within the study area and will not be impacted by the proposal. Further details are provided in Section 3.7.4. Coastal Wetlands and Littoral Rainforest mapped under the Coastal Management SEPP occur in the local area, however, these are not within the proposed construction works footprint. Neither of these habitats will be impacted directly or indirectly by the proposal. Further details and maps of locations are provided in Section 3.7.5.	☐ Yes	☑ No
Would the proposal provide any additional barriers to the movement of wildlife? During construction the use of silt curtains may restrict the movement of marine fauna which may occur within the silt curtain to areas outside of it. However, the proposed Marine Centre upgrade itself would be consistent with currently existing structures and would not result in any barriers to the movement of wildlife during operation.	☑ Yes	☐ No
Would the proposal disturb any natural waterways or aquatic habitat? Yes. Existing aquatic habitat at the site is described in Section 3.7.1. Potential construction related impacts on aquatic habitats and flora within the immediate construction footprint can be summarised as follows: • Direct removal of unvegetated soft sediment habitat through dredging.	☑ Yes	☐ No

Description of existing environmental and potential impacts		
• Sedimentation of unvegetated soft sediment seafloor habitats and rocky subtidal habitat of the existing rock revetments from the settlement of sediments which may be generated during dredging, demolition, piling and from the action of construction vessels. Within the immediate construction zone these impacts cannot be avoided, however, if appropriate safeguards are adopted then these impacts outside of the immediate construction area can be mitigated and avoided or minimised. • Short term reductions in light availability in the immediate construction area through increased turbidity levels caused by dredging, demolition and piling activities. These will not have significant impacts considering the relative lack of flora on the seabed itself within this area which is sensitive to such impacts (e.g. seagrass). • Long term shading impacts from extra walkways will occur, however this would be over non-vegetated substrate so is not considered to be a shading issue for sensitive receivers such as seagrass. • Direct impacts on unvegetated soft sediment seafloor and small areas of macroalgae (growing at the base of the rock revetments and other artificial structures e.g. piles) in the immediate construction area from demolition of existing government berths and sedimentation impacts. • Direct impacts on unvegetated soft sediment seafloor habitats through the activities of construction vessels (e.g. anchoring during construction). • The greater waterway of Coffs Harbour (Outer Harbour) would not be expected to be impacted by the proposed works as long as all appropriate safeguards are adopted. • The Solitary Islands Marine Park which lies outside of Coffs Harbour would not be expected to be impacted by the proposed works as long as all appropriate safeguards are adopted.		
Would the proposal disturb any crevices or other locations (such as on bridges and culverts) for potential bat habitat? No crevices or locations such as bridges and culverts suitable for bat habitat will be disturbed or impacted by the proposal.	☐ Yes	☑ No
Additional information regarding potential impacts of the proposal on marine fauna is provided under specific headings below: <u>Direct Impacts of Demolition and Construction</u> Direct impacts of demolition and construction on natural and artificial habitats and the marine fauna which may reside within or on these has the potential to occur. For example: • Removal of existing structures will disturb the seafloor and any benthic epifauna or infauna which utilise this. • Removal of existing structures will in the short term remove areas of shelter and feeding for mobile species such as fish and crustaceans. • Piling and dredging will impact directly on unvegetated substrate and any marine infauna living within it. Minor foreshore works or disturbance which may impact on the existing rock revetment could result in harm		

Description of existing environmental and potential impacts

to sessile fauna (e.g. oysters and other small gastropods) which may be attached to the rocky substrate and a small and temporary loss of shelter and feeding areas for mobile species such as fish and crustaceans.

Silt curtains erected around the construction area may restrict movement of mobile fauna in the short term within a very small and localised area.

The settlement of resuspended sediments may result in localised impacts on sessile marine fauna (e.g. ascidians, bivalves, molluscs) which inhabit artificial structures in the inner harbour area.

Entanglement / Ingestion of Marine Debris

Marine fauna (fishes, reptiles, sharks and rays, marine mammals and birds) have the potential to be adversely affected by marine debris which may be accidentally or deliberately disposed of into the waterway during demolition or construction. “Entanglement in or ingestion of anthropogenic debris in marine and estuarine environments” is listed as a key threatening process (KTP) under the BC Act 2016 while “Injury and fatality to vertebrate marine life caused by ingestion of, or entanglement in, harmful marine debris” is listed as a KTP under the EPBC Act 1999.

Entanglement of fauna in marine debris can cause restricted mobility, starvation, infection, amputation, drowning and smothering. Ingestion of marine debris occurs when species confuse items such as plastic bags, rubber, balloons and confectionery wrappers with prey and ingest them, causing a physical blockage in the digestive system, leading to internal injuries.

Entanglement with and ingestion of marine debris have been recorded in the following species and populations that are listed as threatened under the BC Act 2016 in NSW (OEH 2011):

- Loggerhead turtle (*Caretta caretta*) - endangered
- Green turtle (*Chelonia mydas*) - vulnerable
- Leathery turtle (*Dermochelys coriacea*) - vulnerable
- Australian fur-seal (*Arctocephalus pusillus*) - vulnerable
- New Zealand fur-seal (*Arctocephalus forsteri*) - vulnerable
- Humpback whale (*Megaptera novaeangliae*) - vulnerable
- Sperm whale (*Physeter catadon*) - vulnerable
- Little penguin (*Eudyptula minor*) - protected

Entanglements with and ingestion of marine debris are also possible (but considered highly unlikely for the current proposal) for the following species that are threatened under the BC Act 2016 in NSW (OEH 2011):

- Dugong (*Dugong dugong*) - endangered
- Blue whale (*Balaenoptera musculus*) - endangered
- Southern right whale (*Eubalaena australis*) - vulnerable

The following marine fauna listed under the EPBC Act 1999 are thought to be particularly vulnerable to ingestion or entanglement in marine debris (DEH 2003):

- Loggerhead turtle (*Caretta caretta*) - endangered
- Southern right whale (*Eubalaena australis*) - endangered
- Blue whale (*Balaenoptera musculus*) - endangered
- Leatherback turtle (*Dermochelys coriacea*) - vulnerable
- Hawksbill turtle (*Eretmochelys imbricata*) - vulnerable
- Flatback turtle (*Natator depressus*) - vulnerable
- Green turtle (*Chelonia mydas*) - vulnerable

Description of existing environmental and potential impacts

- Humpback whale (*Megaptera novaeangliae*) - vulnerable
- Grey nurse shark (*Carcharias Taurus*) – vulnerable

While the potential impacts of marine debris on fauna can be fatal, this potential impact can also be easily mitigated and is considered to be unlikely for the proposal. With appropriate waste management processes put in place during construction the potential impact of marine debris associated with the proposal can be effectively managed or mitigated and is not considered to be significant.

Impacts of Floating Plant and Cable Strike

The proposed construction works will most likely require floating plant (e.g. pile driver, crane for removing old piles and lifting new piles and other elements into place and barges) to bring piles and marine elements to the site. These will be required to be anchored or moored for the construction period to keep them in place. Anchoring gear typically has long cables, necessary to achieve stability. This equipment has the potential to impact on marine fauna through cable strike. Cable strike is related to anchor cables that stretch and slacken in the water column. Cables may strike marine fauna, causing slashing or other injuries, particularly larger fauna if swimming past. The risk of cable strike is generally greatest for inquisitive young cetaceans (dolphins and whales) and pinnipeds (seals), and slow moving species (e.g. turtles), although all animals are susceptible to injuries from cable movement in the water column. The risk of cable strike is greatest at night when floating plant may be left on site with multiple anchors and/or moorings. The potential of risk from cable strike is also related to the number of large marine fauna present in an area, which is expected to be low in the inner harbour area, particularly as these animals are likely to avoid the area during demolition and construction due to noise impacts.

Vessel Strike

There is the potential for marine fauna in the area to be hit by construction vessels causing injury or death depending on the vessel size, speed and species involved. Vessel strike is of most concern for slower moving marine mammals such as whales and turtles. The risk of damaging vessel strike associated with the proposed activities is very low due to the expected low number of large fauna, low number of vessels, and very low speeds that these would be travelling within this waterway. While at site these vessels would generally be stationary. Large marine fauna which may be present within the Coffs Harbour area are also likely to be accustomed to vessel presence.

The addition of a small number of stationary or slow moving construction vessels and plant is unlikely to add significantly to the existing vessel traffic or its impact on fauna. In addition, it is likely that if mobile marine fauna are present in the construction area they will leave or avoid the area when construction vessels are operating due to noise impacts.

Impacts of Water Pollution

Potential sources of water pollution associated with the project are listed in Section 3.2. Water pollution has the potential to cause harm to marine fauna including sessile and mobile invertebrates, fish, reptiles, birds and marine mammals. Water pollution may alter the distribution and density of species, can increase levels of contaminants in the tissue of some species, which can then have impacts up the food chain, and reduce the relative abundance of top-order predators (DECCW 2009). Reproductive physiology, mating systems and organism life histories can also be impacted by water pollution and can combine with other factors to reduce population persistence (Dulvey et al. 2003).

There is the potential for hazardous substances (e.g. fuels, oils and other construction plant related fluids)

to accidently enter the waterway through spills or leaks from land and marine based construction vessels and equipment. Impacts of this water pollution on marine fauna can potentially occur through two main routes being:

1. Ingestion; and
2. Substances such as oils sticking to their bodies, feathers or fur.

While the potential impacts of water pollution, including spills of fuels and oils can be dangerous, it is expected that this potential impact can be mitigated or managed effectively with the safeguards outlined in this REF associated with protecting water quality (see Section 3.2 and Section 5).

Lighting Impacts

Artificial lighting used during construction has the potential to influence the behaviour of fauna, primarily by attraction, avoidance, disorientation or interruption to reproductive processes such as selection of oviposition sites. The key receptors likely to be impacted by artificial lighting are marine birds, however; some marine fauna also have the potential to be impacted. As many shorebirds and marine birds are nocturnal, actively foraging at night, feeding behaviour may also be impacted by artificial lighting. For example, birds have been known to forage at night on insects which are attracted to artificial lights. Attraction of marine fauna such as fishes to the construction area may also occur in the short term as a result of project construction activities which are undertaken during the evening / night.

Light emissions relating to the proposed construction will predominantly relate to the use of artificial lighting at night. However, it is not expected that night-time construction would occur for this proposal and any night time lighting would be associated with access and safety requirements. In addition, background (ambient) lighting in the project area is quite high and includes lighting along the waterway, the marina, carparks and lighting from nearby commercial areas and businesses. As such, any additional night time lighting associated with the proposed construction is not considered to be significant or have any additional impact given the level of ambient lighting already at the site.

Noise Impacts

Construction noise impacts related to the proposal are likely to include:

- Vehicle and vessel engine noise
- Demolition noise
- Dredging noise
- Piling noise
- Land based construction noise

Given that the study site is located adjacent to a commonly used waterway, commercial wharf and marina area and high number of public car parks, the additional noise impacts of vehicles and vessels associated with the project on marine fauna are likely to be insignificant in relation to existing vehicle and vessel background noise. Piling for the new berths will be the main source of underwater construction noise which may affect marine fauna. It is anticipated that piling for the proposal would take around 2-4 weeks but would not be continuous during this time.

A number of marine mammals which have the potential to occur at or near the site are sensitive to underwater noise. The Underwater Piling Activities Noise Guidelines (Government of South Australia 2012) provides information regarding sensitivity of various species to underwater noise. Marine mammals are sensitive to the following frequencies:

- Baleen whales including Southern right whales, humpback whales and blue whales - sensitive to

Description of existing environmental and potential impacts

sound in the range of 7Hz to 22kHz;
- Toothed whales, including dolphins and killer whales - sensitive to sound in the range of 150 Hz to 160kHz; and
- Pinnipeds (seals and sea lions) - sensitive to higher frequencies in the range of 75 Hz to 30 kHz.

Impacts of noise on marine fauna may be classed as behavioural or physiological.

Behavioural related noise impacts / responses may include:
- Changes in vocalisation, resting, diving and breathing patterns, changes in mother-infant spatial relationships, and avoidance of the noise source.
- Masking of biologically important sounds may interfere with communication and social interaction, and cause changes in behaviour as well.

Avoidance behaviour is expected to occur for most highly mobile vertebrates which may be in the study area including mammals, fishes and marine reptiles (e.g. turtles).

Physiological impacts can include reductions in hearing sensitivity or an increase in hearing threshold. If the noise exposure is below some critical sound energy level, the hair cells will eventually return to their normal shape. This effect is called a temporary threshold shift (TTS) as the hearing loss is temporary. If the noise exposure exceeds the critical sound energy level, the hair cells become permanently damaged and the effect is called permanent threshold shift (PTS) (PEL 2016).

A number of safeguards would be adopted to reduce the potential impacts of underwater noise on marine fauna (particularly during piling) which are known to occur in the study area as described in this Section and Section 5.

Invasive Marine Species

There is the potential that invasive marine species not currently known from Coffs Harbour could be translocated here during construction via transport of organisms or their eggs / cysts attached to the hulls of construction vessels, attached to construction equipment or in the ballast of vessels.

The introduction of invasive marine species to areas in which they do not yet occur has the potential to threaten local biodiversity and displace indigenous species, impact on primary production and aquaculture. This may occur directly via competitive exclusion or direct predation, or indirectly through changing the physical and biological characteristics and structure of habitats and fouling of marine infrastructure (NSW DPI 2018).

3.7.1 Marine Habitat

A number of marine ecological field surveys have been undertaken within the Coffs Harbour Inner Harbour in recent years to describe marine habitats in the study area. These have been undertaken for various proposals associated with the Coffs Harbour Slipway site and the Government Marine Centre. These include WorleyParsons (2014 and 2018), Elgin and Associates (2015) and Advisian (2020). Results of these surveys are presented below.

WorleyParsons (2014 and 2018)

In 2014, WorleyParsons (now Advisian) undertook a general survey of marine habitats adjacent to the former slipway site as part of the slipway remediation project. The marine habitat within the study area at that time was noted as lacking any aquatic vegetation, except for one mangrove on the foreshore (which has been removed since site remediation in 2016). The intertidal zone at this time was artificially constructed and many of the intertidal rocks were covered in fine filamentous green algae. The subtidal zone was comprised of unvegetated muddy marine sediment with no seagrass or macroalgae present. The intertidal zone nearby in the inner harbour area was similar and also included a high number of boat moorings and wharves associated with the government agencies (e.g. Water Police, Fisheries, Marine Parks) and the Coffs Harbour commercial fishing co-operative. Further east, the Coffs Harbour International Marina occurs, again with a fully altered foreshore. Images of the intertidal area prior to site remediation (2015) are provided in Figure 3-7 and images following site remediation (2018) in Figure 3-8.

Figure 3-7 Intertidal foreshore and waterway within the immediate study area prior to site remediation.

Figure 3-8 Intertidal foreshore and waterway within the immediate study area following site remediation.

Elgin Associates (2015)

Elgin and Associates undertook surveys of the mooring pilings in the inner harbour in 2015. They reported that mooring pilings in this area were dominated by a sessile assemblage of filter feeding organisms including oysters, colonial ascidians, barnacles, sabellid tubeworms and scallops. A vertical zonation of organisms was evident with oysters (Saccostrea) dominant at the upper levels, with solitary ascidians (Pyura) found immediately below these. The majority of pilings were covered in live or dead barnacles (Balanus) from 1 m depth to the seabed. Patches of the habitat forming tubeworm (Galeolaria) were also common. Marina taxa which were sparsely distributed over the pilings included colonial ascidians (e.g. Botrylloides), encrusting and erect sponges. These organisms provided habitats for a range of smaller mobile invertebrates and fish species.

Macroalgae was uncommon in this inner harbour area, with only green filamentous algae (Cladophora spp.) observed growing epizoically on solitary ascidians and limited to the upper 1 m water depth. The lack of macroalgae in the inner harbour area was attributed to poor water clarity and light penetration limiting growth. Large foliose brown algae which typically colonise such structures (e.g. *Ecklonia radiata* and Sargassum spp.) were absent here. The only other alga observed within the inner harbour was the brown algae *Dilophus marginatus*, which was abundant on the rocks along the inner side of the northern break wall. Images of organisms recorded on mooring pilings by Elgin and Associates (2015) are provided in Figure 3-9.

Figure 3-9 Marine flora and fauna identified on mooring piles in the vicinity of the study area (Source: Elgin and Associates 2015).

Targeted surveys undertaken by Elgin and Associates (2015) for syngnathids in the inner harbour found no individuals of this taxa during the inspection. Habitat that may support syngnathids was recorded on 27 of the 160 pilings inspected (i.e. 17%). However, habitats were uncommon and sparsely distributed on individual pilings when recorded, estimated to occupy less than 1% of the total piling area. Elgin and Associates (2015) concluded that the inner harbour provides limited habitat opportunities for these organisms.

Targeted surveys undertaken by Elgin and Associates (2015) for the critically endangered marine alga *Nereia lophocladia* (on the northern break wall outside of the harbour and in the subtidal reefs on the northern side of Muttonbird Island) found no evidence of these species at that time (in autumn 2015). However, *N. lophocladia* has been previously reported and its occurrence is likely to be seasonal. During this survey, the shallow subtidal reef communities along the northern break wall and Muttonbird Island were described as being dominated by macroalgae with some hard and soft corals present.

Large brown perennial algae Ecklonia and Sargassum were abundant with an understorey dominated by coralline algae (Corallina, Amphiroa, Jania). The most conspicuous and abundant algae included brown algae of the orders Dictyotales (Padina, Stypopodium, Dictyota, Dilophus, Lobophora, and Zonaria). Other commonly encountered algae included red algae *Peysonnelia capensis*, *Martensia australis*, Phacelocarpus, Plocamium spp. and *Galaxaura obtusata*. Green algae were best represented by Caulerpa (*C. peltata*, *C. geminata*, *C. brachypus*), Halimeda and *Bryopsis plumosa*. Images of some of these macroalgae are provided in Figure 3-10. Sea urchins including the purple urchin *Centrostephanus rodgersii* and the pencil urchin *Phyllacanthus parvispinus* were present on these reefs, however were not observed in high numbers and urchin barrens did not occur (Elgin and Associates 2015).

Figure 3-10 Macroalgae observed on subtidal reefs of the northern break wall (outside of Coffs Harbour) and the reefs north of Muttonbird island (Source: Elgin and Associates 2015).

Advisian 2020

Coffs Harbour – Inner Harbour (Proposed Works Area)

Intertidal and subtidal marine habitat within the proposed works area was surveyed in July 2020. The intertidal surfaces of the relatively newly constructed rock revetment / breakwater were largely inhabited by rock oysters, limpets and barnacles. No aquatic vegetation (seagrass, macroalgae, mangroves or saltmarsh) was present in the intertidal zone. Moving subtidally, this rocky substrate was covered by small brown algae and filamentous algae (Figure 3-11).

The base of the breakwater consisted unvegetated soft sediment. No large macroalgae such as Ecklonia or Sargassum were present. Occasional solitary ascidians (*Pyura stolonifera*) were seen but were not abundant as were unidentified mobile crustaceans (crabs). Mooring piles were inhabited by a similar suite of organisms and were low in diversity (Figure 3-12). The subtidal seafloor within the works area was all unvegetated and bioturbation from burrowing and filter feeding organisms was apparent (Figure 3-13).

The diversity recorded within this western section of the Inner Harbour was much lower than that noted by Elgin on mooring piles in 2015, likely as a result of these specific breakwater and mooring / jetty structures being relatively new and also the site remediation which was undertaken in 2016.

Figure 3-11 Rocky intertidal and subtidal habitat of the breakwater / rock revetment with unvegetated soft sediment at its base.

Figure 3-12 Intertidal and subtidal habitat of mooring piles within the proposed dredge area.

Figure 3-13 Unvegetated soft sediment subtidal habitat adjacent to and within the proposed dredge area in the Inner Harbour.

Jetty Beach Intertidal / Swash Zone

Intertidal habitat around the swash zone off the northern end of Jetty Beach was surveyed via site walkover at low tide to document the various marine flora and fauna existing in this area. This area was surveyed as it had been identified during early proposal stages as a potential disposal location for marine sediments but has since been disregarded as an option. The sandy beach and swash zone were unvegetated. Dominant species in the intertidal which were recorded attached to the rocky substrate of the breakwater included various limpets and barnacles, Sydney rock oysters (*Saccostrea glomerata*), polychaete tube worms (*Galeolaria caespitosa*), cunjevoi (*Pyura stolonifera*), sea lettuce (*Ulva lactuca*) and small brown macroalgae species. No large macroalgae, seagrass, mangroves or saltmarsh were present here but may occur in deeper waters towards the harbour entrance (area not surveyed). Images are shown in Figure 3-14.






Figure 3-14 Intertidal habitat on the southern side of the breakwater in the swash zone of Jetty Beach.

3.7.2 Threatened and Protected Species Searches

The various marine habitats within Coffs Harbour and nearby coastal waters are known to provide shelter, foraging, breeding and nursery areas for a wide range of marine fauna including bony fishes (including Syngnathids), sharks and rays, marine mammals (i.e. whales, dolphins and seals), marine reptiles (e.g. turtles) and marine/migratory birds. Many of these species are listed as threatened or protected under State and/or Commonwealth legislation including the NSW FM Act 1994, NSW BC Act 2016 and Commonwealth EPBC Act 1999. The species listed under these Acts with the potential to occur in the study area are outlined in the Sections below.

Fisheries Management Act 1994

Threatened and protected marine species listed under Schedules 4 to 5 of the FM Act 1994 (see search results in Appendix D) were reviewed in order to satisfy requirements of the Fisheries NSW Policy and Guidelines for Fish Habitat Conservation and Management (NSW DPI 2013). Marine species, populations and ecological communities currently listed as endangered, critically endangered and/or vulnerable (i.e. Schedule 4, 4A and 5) under the NSW FM Act 1994 with the potential to occur in the study area are listed below.

Schedule 4: Endangered Species, Populations and Ecological Communities

- White's Seahorse (*Hippocampus whitei*) – endangered species
- Scalloped hammerhead shark (*Sphyrna lewini*) - endangered species

- Southern bluefin tuna (*Thunnus maccoyii*) - endangered species
- Marine worm (*Hadrachaeta aspeta*) - species presumed extinct
- Green sawfish (*Pristis zijsron*) - species presumed extinct
- Bennetts seaweed (*Vanvoorstia bennettiana*) - species presumed extinct

Schedule 4A: Critically Endangered Species and Ecological Communities

- Grey nurse shark (*Carcharius taurus*) - critically endangered species
- Marine slug (*Smeagol hilaris*) - critically endangered species
- Marine brown algae (*Nereia lophocladia*) - critically endangered species

Schedule 5: Vulnerable Species and Ecological Communities

- Great white shark (*Carcharodon carcharias*) - vulnerable species
- Black cod (*Epinephelus daemelii*) - vulnerable species
- Great hammerhead shark (*Sphyrna mokarran*) - vulnerable species

Protected Species

All species of the families 'Syngnathidae', 'Solenostomidae' and 'Pegasidae' (i.e. seahorses, sea dragons, pipefishes, pipehorses).

- Ballina angelfish, *Chaetodontoplus ballinae*
- Bluefish, *Girella cyanea*
- Eastern blue devil fish, *Paraplesiops bleekeri*
- Elegant wrasse, *Anampses elegans*
- Estuary cod, *Epinephelus coioides*
- Giant Queensland groper, *Epinephelus lanceolatus*
- Herbsts nurse shark, *Odontaspis ferox*

Considering the proposed activity, its potential impacts on marine fauna, and available safeguards, the proposed works are not expected to cause any long term or significant impact on these species, nor will they impact on the viability of local populations, or place any of them at the risk of extinction.

Biodiversity Conservation Act 2016

An online database search for threatened and protected species listed under the NSW BC Act 2016 recorded within a 10 km radium of the study site (using the BioNet Atlas of NSW Wildlife) was undertaken on 25th August 2020. The full Atlas of NSW Wildlife search results are provided in **Appendix D**. The search listed 26 threatened marine species which have been recorded within the study area (listed in Table 3-2).

Numerous terrestrial species and marine/aquatic birds were also listed but due to the lack of natural foreshore habitat available at the site, along with the adjacent land uses, the majority of these species are unlikely to use this area, particularly for any significant breeding, roosting or foraging activities. Some of the marine birds listed in **Appendix D** may make use of the sandy beach (Jetty Beach) south of the site and rocky outcrops which border Coffs Harbour for roosting, nesting and foraging, however, these are outside of the proposed demolition and construction areas.

Table 3-2 Threatened and protected marine species listed under the BC Act 2016 with the potential to occur in the study area.

Common Name	Species Name	Status (BC Act)
Loggerhead Turtle	*Caretta caretta*	Endangered, Protected
Green Turtle	*Chelonia mydas*	Vulnerable, Protected
Hawksbill Turtle	*Eretmochelys imbricata*	Protected
Flatback Turtle	*Natator depressus*	Protected
Little Penguin	*Eudyptula minor*	Protected
Dugong	*Dugong dugon*	Endangered, Protected
Australian Fur-seal	*Arctocephalus pusillus doriferus*	Vulnerable, Protected
Australian Sea-Lion	*Neophoca cinerea*	Protected
Southern Right Whale	*Eubalaena australis*	Endangered, Protected
False Killer Whale	*Pseudorca crassidens*	Protected
Dwarf Minke Whale	*Balaenoptera acutorostrata*	Protected
Bryde's Whale	*Balaenoptera edeni*	Protected
Blue Whale	*Balaenoptera musculus*	Endangered, Protected
Humpback Whale	*Megaptera novaeangliae*	Vulnerable, Protected
Pygmy Sperm Whale	*Kogia breviceps*	Protected
Gray's Beaked Whale	*Mesoplodon grayi*	Protected
Strap-toothed Beaked Whale	*Mesoplodon layardii*	Protected
Unidentified Beaked Whale	*Mesoplodon sp.*	Protected
Pygmy Killer Whale	*Feresa attenuate*	Protected
Melon-headed Whale	*Peponocephala electra*	Protected
Spotted Dolphin	*Stenella attenuate*	Protected
Striped Dolphin	*Stenella coeruleoalba*	Protected
Long-snouted Spinner Dolphin	*Stenella longirostris*	Protected
Risso's Dolphin	*Grampus griseus*	Protected
Fraser's Dolphin	*Lagenodelphis hosei*	Protected
Common Dolphin	*Delphinus delphis*	Protected
Bottlenose Dolphin	*Tursiops truncates*	Protected

Of the marine species listed in Table 3-2, marine turtle species are the most likely to venture into the sheltered marina area. It is less likely that any species of cetacean (whale or dolphins) would occur in the shallow waters within the confines of the Inner Harbour.

Considering the proposed activity, its potential impacts on marine fauna and available safeguards the proposed works are not expected to cause any long term or significant impact on any of these species, nor will they impact on the viability of local populations or place any of them at the risk of extinction.

Environment Protection and Biodiversity Conservation Act 1999

An online database search for species listed under the EPBC Act 1999 with the potential to occur in the study area (within a 10 km radius of the site) was made on 25 August 2020 using the EPBC Act Protected Matters Search Tool. Full search results are provided in **Appendix B**.

In summary, the EPBC Act 1999 search listed 92 listed marine species, 12 whales and other cetaceans, 70 threatened species (marine and terrestrial) and 57 listed migratory species (marine and terrestrial) with the potential to occur in the study area (i.e. within a 1 km radius of the study site). The threatened and protected marine species under the EPBC Act 1999 are listed in Table 3-3. The likelihood of occurrence of these species (as determined by the database) in the study area is also provided.

Table 3-3 Threatened and protected marine species listed under the EPBC Act 1999 with the potential to occur in the study area.

Common Name	Species Name	Status	Likelihood of Occurrence
Black Cod	*Epinephelus daemelii*	V	Species or species habitat likely to occur within area
Elegant Seasnake	*Hydrophis elegans*	L	Species or species habitat may occur within area
Yellow Bellied Seasnake	*Pelamis platurus*	L	Species or species habitat may occur within area
Loggerhead Turtle	*Caretta caretta*	E, M, L	Breeding known to occur within area
Green Turtle	*Chelonia mydas*	V, M, L	Species or species habitat known to occur within area
Leatherback Turtle	*Dermochelys coriacea*	E, M, L	Breeding likely to occur within area
Hawksbill Turtle	*Eretmochelys imbricata*	V, M, L	Species or species habitat known to occur within area
Flatback Turtle	*Natador depressus*	V, M, L	Breeding likely to occur within area
Grey Nurse Shark (east coast pop'n)	*Carcharias taurus*	CE	Species or species habitat likely to occur within area
Great White Shark	*Carcharodon carcharias*	V, M	Species or species habitat known to occur within area
Whale Shark	*Rhincodon typus*	V, M	Species or species habitat may occur within area
Porbeagle	*Lamna nasus*	M	Species or species habitat may occur within area
Reef Manta Ray	*Manta alfredi*	M	Species or species habitat known to occur within area
Giant Manta Ray	*Manta birostris*	M	Species or species habitat may occur within area
Blue Whale	*Balaenoptera musculus*	E, M, W	Species or species habitat may occur within area
Southern Right Whale	*Eubalaena australis*	E, M, W	Species or species habitat likely to occur within area
Humpback Whale	*Megaptera novaeangliae*	V, M, W	Species or species habitat known to occur within area
Killer Whale	*Orcinus orca*	M	Species or species habitat may occur within area
Bryde's Whale	*Balaenoptera edeni*	M, W	Species or species habitat may occur within area
Minke Whale	*Balaenoptera acutorostrata*	W	Species or species habitat may occur within area
Indo Pacific Humpback Dolphin	*Sousa chinensis*	M, W	Species or species habitat likely to occur within area
Indian Ocean Bottlenose Dolphin	*Tursiops aduncus*	W	Species or species habitat likely to occur within area
Bottlenose Dolphin	*Tursiops truncatus s. str.*	W	Species or species habitat may occur within area
Common Dolphin	*Delphinus delphis*	W	Species or species habitat may occur within area
Risso's Dolphin	*Grampus griseus*	W	Species or species habitat may occur within area
Spotted Dolphin	*Stenella attenuata*	W	Species or species habitat may occur within area

Common Name	Species Name	Status	Likelihood of Occurrence
Dugong	*Dugong dugon*	M, L	Species or species habitat may occur within area
Syngnathids	*30 sp.*	L	Species or species habitat may occur within area
Common Sandpiper	*Actitis hypoleucos*	L	Species or species habitat may occur within area
Common Noddy	*Anous stolidus*	M	Species or species habitat likely to occur within area
Fork-tailed Swift	*Apus pacificus*	M	Species or species habitat likely to occur within area
Great Egret	*Ardea alba*	L	Breeding known to occur within area
Cattle Egret	*Ardea ibis*	L	Species or species habitat may occur within area
Sharp-tailed Sandpiper	*Calidris acuminate*	L	Species or species habitat may occur within area
Red Knot	*Calidris canutus*	E	Species or species habitat known to occur within area
Curlew Sandpiper	*Calidris ferruginea*	CE	Species or species habitat may occur within area
Pectoral Sandpiper	*Calidris melanotos*	L	Species or species habitat may occur within area
Streaked Shearwater	*Calonectris leucomelas*	M	Species or species habitat may occur within area
Antipodean Albatross	*Diomedea antipodensis*	V, M	Foraging, feeding or related behaviour likely to occur within area
Southern Royal Albatross	*Diomedea epomophora*	V, M	Foraging, feeding or related behaviour likely to occur within area
Wandering Albatross	*Diomedea exuland*	V, M	Foraging, feeding or related behaviour likely to occur within area
Gibson's Albatross	*Diomedea gibsoni*	V*	Foraging, feeding or related behaviour likely to occur within area
Northern Royal Albatross	*Diomedea sanfordi*	E, M	Foraging, feeding or related behaviour likely to occur within area
Lesser Frigatebird	*Fregata ariel*	M	Species or species habitat known to occur within area
Great Frigatebird	*Fregata minor*	M	Species or species habitat likely to occur within area
Latham's Snipe	*Gallinago hardwickii*	L	Species or species habitat may occur within area
White-bellied Sea-Eagle	*Haliaeetus leucogaster*	L	Species or species habitat known to occur within area
White-throated Needletail	*Hirundapus caudactus*	V	Species or species habitat known to occur within area
Silver Gull	*Larus novaehollandiae*	L	Breeding known to occur within area
Swift Parrot	*Lathamus discolour*	CE	Species or species habitat likely to occur within area
Bar-tailed Godwit	*Limosa lapponica*	L	Species or species habitat known to occur within area
Southern Giant-Petrel	*Macronectes gigantus*	E, M	Species or species habitat may occur within area
Northern Giant Petrel	*Macronectes halli*	V, M	Species or species habitat may occur within area
Rainbow Bee-eater	*Merops ornatus*	L	Species or species habitat may occur within area
Black-faced Monarch	*Monarcha melanopsis*	L	Species or species habitat known to occur within area
Spectacled	*Monarcha trivirgatus*	L	Species or species habitat known to occur within area

Common Name	Species Name	Status	Likelihood of Occurrence
Monarch			
Satin Flycatcher	*Myiagra cyanoleuca*	L	Species or species habitat known to occur within area
Fairy Prion	*Pachyptila turtur*	L	Species or species habitat known to occur within area
Eastern Curlew	*Numenius madagascariensis*	CE	Species or species habitat known to occur within area
Osprey	*Pandion haliaetus*	L	Breeding known to occur within area
White-faced Storm-Petrel	*Pelagodroma marina*	L	Breeding known to occur within area
Sooty Albatross	*Phoebetria fusca*	V, M	Species or species habitat may occur within area
Black-winged Petrel	*Pterodroma nigripennis*	L	Breeding known to occur within area
Flesh-footed Shearwater	*Puffinus carneipes*	M	Foraging, feeding or related behaviour likely to occur within area
Sooty Shearwater	*Puffinus griseus*	M	Breeding known to occur within area
Wedge-tailed Shearwater	*Puffinus pacificus*	M	Breeding known to occur within area
Short-tailed Shearwater	*Puffinus tenuirostris*	M	Breeding known to occur within area
Rufous Fantail	*Rhipidura rufifrons*	L	Species or Species habitat known to occur within area
Painted Snipe	*Rostratula benghalensis*	E*	Species or species habitat likely to occur within area
Little Tern	*Sterna albifrons*	M	Species or species habitat may occur within area
Buller's Albatross	*Thalassarche bulleri*	V, M	Species or species habitat may occur within area
Shy Albatross	*Thalassarche caute*	E, M	Species or species habitat may occur within area
Chatham Albatross	*Thalassarche eremita*	E, M	Species or species habitat may occur within area
Campbell Albatross	*Thalassarche impavida*	V, M	Species or species habitat may occur within area
Black-browed Albatross	*Thalassarche malnophris*	V, M	Species or species habitat may occur within area
Salvin's Albatross	*Thalassarche salvini*	V, M	Foraging, feeding or related behavious likely to occur within area
Pacific Albatross	*Thalassarche sp. Nov.*	V*	Species or species habitat may occur within area
White-capped Albatross	*Thalassarche steadi*	V	Foraging, feeding or related behaviour likely to occur within area
Hooded Plover (eastern)	*Thinornis rubricollis*	V*	Species or species habitat may occur within area
Common Greenshank	*Tringa nebularia*	L	Species or species habitat may occur within area

EPBC Act Status – L = listed marine species, V = vulnerable, E = endangered, CE = critically endangered, W = whales and other cetaceans, M = migratory.

Black cod, syngnathids and turtles are the species most likely to occur within the inner harbour and the proposed construction area. Considering the proposed activity, its potential impacts on marine fauna and available safeguards the proposed demolition and construction works are not expected to cause any long

term or significant impact on these species, nor will they impact on the viability of local populations or place any of them at the risk of extinction.

3.7.3 WeedWise Search

A search of the NSW DPI WeedWise database for aquatic weeds on the North Coast was made on 26th August 2020. Considering the proposed works (in marine water) and the lack of any natural foreshore vegetation or land based activities, terrestrial weeds are not considered to be applicable to this proposal.

Twenty-six aquatic weeds on the North Coast were identified, with search results provided in **Appendix H**. These are all freshwater aquatic weed species and are not expected to be translocated into or out of the study area during the proposed activity.

3.7.4 Critical Habitat / Areas of Outstanding Biodiversity Value (AOBVs)

This section identifies any land declared as Critical Habitat and Areas of Outstanding Biodiversity Value (AOBV) located within the study area, as listed under the FM Act 1994, BC Act 2016 and EPBC Act 1999.

Fisheries Management Act 1994 – Critical Habitat

The FM Act 1994 makes provision for the declaration of Critical Habitat by the Minister for Primary Industries. Critical Habitat is defined under the FM Act 1994 as 'the whole or any part of the habitat of an endangered species, population or ecological community that is critical to the survival of the species, population or ecological community'. Regulations can be developed to control specific activities in critical habitat areas. The Register of Critical Habitat under the FM Act 1994 can be found at ***http://www.dpi.nsw.gov.au/fishing/species-protection/conservation/what/register*** (NSW DPI 2020) and includes the following:

- Grey Nurse Shark Critical Habitat – Various locations in NSW are listed, none of which are located in the vicinity of the proposed works (***https://www.dpi.nsw.gov.au/__data/assets/pdf_file/0003/636330/Grey-nurse-shark-critical-habitat.pdf***) (NSW DPI 2020).

No areas of Critical Habitat listed under the FM Act 1994 will be impacted by the proposal.

Environment Protection and Biodiversity Conservation Act 1999 – Critical Habitat

The Register of Critical Habitat for species listed under the EPBC Act 1999 indicates that no areas of listed Critical Habitat under this Act occur within the study area (DAWE 2020) (***http://www.environment.gov.au/cgi-bin/sprat/public/publicregisterofcriticalhabitat.pl***) .

The only areas of Critical Habitat for aquatic / marine species identified under the EPBC Act are:

- Macquarie Island, Tasmania – Critical Habitat for wandering albatross (*Diomedea exulans*).
- Albatross Island, The Mewstone, Pedra Branca, Tasmania – Critical Habitat for shy albatross (*Thalassarche cauta*).
- Macquarie Island, Tasmania – Critical Habitat for grey-headed albatross (*Thalassarche chrysostoma*).

None of these islands are located near to the study area and will not be impacted by the proposal.

Biodiversity Conservation Act - Areas of Outstanding Biodiversity Value

The BC Act 2016 gives the Minister for the Environment the power to declare Areas of Outstanding Biodiversity Value (AOBVs). AOBVs are special areas that contain irreplaceable biodiversity values that are important to the whole of NSW, Australia or globally. They are explained in more detail at ***https://www.environment.nsw.gov.au/topics/animals-and-plants/biodiversity/areas-of-outstanding-biodiversity-value*** (DPIE 2020).

Areas of Critical Habitat which were previously declared under the former Threatened Species Conservation Act (TSC Act) 1995 became the first AOBVs in NSW with the commencement of the BC Act 2016. An area of land is listed as an AOBV if it is critical to the survival of an endangered or critically endangered species, population or ecological community.

AOBVs for aquatic or marine species identified under the BC Act 2016 are listed on the Register (***https://www.environment.nsw.gov.au/topics/animals-and-plants/biodiversity/areas-of-outstanding-biodiversity-value/area-of-outstanding-biodiversity-value-register***) and include:

- Cabbage Tree Island, Port Stephens, NSW – Critical Habitat for Gould's petrel (*Pterodroma leucoptera*).
- Manly, Sydney Harbour, NSW – Critical Habitat for little penguin (*Eudyptula minor*).

Neither of these sites are located near to the proposal site and will not be impacted by the proposal.

3.7.5 Coastal Management SEPP

The location of Coastal Wetlands and Littoral Rainforest in the vicinity of the proposal area, as mapped under the Coastal Management SEPP, were determined using the NSW DPI Fisheries Spatial Data Portal (***https://webmap.industry.nsw.gov.au/Html5Viewer/index.html?viewer=Fisheries_Data_Portal***).

Coastal Wetlands (Coastal Management SEPP)

The closest Coastal Wetlands to the study site are located over 1 km away and is not within the same waterway (see Figure 3-15) and will not be impacted in any way by the proposal, either directly or indirectly.

Figure 3-15 Location of Coastal Wetlands (Coastal Management SEPP) in the vicinity of the proposal site (NSW DPI 2020).

Littoral Rainforests (Coastal Management SEPP)

The closest Littoral Rainforest is mapped > 250 m away from the proposed works area, behind Jetty Beach (see Figure 3-16). Considering this location, littoral rainforest will not be impacted by the proposed works, either directly or indirectly.

Figure 3-16 Location of Littoral Rainforests (Coastal Management SEPP) in the vicinity of the proposal site (NSW DPI 2020).

3.7.6 Protected Areas

Marine Protected Areas

Protected areas, set aside for conservation under the NP&W Act 1974, are managed by the National Parks and Wildlife Service (NPWS). An important component of the State's reserve system are marine protected areas. These include many National Parks and Nature Reserves with marine or estuarine components, as well as Aquatic Reserves and Marine Parks managed by the Marine Estate Management Authority (OEH 2020). Marine protected areas are parts of the NSW marine estate that are managed to conserve marine biodiversity and support marine science, recreation and education. The NSW system of marine protected areas includes:

- Marine parks – six multiple use marine parks cover around one third (approximately 345,000 hectares) of the NSW marine estate.
- Aquatic reserves – 12 aquatic reserves cover around 2,000 hectares of the NSW marine estate.
- National parks and nature reserves – include around 20,000 hectares of estuarine and oceanic habitats (NSW DPI 2020)

A map of the location of all marine protected areas in NSW is provided in Figure 3-17. The closest marine protected area to the study site is the Solitary Island Marine Park, which is located immediately north of the study area. The Solitary Islands Marine Park extends north from Coffs Harbour to Sandon River along about 75 km of coastline. It is approximately 710 km^2 from the mean high water to three nautical miles offshore, including estuaries to their tidal limit. The park was established in January 1998 (prior to that it was a marine reserve since 1991) and its zones and management rules commenced in August 2002.

The zoning map for this marine park is provided in **Appendix I.** The area of the marine park immediately north of Coffs Harbour is zoned as a Habitat Protection Zone (NSW DPI 2020).

The Solitary Islands Marine Park contains:

- Diverse habitats - estuaries, sandy beaches, intertidal rocky shores, sub-tidal reefs and open oceans;
- The important Solitary Islands, from which the marine park takes its name.

More than 550 reef fish, 90 hard coral and 600 molluscs (shelled animals) species have been observed throughout the park (NSW DPI 2020):

- North Solitary Island has the park's highest reef fish diversity. Anemone Bay, at the Island's northern end, is particularly diverse and supports the densest coverage of anemone and anemone fish worldwide.
- South Solitary is renowned for its large pelagic fish, turtles and is also rich in shelled animals, with many marine snails and slugs, especially on the western side. It is the northern most breeding site recorded for the giant cuttlefish.
- The park's northern estuaries are some of the state's most pristine, largely because the majority of adjacent land is located in Yuraygir National Park.
- The local Aboriginal communities within the Gumbaynggirr Nation and Yaegl Nation have strong cultural links with the marine park and are actively involved in conservation planning.

Despite its proximity to the site, the Solitary Islands Marine Park is not located within the immediate works area and it is highly unlikely that the proposed works will result in any impact on the marine park if appropriate safeguards listed in this REF are adopted.

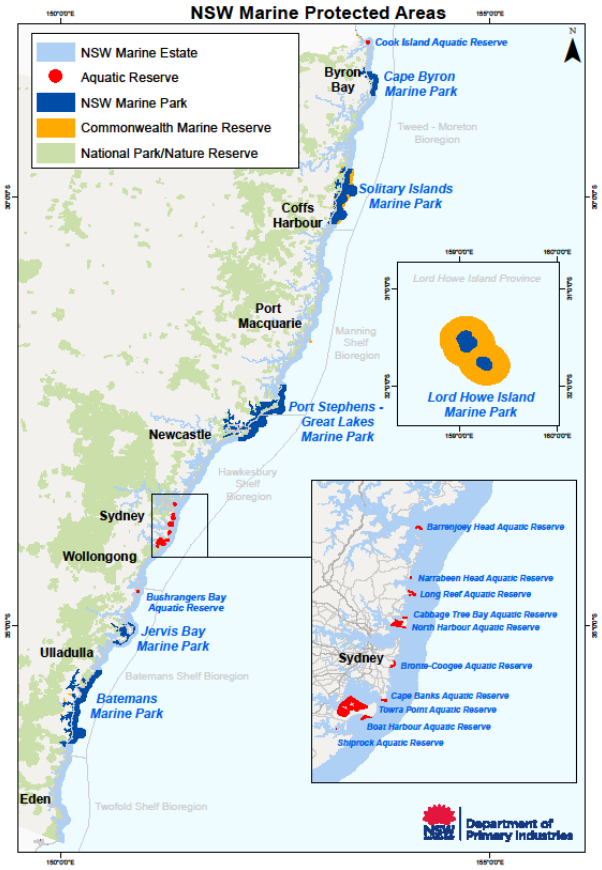

Figure 3-17 Marine protected areas in New South Wales (Source: NSW DPI 2020).

Terrestrial Protected Areas

Muttonbird Island Nature Reserve is located directly east of Coffs Harbour International Marina, on the southern boundary of the Solitary Islands Marine Park (Figure 3-18). It is linked to the mainland by a causeway, which acts as the northern breakwater for the harbour. With over 5,500 breeding pairs it is a major breeding ground for migratory wedge-tailed shearwaters (*Puffinus pacificus*), known locally as muttonbirds, which migrate annually to the Philippines but return to breed on the island. Also known as Giidany Miirlarl, it is also an important Aboriginal place, harbouring stories of the Dreaming and a wealth of traditional resources. The island is not located within the proposed works area and no impacts of the proposed works on Muttonbird Island Nature Reserve will occur.

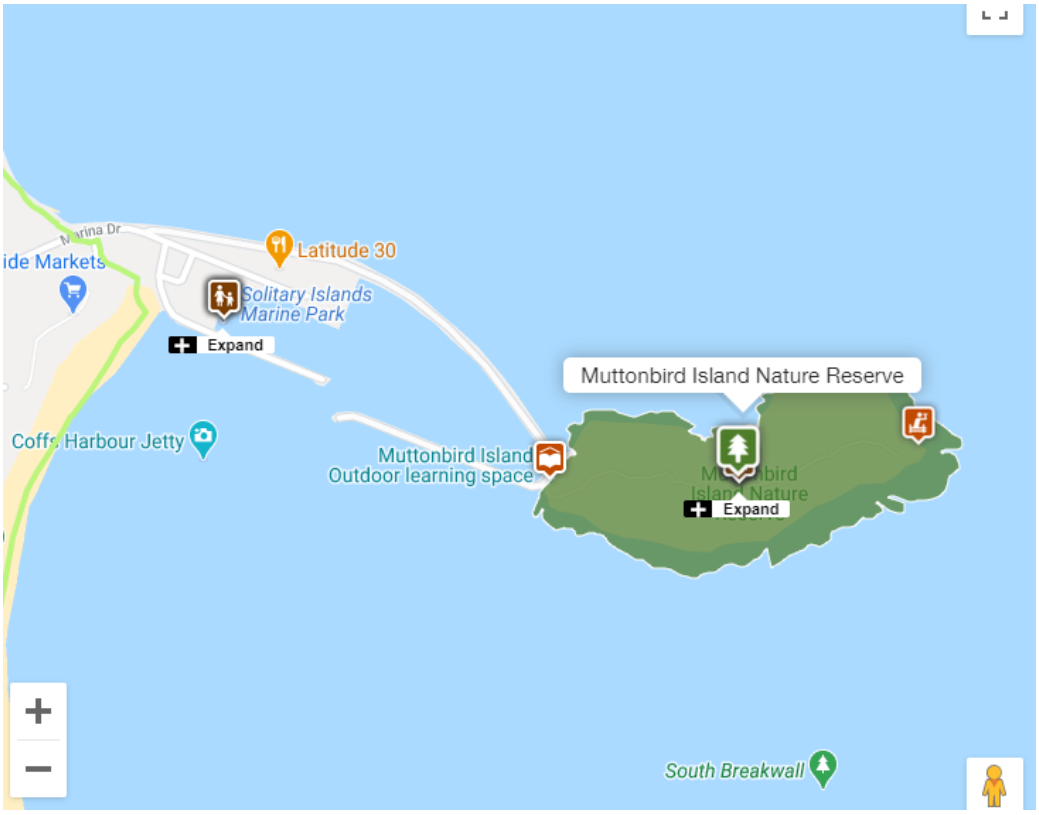

Figure 3-18 Muttonbird Island Nature Reserve (Source: National Parks and Wildlife Service 2020).

3.7.7 Wetlands of International Important (RAMSAR Wetlands)

No wetlands of international importance (RAMSAR Wetlands) occur within the study area (within a 1 km radius of the proposal) and will not be impacted. Refer to EPBC Act Protected Matters Search results in **Appendix B.**

Safeguards

Safeguards to be implemented for biodiversity include:

1. There is to be no disturbance or damage to threatened species or areas of outstanding value.
2. Works are not to harm threatened fauna (including where they inhabit bridges or other structures e.g. timber fence posts or maritime piles).
3. If unexpected threatened fauna or flora species are discovered, stop works immediately and follow the Roads and Maritime Services Unexpected Threatened Species Find Procedure in the Roads and Maritime Services Biodiversity Guidelines 2011 – Guide 1 (Pre-clearing process).
4. Fauna handling must be carried out in accordance with the requirements the Roads and Maritime Services Biodiversity Guidelines - Guide 9 (Fauna Handling).
5. Works are not to create an ongoing barrier to the movement of wildlife.

6. Anchoring and/or use of construction vessels (including barges) is not permitted over sensitive marine vegetation or rocky reef habitat.
7. All activities are to minimise disturbance to shallow water habitats under, and in the immediate vicinity of water based structures, including disturbance of seabed sediments and smothering habitats from propeller strike or excessive propeller wash.
8. All activities are to be carried out to avoid spreading marine pests including:
    - All equipment with the potential to import diseases or pests to site will be cleaned prior to arrival onsite.
    - 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.
9. Any harm to marine vegetation is to be carried out in accordance with a permit under the Fisheries Management Act 1994
10. All safeguards outlined for 'waterways and water quality' and 'soils and/or sediments' must be adopted as these will also assist in preventing impacts on marine habitats.
11. Contractors (e.g. piling operators) must take all necessary actions to avoid any adverse interactions of vessels and equipment with marine mammals, turtles and rays including ceasing dredging, piling or other works if required.
12. Silt curtains must be monitored / checked regularly to avoid entanglement of fauna.
13. To limit the potential of a fish kill incident, the Contractor must undertake a visual inspection of the waterway for dead or distressed fish (indicated by fish gasping at the water surface, fish crowding at the shoreline) a minimum of twice daily during the works. DPI Fisheries (1800 043 536) shall be immediately notified of any observations or reports of dead or distressed fish within the construction site. In such cases, all works other than emergency response procedures are to cease until the issue is rectified and written approval to proceed is provided by DPI Fisheries.
14. To reduce the potential impacts of marine debris on marine fauna, general and construction waste shall be contained and correctly disposed of onshore. Also refer to waste management safeguards.
15. To reduce the potential for lighting related impacts on marine fauna construction activities must not be undertaken during the evening / night time.
16. The risk of vessel strike during construction should be reduced through the adoption of:
    - Limitation of vessel speed limits.
    - Moving vessel exclusion zones around marina mammals if they occur (300 m).
    - Education of all personnel.
    - Awareness of the presence of marine fauna in the local waterway so that they can adopt appropriate speeds and clearance.
17. To reduce the potential for piling noise impacts on marine fauna a soft start procedure should be adopted after the local waterway has been checked for the presence of large marine fauna. If any large marine fauna are spotted within the local waterway during piling, then the piling should cease until they have moved away from the area.
18. Any injured marine mammals must be immediately reported to NPWS on 1300 361 967 or the ORRCA 24 hour hotline on 02 9415 3333. The ORRCA telephone hotline is staffed by volunteers and keeps ORRCA members, Government Authorities and interested members of the public informed of marine mammal emergencies, incidents and sightings.
19. To reduce the risk of invasive species being translocated to the site via construction vessels or equipment, the following should be adopted:
    - Contractors must undertake a Vessel Risk Assessment (VRA) of vessels, floating plant and other marine construction equipment prior to mobilisation to site. The VRA may be undertaken by the vessel owner / operator. The VRA will determine if a vessel inspection is required.
    - Contractors must undertake an Invasive Marine Species (IMS) Inspection of all vessels assessed in the VRA as uncertain or high risk for introduction of invasive marine species. The IMS must be undertaken by an appropriately qualified person with experience in biosecurity of marine vessels, floating plant and marine based construction equipment. The Contractor is responsible

for arranging the IMS inspection and attendance of Fisheries or other suitably qualified personnel.
    - The Contractor shall arrange vessels IMS inspections for all vessels considered high / uncertain risk prior to the commencement of construction either within seven days of mobilisation to site (directly).
20. Construction vessel antifouling shall be maintained to avoid the attachment and potential translocation of invasive species.
21. Ballast water management must be adopted as follows:
    - Ballast water exchange by domestic vessels shall be avoided.
    - Domestic vessels shall manage ballast water in accordance with the Australian Ballast Water Management Requirements (Department of Agriculture and Water Resources 2016).
22. Monitoring and inspection / surveillance of the construction vessels and barges should be undertaken in accordance with the Biosecurity Act 2015.
23. Any suspected new sightings of invasive marine species should be reported by calling the 24-hour recorded hotline; 02 4916 3877 or email ***aquatic.pests@dpi.nsw.gov.au***.

3.8 Trees

Description of existing environmental and potential impacts		
Does the proposal involve pruning, trimming or removal of any tree/s? No trees occur within the construction area and will not be impacted in any way.	☐ Yes	☑ No
Do the trees form part of a streetscape, an avenue or roadside planting? No trees occur within the construction area and will not be impacted in any way.	☐ Yes	☑ No
Have the trees been planted by a community group, landcare group or by council or is the tree a memorial or part of a memorial group e.g. has a plaque? No trees occur within the construction area and will not be impacted in any way.	☐ Yes	☑ No
Do the trees form part of a heritage listing or have other heritage value? No trees occur within the construction area and will not be impacted in any way.	☐ Yes	☑ No

Safeguards

Safeguards are not applicable to this section as no trees occur onsite and no trees will be disturbed or removed.

3.9 Traffic and transport

Description of existing environmental and potential impacts		

Is the proposal likely to result in detours or disruptions to traffic flow (vehicular, cycle and pedestrian) or access during construction?
Yes. There will be minor and temporary impacts on both vehicular and vessel traffic / access during construction as well as permanent loss of a small number of Fishing Co-op berths.
 	
Short term impacts on vehicle/vessel traffic and access will be expected as follows:
• Additional vehicle traffic on local and main roads in Coffs Harbour and the immediate construction area during the construction period. However, in general, this increase in traffic would not be dissimilar to any other general construction activity in the town and would be short term.
• Potential short term reductions in the number of public parking spots available within the carpark adjacent to the construction site due to construction vehicles or Contractors utilising parking spots (i.e. over the duration of the works only). This may cause minor inconveniences to local workers and visitors to the area for the duration of the works. However, if the works are undertaken out of key visitation/tourist times (as is proposed) these impacts are not considered to be significant.
• Short term impacts to vessel access and navigation in the local waterway during dredging and berth construction (i.e. in the western end of the inner harbour area only). These will mainly affect Government and Fishing Co-op vessels which currently berth in the proposed works area. It is expected that short term berthing arrangements could easily be organised with the International Marina at the eastern end of the harbour where required.
• Access issues are not expected to significantly impact recreational and visiting vessels at the Coffs Harbour International Marina, located at the eastern side of the inner harbour. However, there may be access restrictions to the public jetty in in inner harbour for short period (not expected during all works and can likely be avoided).
• Safety issues caused by the presence of vessels, barges (and anchors), piling equipment and silt curtains may occur as follows:
  ○ Short term access restrictions into the inner harbour while construction vessels are moving in and out.
  ○ Access and manoeuvrability restrictions caused by the placement of silt curtains.
  ○ Increased risk of vessel collisions / accidents with construction equipment.
• Short term speed restrictions (e.g. 4 knot limits) will be required around the works area and any on-water construction equipment during construction. This is not seen as a significant issue as vessels moving through this area would already be doing so at very low speeds.
• No anchoring will be allowable near the construction zone. However, this is not significant as it is unlikely that vessels would anchor in this area of the waterway to begin with.
	☑ Yes	☐ No

Description of existing environmental and potential impacts		
There will be no long term / permanent loss of public parking spaces as a result of this proposal. However, there will be a permanent loss of four (4) Fishing Co-op berths associated with existing Catwalks 1, 2 and 3. Catwalks 1 and 2 are to be permanently removed (these currently provide 3 co-op berths) and the western berth of catwalk will also be lost due to design requirements. The Fishing Co-op is aware of this loss and has been in consultation with TfNSW during the proposal design stage.		
Is the proposal likely to result in detours or disruptions to traffic flow (vehicular, cycle and pedestrian) or access during operation? No changes to access requirements or users will occur during operation.	☐ Yes	☑ No
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?	☐ Yes	☑ No
No additional impacts not identified above are expected.		

Safeguards

Safeguards to be implemented for traffic and transport are:

1. 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.
2. 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.
3. 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. This will be the responsibility of the Contractor(s).
4. Notification is to be given to affected businesses and community members prior to the works taking place (a minimum of 7 calendar days prior to the start of works). The notification is to include:
    - 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.
5. No new access tracks are to be created for the works.
6. Parking of vehicles and storage of plant/equipment is to occur on existing paved areas. Where this is not possible, vehicles and plant/equipment are to be kept away from environmentally sensitive areas and outside the dripline of trees.
7. Any access to waterways using barges/boats or similar is to be via an existing boat ramp with no disturbance to the bank or surrounding vegetation.

3.10 Socio-economic

Description of existing environmental and potential impacts		
Is the proposal likely to impact on local business? Yes. Potential 'noise and vibration' and 'traffic and transport' impacts on local business are possible as identified and described in Section 3.3 and Section 3.9 respectively.	☑ Yes	☐ No
Is the proposal likely to require any property acquisition? No. There is no property acquisition involved. TfNSW (the proponent) are Crown Land Managers for the Coffs Harbour area for the marina.	☐ Yes	☑ No
Is the proposal likely to alter any access for properties (either temporarily or permanently)? Yes. There will be no impact on access to any land based properties (residential or commercial). However, there will be short-term access impacts for a number of Government and Fishing Co-op vessels to their existing berths during construction as described in Section 3.9. In addition, the Fishing Co-op will permanently lose four (4) berths as a result of the proposal (this has been discussed between the Co-op and TfNSW during the design phase).	☑ Yes	☐ No
Is the proposal likely to alter any on-street parking arrangements (either temporarily or permanently)? No. On street parking arrangements are not expected to be altered. However, there may be some additional construction / Contractor related traffic requiring short term use of public parking spaces during construction as described in in Section 3.9.	☐ Yes	☑ No
Is the proposal likely to change pedestrian movements or pedestrian access (either temporarily or permanently)? There may be some temporary restrictions to public access along the footpaths and foreshore immediately adjacent to the works area for the duration of the demolition and construction works. This will be required to ensure public safety. Minor and insignificant impacts on recreational fishers may occur through temporary restricted access to the southern breakwall of the harbour during construction, an area which is used by recreational fishers. There is a high availability of alternate locations in the waterway for recreational fishing.	☑ Yes	☐ No

Description of existing environmental and potential impacts		
Is the proposal likely to impact on any items or places of social value to the community (either temporarily or permanently)? Yes. The local area and areas in the vicinity of proposed works are important both socially and recreationally for locals and tourists. There will be potential short-term and temporary 'noise and vibration' and 'traffic and transport' impacts on local business and users during construction as identified and described in Section 3.3 and Section 3.9 respectively. However, there will be no impacts on nearby parklands or beaches and the recreational amenity they provide would still occur.	☑ Yes	☐ No
Is the proposal likely to reduce or change visibility of any businesses, farms, tourist attractions or the like (either temporarily or permanently)? Due to the location of the proposed works there will be no change to the visibility of any local businesses.	☐ Yes	☑ No
There are no potential socio-economic impacts of the proposal not listed above or not covered in other sections of this document.		

Safeguards

Safeguards to be implemented for socio-economic impacts are:

1. Adopt all safeguards relating to noise and vibration as outlined in Section 3.3.
2. Adopt all safeguards relating to traffic and transport as outlined in Section 3.9.
3. Adopt all safeguards relating to landscape character and visual amenity in Section 3.11.
4. Before starting construction, an internet site and free-call number must be established for enquiries regarding the proposal, which is to be maintained for the entirety of construction. Contact details must be clearly displayed at the entrance to the site. All enquiries and complaints are to be tracked through a tracking system and acknowledged within 24 hours of being received.
5. The construction area must be secured when unattended.
6. A Communication Plan (CP) is to be prepared and implemented as part of the CEMP to help provide timely and accurate information to stakeholders during construction. The CP must include (as a minimum):
   - Mechanisms to provide details and timing of proposed activities to affected residents and local businesses, including changed traffic and access conditions.
   - Contact name and number for complaints.
   - The CP must be prepared in accordance with the Community Involvement and Communications Resource Manual (RTA, 2008).
7. All complaints are to be recorded on a complaints register and attended to promptly.
8. 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.

3.11 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? (heritage items and areas, distinctive or historic built form, National Parks, conservation areas, scenic highways etc)? Yes. Nearby items include the Coffs Harbour Jetty and Mutton Bird island Nature Reserve and associated walking trails. However, as the proposed marine centre upgrades would be very similar in terms of their visual impact as to that which already exists and changes as a result of the proposal are not considered significant.	☑ Yes	☐ No
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? No. The proposed Government Marine Centre upgrade would be extremely similar in terms of its visual impact within the Coffs Harbour area as it has currently. It would not intrude on or obstruct any views.	☐ Yes	☑ No
Would the proposal require the removal of mature trees or stands of vegetation, either native or introduced? No native terrestrial vegetation occurs at the site (the foreshore is fully developed) and no terrestrial vegetation removal would be required. Some marine macroalgae attached to existing berth structures would be lost but as this does not contribute to the sites visual amenity this is not considered to be relevant to this question and is covered elsewhere.	☐ Yes	☑ No
Would the proposal result in large areas of shotcrete visible from the road or adjacent properties? No shotcrete walls are proposed.	☐ Yes	☑ No
Would the proposal involve new noise walls or visible changes to existing noise walls? No noise walls are required or proposed.	☐ Yes	☑ No
Would the proposal involve the removal or reuse of large areas of road corridor, landscape, either verges or medians? No removal or reuse of any of these areas is proposed. Potential disposal of dewatered sediment on a roadside corridor is bring considered but this does not constitute reuse of a road corridor (just a reuse of the sediment).	☐ Yes	☑ No
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? No bridges are associated with the proposal.	☐ Yes	☑ No

Description of existing environmental and potential impacts		
If involving lighting, would the proposal create unwanted light spillage on residential properties at night (in construction or operation)? No nigh time construction works are proposed. Any proposed lighting during operation would be highly similar to that which is already exists at the site and would be for safety amenity only. No residential properties occur within or near to the proposed works area.	☐ Yes	☑ No
Would any new structures or features being constructed result in over shadowing to adjoining properties or areas? No shadowing of adjoining properties will result from the proposal.	☐ Yes	☑ No
There are no potential landscape character and visual amenity impacts of the proposal not listed above.		

Safeguards

Safeguards to be implemented are:

1. Works to be carried out in accordance with Roads and Maritime EIA-N04 Guideline for Landscape Character and visual impact assessment.

3.12 Waste

Description of existing environmental and potential impacts		
Is the proposal likely to generate >200 tonnes of waste material (contaminated and /or non-contaminated material)? No. There will be >200 tonne (T) of excavated marine sediment but this is proposed to be beneficially reused (resource recovery) by TfNSW (e.g. in a road corridor) so this would not constitute 'waste'. This would be stored onsite (on the existing hardstand) for dewatering and storage prior to movement to the location. There are some pontoons, catwalks and piles which would be demolished from the existing Marine Centre and disposed of. It is estimated that the pontoons and piles would constitute about 100T. The two catwalks and piles to be demolished would be around 5T (including piles). There may also be a small amount of refuse or debris on the seabed (allow for an additional 1-2T). This waste would be classes as General solid waste (non-putrescible). This would be stored onsite (on the existing hardstand) prior to movement to the disposal location. A waste management plan does not form part of this REF and would be the requirement of the Contractor to develop and implement.	☐ Yes	☑ No
Is the proposal likely to require a licence from EPA? No.	☐ Yes	☑ No

Description of existing environmental and potential impacts		
a) The proposed dredging does not trigger an EPL. b) In terms of the operation of the build marine centre mooring facility the centre does not constitute a Scheduled activity under Part 1, Section 25 of the POEO Act 1997.		
Is the proposal likely to require the removal of asbestos? No removal of asbestos will be required for the proposed works.	☐ Yes	☑ No
No other potential waste impacts are expected.		

Safeguards

Safeguards to be implemented for waste are:

1. A Waste Management Plan must be prepared by the Contractor(s) that follows the Roads and Maritime Services Technical Guide: Management of road construction and maintenance waste.
2. Resource management hierarchy principles are to be followed (in accordance with the Waste Avoidance & Resource Recovery Act 2001):
   - 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.
3. Working areas are to be maintained, kept free of rubbish and cleaned up at the end of each working day.
4. All waste must be appropriately and securely contained on-site prior to disposal. Labelled, covered waste receptacles should be provided and recycling of general waste undertaken.
5. Bulk project waste (e.g. fill) sent to a site not owned by the Roads and Maritime Services (excluding EPA licensed 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.
6. There is to be no disposal or re-use of construction waste on to other land (excluding the marine sediment re-use proposed on a TfNSW roadside corridor).
7. Waste is not to be burnt on site.
8. Waste material, other than vegetation and tree mulch, is not to be left on site once the works have been completed.
9. Complete removal of the existing berth structures must be undertaken. A seabed clearance survey should be undertaken post-construction to ensure that all demolition and construction products have been removed.
10. All wastewater from vessels is to be discharged at an approved vessel wastewater disposal facility. No vessel wastewater is to be discharged (i.e. pumped out) directly into the water or onto any land adjacent.
11. The proponent should note and be aware of its responsibility to notify each relevant authority of any pollution incident, in accordance with Section 148 of the Protection of the Environment Operations Act 1997.
12. Additional classification of dewatered sediments is required to confirm classification of sediments as ENM or formally classify under the NSW EPA Waste Classification Guidelines.

4. Consideration of State and Commonwealth environmental factors

4.1 Environmental Planning and Assessment Regulation 2000 checklist

In addition to the requirements of the Is an EIS required? the following factors listed in clause 228(2) of the Environmental Planning and Assessment Regulation, 2000 have also 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.

Environmental factor	Impact
(a) Any environmental impact on a community? There would be no long term adverse environmental impacts on the local community. All short term potential impacts on the local community relating to noise and vibration, traffic and transport and socio-economic factors can be mitigated/managed effectively with the safeguards as detailed in this REF. The proposal will result in a long term benefit to users and a flow on effect to social amenity and safety provided by these users. Refer to safeguards in Section 5.	Negative – short term Positive – long term
(b) Any transformation of a locality? All proposed works would be undertaken within the boundaries of the existing use area. The proposal would lead to a positive transformation of an already altered site, increasing the user amenity (i.e. for Government agencies) and indirectly benefiting recreational and commercial boaters and environmental safety for the area. Refer to safeguards in Section 5.	Positive – long term
(c) Any environmental impact on the ecosystems of a locality? The proposal would have potential short term and highly localised impacts on marine habitats, fauna, water and sediment quality. However, these impacts would be avoided or minimised by adopting the safeguards as detailed in this REF. Refer to safeguards in Section 5.	Negative – short term
(d) Any reduction of the aesthetic, recreational, scientific or other environmental quality or value of a locality? Short term noise and access impacts for recreational users of the area would be expected to occur as a result of the proposal. There would be no long-term reduction in the aesthetic, recreational, scientific or other environmental quality or value of the locality as result of the proposed works. Refer to safeguards in Section 5.	Negative – short term

Environmental factor	Impact
(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? There would be no harm to any known locality, place or building of significance. Refer to safeguards in Section 5.	No expected impact
(f) Any impact on habitat of any protected animals (within the meaning of the *Biodiversity Conservation Act 2016*)? The local marine and terrestrial environments have the potential to support several fauna species protected under the BC Act 2016. Any potential impacts on these habitats (typically relating to noise or potential water quality impacts) would be indirect and short-term in nature. In addition, any impacts can be avoided or minimised by adopting the safeguards provided in this REF. Refer to safeguards in Section 5.	Nil or Negative – short term
(g) Any endangering of any species of animal, plant or other form of life, whether living on land, in water or in the air? There would be no endangering of any species of animal, plant or other form of life resulting from the proposed works. Safeguards are provided to avoid or minimise any potential impacts on flora and fauna. Refer to safeguards in Section 5.	No expected impact
(h) Any long-term effects on the environment? There would be no adverse long-terms effects on the environment, especially if the safeguards outlined in this REF are adopted and operation of the facility is undertaken in accordance with best practice. Refer to safeguards in Section 5.	No expected impact
(i) Any degradation of the quality of the environment? There is the potential for short term impacts on the quality of the environment e.g. water and sediment quality. By adopting the safeguards outlined in this REF any degradation in the quality of the environment would be temporary and highly localised. No long-term degradation to the quality of the environment is expected. Refer to safeguards in Section 5.	Negative – short term
(j) Any risk to the safety of the environment? There would be potential short term risks to the safety of the environment during the proposed construction works which would be managed effectively with the safeguards presented in this REF. Any risk to the safety of the environment would be short term and temporary. In the long term the safety of the environment at the site should be improved. Refer to safeguards in Section 5.	Negative – short term Positive – long term

Environmental factor	Impact
(k) Any reduction in the range of beneficial uses of the environment? There would be a short-term reduction in the beneficial uses of the environment, primarily resulting from access restrictions during construction. However, the proposed facility aims to increase the range of beneficial uses of the site in the longer term. Refer to safeguards in Section 5.	Negative – short term Positive – long term
(l) Any pollution of the environment? There is the potential for short term and localised water, sediment and noise pollution issues associated with the proposal during construction. However, these can be mitigated/managed effectively with the safeguards presented in this REF. Refer to safeguards in Section 5.	Negative – short term
(m) Any environmental problems associated with the disposal of waste? There will be no environmental problems associated with any general or construction waste generated from the site. The waste generated during the proposal would be contained and removed for disposal to approved recycling facilities or to licensed landfill or beneficial roadside reuse in accordance with the safeguards in this REF. No environmental problems are anticipated for the disposal of waste. Refer to safeguards in Section 5.	No expected impact
(n) Any increased demands on resources, natural or otherwise which are, or are likely to become, in short supply? The proposal would not result in any increased demands on resources that are, or are likely to become, in short supply. Relatively small amounts of construction materials would be required for the proposed works. The safeguards provided in this REF would be implemented to minimise any impacts. Refer to safeguards in Section 5.	No expected impact
(o) Any cumulative environmental effect with other existing or likely future activities? There would be no immediate / short term cumulative environmental effect of the proposal with other proposed activities. The majority of vessels which will use the upgraded Government berths are already using the existing facility. Use of the site will remain as it currently is. There may be minor cumulative impacts with future development or upgrades within the inner harbour which are not related to the current proposal and not yet known, however these would be expected to be minimal given limitations to site activities and size. Potential impacts would be minimised with implementation of the safeguards provided in this REF. Refer to safeguards in Section 5.	Nil – short term Negative – long term
(p) Any impact on coastal processes and coastal hazards, including those under projected climate change conditions? There would be no impacts on coastal processes or coastal hazards as a result of the proposed construction works.	No expected impact

4.2 Matters of National Environmental Significance checklist

An EPBC Act 1999 Protected Matters Search was undertaken for the proposal to identify any Matters of National Environmental Significance (MNES) within a 1 km radius of the study site (see **Appendix B**). A summary of findings is provided below.

Factor	Impact
(a) Any impact on a World Heritage property? No World Heritage Properties occur within1 km of the study area (see **Appendix B** and Section 3.5) so will not be impacted by the proposal.	Nil
(b) Any impact on a National Heritage place? No National Heritage Places occur within 1 km of the study area (see **Appendix B** and Section 3.5) so will not be impacted by the proposal.	Nil
(c) Any impact on a wetland of international importance (often called 'Ramsar' wetlands)? No wetlands of international importance occur within 1 km of the study area (see **Appendix B** and Section 3.7.2) and will not be impacted by the proposal.	Nil
(d) Any impact on nationally threatened species, ecological communities or migratory species? The EPBC Act 1999 Protected Matters Search (**Appendix B**) identified a number of threatened and migratory fauna with the potential to occur in the study area (within 1 km of the site) (see Section 3.7.2). Only short-term and minor impacts are expected on these species considering the proposed works and the safeguards which would be adopted for the proposal.	Negative – short term
(e) Any impact on a Commonwealth marine area? The Commonwealth Marine Area does not occur within 1 km of the study area (see **Appendix B**) and will not be impacted by the proposal if the safeguards included in this REF are adopted.	Nil
(f) Does the proposal involve a nuclear action (including uranium mining)? The proposal does not include a nuclear action.	Nil
Additionally, any impact (direct or indirect) on the environment of Commonwealth land? The proposal will not have any impact on any listed Commonwealth Land as it does not occur within a 1 km radius of the study area (see **Appendix B**).	Nil

5. Summary of safeguards and environmental management measures

5.1 Safeguards summary

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 Roads and Maritime 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.

Safeguards for the proposed work	
Soils/sediments	1. A silt boom/curtain must be installed around any active in-water work areas that may disturb the seabed (e.g. dredging, piling, demolition). The installation of the silt boom may be progressive to contain areas of current works, however before construction, a plan of deployment and progression must be prepared by the Contractor to align with the schedule of works; the plan must ensure that: • Installation of the silt curtain/boom is to occur before starting physical works. • Installation is undertaken during high tide periods from a boat. The device must be designed to rise and fall with the tide to prevent disturbance. • The silt boom and curtain must be weighted appropriately with sufficient length to reach from the surface to the bed level regardless of tidal fluctuations before starting work. • Inspection of the device is undertaken on a daily basis after ebbing tides, with additional inspection following any storm events. Visual monitoring of turbidity inside and outside of the device must occur at all times during work. • Results of daily observations of the integrity of the silt curtain are required to be recorded and maintained. Records are required to be kept on the site and to be made available for inspection by persons authorised by TfNSW. • Decommissioning is to be carried out by boat during a high tide period. 2. Decommissioning can only be undertaken once construction activities are above seabed level (that is, no activities which disturb the seabed are to occur without the curtain in place). 3. Before removing the silt curtain device, conditions within the curtain will be assessed visually to verify that sediment has settled resulting in similar water turbidity to that outside the curtain (that is, the curtain must not be decommissioned until the water inside and outside correspond visually). 4. Visual monitoring of local water quality (i.e. turbidity, hydrocarbon spills/slicks) is to be undertaken at all times during work to quickly identify any potential spills or deficient silt curtains or erosion and sediment controls. 5. Work positioning barges, excavators and pile driving equipment must be scheduled to occur during calm conditions to prevent excessive sedimentation impacts and minimise any safety risks. 6. Erosion and sediment control measures on land (i.e. during dewatering of dredged sediments) are to be implemented and maintained to: • Prevent sediment moving off-site and sediment laden water entering any water course, drainage lines, or drain inlets.

Safeguards for the proposed work	
	• Reduce water velocity and capture sediment on site. • Minimise the amount of material transported from site to surrounding pavement surfaces. • Divert clean water around the site. 7. Erosion and sediment control measures are to be implemented in accordance with the Landcom/Department of Housing Managing Urban Stormwater, Soils and Construction Guidelines (the Blue Book)). 8. 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. 9. Work areas are to be stabilised progressively during the works. 10. A progressive Erosion and Sediment Control Plan (ESCP) is to be prepared for the works. This would be required from the Contractor(s). 11. The maintenance of sediment stockpile sites is to be in accordance with the Roads and Maritime Services Stockpile Site Management Guideline (EMS-TG-10).
Waterways and water quality	12. All fuels, chemicals and hazardous liquids would be stored away from drainage lines, within an impervious bunded area in accordance with Australian Standards, EPA Guidelines and Transport for NSW's Chemical Storage and Spill Response Guidelines (TfNSW, 2019). 13. Adequate water quality and hazardous materials procedures (including spill management procedures, use of spill kits and procedures for refuelling and maintaining construction vehicles/equipment) would be implemented in accordance with relevant EPA guidelines and the Transport for NSW Chemical Storage and Spill Response Guidelines (TfNSW, 2019j) during the construction phase. 14. 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. 15. Spill kits for construction barges must be specific for working within the marine environment. 16. All staff would be made aware of the location of the spill kits and be trained in how to use the kits in the case of a spill. 17. The proponent should note and be aware of its responsibility to notify each relevant authority of any pollution incident, in accordance with Section 148 of the Protection of the Environment Operations Act 1997. 18. During construction the Contractor must apply the following measures to reduce impacts on water quality. Measures include (but are not limited to): • All construction equipment and vessels will be inspected by qualified personnel prior to the commencement of work to reduce the risk of hydrocarbon spills or leaks. • Vehicles, vessels and plant must be properly maintained and regularly inspected for fluid leaks. • No vehicle or vessel wash-down would occur on-site. • Portable toilets will be positioned securely within approved compound areas and emptied on a regular basis using a licensed service provider and human waste disposed of to a local sewerage treatment plant. • Non-toxic/biodegradable environmentally friendly/water based drilling muds/lubricants will be used for pile driving activities.

Safeguards for the proposed work	
	• The lowest volume of hydrocarbons (oil, grease, petrol and diesel) practicable will be stored on-site. • Chemical storage areas will be bunded and chemicals will be stored in accordance with the products Safety Data Sheet (SDS) and AS 1940 on board construction vessels and land-based construction areas only. • Vessels (self-propelled and unpowered) will have adequate on-board communication, containment, drainage, bunding and monitoring systems to prevent discharges of unauthorized effluents. 19. There is to be no release of dirty water into drainage lines and/or waterways. 20. Visual monitoring of local water quality (i.e. turbidity, hydrocarbon spills/slicks) is to be undertaken at all times during active works to identify any potential spills or deficient silt curtains or erosion and sediment controls. 21. Water quality control measures are to be used to prevent any materials (e.g. concrete, grout, sediment etc) entering drain inlets or waterways. 22. 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. 23. Excess debris from cleaning and washing is removed using hand tools. 24. Vessels (including barges) are only to be used at suitable tides when no less than 600 mm clearance is available between the underside of the vessel and the bed of the waterway. 25. Silt curtain/s are to be installed prior to and around the area of works that may disturb the seabed. 26. Silt curtains are to be installed, monitored and maintained as needed to contain any sediment. 27. All erosion and sediment control safeguards as described in Section 3.1 must be adopted to prevent water quality issues associated with the spread of suspended sediments. 28. In the event of a maritime spill, the incident emergency plan would be implemented in accordance the response to shipping incidents and emergencies outlined in the 'NSW State Waters Marine Oil and Chemical Spill Contingency Plan' (Maritime, 2012). 29. 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. 30. 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.
Noise and vibration	31. Works are to be undertaken within the hours of operation outlined in the DECCW Interim Construction Noise Guideline (DECCW 2009) (***http://www.epa.nsw.gov.au/resources/noise/09265cng.pdf***). Any work performed outside normal work hours or on Sundays or public holidays must have measures in place to minimise noise impacts. The recommended standard hours for construction work are as follows: • Monday to Friday 7am – 6pm • Saturday 8am – 1pm • No work on Sunday or public holidays

Safeguards for the proposed work	
	32. Timing and duration of works should also be planned as follows: • The duration of construction works should be planned for as short a time frame as necessary and possible to reduce potential noise impacts. • Timing of the works should consider and avoid peak holiday use periods where possible (including summer and Easter holidays) to minimise impacts on tourism and recreational users. 33. Noise impacts are to be minimised in accordance with Roads and Maritime Construction Noise Estimator. 34. Additional noise and vibration mitigation measures should be adopted as follows (and as applicable): • Allowing adequate distance that rollers and other vibration producing equipment can come to adjacent buildings, • Using non vibration producing equipment, to minimise or prevent vibration impacts, • Enclosing engines with sound absorption material, and • Ensuring properly maintained / functioning mufflers are fitted to plant and equipment. 35. Where there are complaints received about noise or vibration from an identified work activity, review and implement where feasible and reasonable, actions additional to those described above to minimise noise or vibration output. 36. Notification - Residents, community and commercial operators in the area should be made aware of the scope and timing of the proposed works so that they can plan accordingly. This may be done through direct consultation with commercial operators and local businesses, notices in the local newspaper, local shops, community noticeboards and through Council. Notification should detail proposed work activities, dates and hours, impacts and mitigation measures, indication of work schedule and a contact telephone number. Notification will be a minimum of 7 calendar days prior to the start of work. 37. Phone calls detailing relevant information made to identified/affected stakeholders, who have provided their contact details, within seven calendar days of proposed work. Phone calls provide affected stakeholders with personalised contact and tailored advice, with the opportunity to provide comments on the proposed work and specific needs. Where the resident cannot be telephoned then an alternative form of engagement should be used. 38. Respite Offers should be considered where there are high noise and vibration generating activities near receivers. As a guide work should be carried out in continuous blocks that do not exceed 3 hours each, with a minimum respite period of one hour between each block. The actual duration of each block of work and respite should be flexible to accommodate the usage of and amenity at nearby receivers. The purpose of such an offer is to provide residents with respite from an ongoing impact. 39. Noise Level Guidelines which must be referred to by the Contractor(s) and included into the CEMP include: • DEC 2006 – Assessing Vibration: A Technical Guideline. Department of Environment and Conservation. February 2006. • DECC 2009 – Interim Construction Noise Guidelines. Department of Environment and Climate Change. July 2009. • DECCW 2001 – NSW Road Noise Policy. Department of Environment, Climate Change and Water. March 2011. • EPA 2000 – NSW Industrial Noise Policy. Environment Protection

Safeguards for the proposed work	
	Authority. January 2000. 40. All Contractors are to receive an environmental induction. The induction must at least include: • Project specific and relevant standard noise and vibration mitigation measures. • Relevant licence and approval conditions. • Permissible hours of work. • Any limitations on high noise generating activities. • Location of nearest sensitive receivers. • Construction employee parking areas. • Designated loading/unloading areas and procedures. • Site opening/closing times (including deliveries). • Environmental incident procedures.
Air quality	41. Air quality during construction will be considered and addressed within the CEMP and must include methods to manage work during strong winds or other adverse weather conditions as required. 42. Plant and machinery would be regularly checked and maintained in a proper and efficient condition. Plant and machinery would be switched off when not in use, and not left idling. 43. Measures (including minor watering or covering exposed areas) are to be used to minimise or prevent air pollution and dust during dewatering activities. 44. Works (including the spraying of paint and other materials) are not to be carried out during strong winds or in weather conditions where high levels of dust or air borne particulates are likely. 45. Materials are not to be burnt on site. 46. Vehicles and vessels transporting sediment, waste or other materials that may produce odours or dust are to be covered during transportation. 47. 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).
Non-Aboriginal Heritage	48. If work results in unexpected archaeological finds, all work must stop in the vicinity of the material/find. TfNSW are to be notified and the 'Unexpected Heritage Items Procedure' in the Standard Management Procedure: Unexpected Heritage Items (2015) is to be followed. 49. If work results in unexpected archaeological finds the Roads and Maritime Services Senior Environment Specialist - Heritage must be contacted immediately.
Aboriginal Heritage	50. All construction staff would undergo an induction in the recognition of Indigenous cultural heritage material. This training would include information such as the importance of Indigenous cultural heritage material and places to the Indigenous community, as well as the legal implications of removal, disturbance and damage to any Indigenous cultural heritage material and sites. 51. If Aboriginal heritage items are uncovered during the works, all works in the vicinity of the find must cease and the Roads and Maritime Services Aboriginal Cultural Heritage Officer and Regional Environment Manager contacted immediately. Steps in the Roads and Maritime Standard Management

Safeguards for the proposed work	
	Procedure: Unexpected Heritage Items must be followed. 52. If unexpected Aboriginal heritage items are uncovered the Contractor(s) would immediately notify the TfNSW Project Manager and TfNSW Environment and Planning Manager so they can assist in co-ordinating next steps which are likely to involve consultation with an Aboriginal heritage consultant, Heritage NSW and the Local Aboriginal Land Council. 53. If human remains are found, work would cease, the site secured and the NSW Police and Heritage NSW notified. Where required, further archaeological investigations and an Aboriginal Heritage Impact Permit would be obtained prior to works recommencing at the location.
Biodiversity	54. There is to be no disturbance or damage to threatened species or areas of outstanding value. 55. Works are not to harm threatened fauna (including where they inhabit bridges or other structures e.g. timber fence posts or maritime piles). 56. If unexpected threatened fauna or flora species are discovered, stop works immediately and follow the Roads and Maritime Services Unexpected Threatened Species Find Procedure in the Roads and Maritime Services Biodiversity Guidelines 2011 – Guide 1 (Pre-clearing process). 57. Fauna handling must be carried out in accordance with the requirements the Roads and Maritime Services Biodiversity Guidelines - Guide 9 (Fauna Handling). 58. Works are not to create an ongoing barrier to the movement of wildlife. 59. Anchoring and/or use of construction vessels (including barges) is not permitted over sensitive marine vegetation or rocky reef habitat. 60. All activities are to minimise disturbance to shallow water habitats under, and in the immediate vicinity of water based structures, including disturbance of seabed sediments and smothering habitats from propeller strike or excessive propeller wash. 61. All activities are to be carried out to avoid spreading marine pests including: • All equipment with the potential to import diseases or pests to site will be cleaned prior to arrival onsite. • 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. 62. Any harm to marine vegetation is to be carried out in accordance with a permit under the Fisheries Management Act 1994 63. All safeguards outlined for ‘waterways and water quality’ and ‘soils and/or sediments’ must be adopted as these will also assist in preventing impacts on marine habitats. 64. Contractors (e.g. piling operators) must take all necessary actions to avoid any adverse interactions of vessels and equipment with marine mammals, turtles and rays including ceasing dredging, piling or other works if required. 65. Silt curtains must be monitored / checked regularly to avoid entanglement of fauna. 66. To limit the potential of a fish kill incident, the Contractor must undertake a visual inspection of the waterway for dead or distressed fish (indicated by fish gasping at the water surface, fish crowding at the shoreline) a minimum of twice daily during the works. DPI Fisheries (1800 043 536) shall be immediately notified of any observations or reports of dead or distressed fish within the

Safeguards for the proposed work	
	construction site. In such cases, all works other than emergency response procedures are to cease until the issue is rectified and written approval to proceed is provided by DPI Fisheries. 67. To reduce the potential impacts of marine debris on marine fauna, general and construction waste shall be contained and correctly disposed of onshore. Also refer to waste management safeguards. 68. To reduce the potential for lighting related impacts on marine fauna construction activities must not be undertaken during the evening / night time. 69. The risk of vessel strike during construction should be reduced through the adoption of: • Limitation of vessel speed limits. • Moving vessel exclusion zones around marina mammals if they occur (300 m). • Education of all personnel. • Awareness of the presence of marine fauna in the local waterway so that they can adopt appropriate speeds and clearance. 70. To reduce the potential for piling noise impacts on marine fauna a soft start procedure should be adopted after the local waterway has been checked for the presence of large marine fauna. If any large marine fauna are spotted within the local waterway during piling, then the piling should cease until they have moved away from the area. 71. Any injured marine mammals must be immediately reported to NPWS on 1300 361 967 or the ORRCA 24 hour hotline on 02 9415 3333. The ORRCA telephone hotline is staffed by volunteers and keeps ORRCA members, Government Authorities and interested members of the public informed of marine mammal emergencies, incidents and sightings. 72. To reduce the risk of invasive species being translocated to the site via construction vessels or equipment, the following should be adopted: • Contractors must undertake a Vessel Risk Assessment (VRA) of vessels, floating plant and other marine construction equipment prior to mobilisation to site. The VRA may be undertaken by the vessel owner / operator. The VRA will determine if a vessel inspection is required. • Contractors must undertake an Invasive Marine Species (IMS) Inspection of all vessels assessed in the VRA as uncertain or high risk for introduction of invasive marine species. The IMS must be undertaken by an appropriately qualified person with experience in biosecurity of marine vessels, floating plant and marine based construction equipment. The Contractor is responsible for arranging the IMS inspection and attendance of Fisheries or other suitably qualified personnel. • The Contractor shall arrange vessels IMS inspections for all vessels considered high / uncertain risk prior to the commencement of construction either within seven days of mobilisation to site (directly). 73. Construction vessel antifouling shall be maintained to avoid the attachment and potential translocation of invasive species. 74. Ballast water management must be adopted as follows: • Ballast water exchange by domestic vessels shall be avoided. • Domestic vessels shall manage ballast water in accordance with the Australian Ballast Water Management Requirements (Department of Agriculture and Water Resources 2016). 75. Monitoring and inspection / surveillance of the construction vessels and barges

Safeguards for the proposed work	
	should be undertaken in accordance with the Biosecurity Act 2015. 76. Any suspected new sightings of invasive marine species should be reported by calling the 24-hour recorded hotline; 02 4916 3877 or email ***aquatic.pests@dpi.nsw.gov.au***
Trees	Safeguards are not applicable to this section as no trees occur onsite and no trees will be disturbed or removed.
Traffic and transport	77. 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. 78. 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. 79. 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. This will be the responsibility of the Contractor(s). 80. Notification is to be given to affected businesses and community members prior to the works taking place (a minimum of 7 calendar days prior to the start of works). The notification is to include: • 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. 81. No new access tracks are to be created for the works. 82. Parking of vehicles and storage of plant/equipment is to occur on existing paved areas. Where this is not possible, vehicles and plant/equipment are to be kept away from environmentally sensitive areas and outside the dripline of trees. 83. Any access to waterways using barges/boats or similar is to be via an existing boat ramp with no disturbance to the bank or surrounding vegetation.
Socio-economic	84. Adopt all safeguards relating to noise and vibration as outlined in Section 3.3. 85. Adopt all safeguards relating to traffic and transport as outlined in Section 3.9. 86. Adopt all safeguards relating to landscape character and visual amenity in Section 3.11. 87. Before starting construction, an internet site and free-call number must be established for enquiries regarding the proposal, which is to be maintained for the entirety of construction. Contact details must be clearly displayed at the entrance to the site. All enquiries and complaints are to be tracked through a tracking system and acknowledged within 24 hours of being received. 88. The construction area must be secured when unattended. 89. A Communication Plan (CP) is to be prepared and implemented as part of the CEMP to help provide timely and accurate information to stakeholders during construction. The CP must include (as a minimum): • Mechanisms to provide details and timing of proposed activities to affected residents and local businesses, including changed traffic and access conditions. • Contact name and number for complaints. • The CP must be prepared in accordance with the Community Involvement

Safeguards for the proposed work	
	and Communications Resource Manual (RTA, 2008). 90. All complaints are to be recorded on a complaints register and attended to promptly. 91. 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.
Landscape character and visual amenity	92. Works to be carried out in accordance with Roads and Maritime EIA-N04 Guideline for Landscape Character and visual impact assessment.
Waste	93. A Waste Management Plan must be prepared by the Contractor(s) that follows the Roads and Maritime Services Technical Guide: Management of road construction and maintenance waste. 94. Resource management hierarchy principles are to be followed (in accordance with the Waste Avoidance & Resource Recovery Act 2001): • 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. 95. Working areas are to be maintained, kept free of rubbish and cleaned up at the end of each working day. 96. All waste must be appropriately and securely contained on-site prior to disposal. Labelled, covered waste receptacles should be provided and recycling of general waste undertaken. 97. Bulk project waste (e.g. fill) sent to a site not owned by the Roads and Maritime Services (excluding EPA licensed 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. 98. There is to be no disposal or re-use of construction waste on to other land (excluding the marine sediment re-use proposed on a TfNSW roadside corridor). 99. Waste is not to be burnt on site. 100. Waste material, other than vegetation and tree mulch, is not to be left on site once the works have been completed. 101. Complete removal of the existing berth structures must be undertaken. A seabed clearance survey should be undertaken post-construction to ensure that all demolition and construction products have been removed. 102. All wastewater from vessels is to be discharged at an approved vessel wastewater disposal facility. No vessel wastewater is to be discharged (i.e. pumped out) directly into the water or onto any land adjacent. 103. The proponent should note and be aware of its responsibility to notify each relevant authority of any pollution incident, in accordance with Section 148 of the Protection of the Environment Operations Act 1997. 104. Additional classification of dewatered sediments is required to confirm classification of sediments as ENM or formally classify under the NSW EPA

Safeguards for the proposed work	
	Waste Classification Guidelines.

5.2 Licensing and approvals

A list of licences and/or approvals required for the proposal is provided in Table 5-2.

Table 5-2 Summary of licencing and approvals required.

Instrument	Requirement	Timing
Fisheries Management Act 1994 (s199)	Notification to the Minister for Primary Industries prior to any dredging or reclamation works.	A minimum of 28 days prior to the start of work.
Fisheries Management Act 1994 (s205)	Permit to dredge/reclaim.	Prior to start of the activity. Note a ~8 week timeframe for permit review and approval may be necessary.
Crown Land Management Act 2016 (Division 3.4, 5.5 and 5.6)	Licence or lease to occupy areas of Crown land.	Prior to start of the activity
S138 Roads Act	Approval from Coffs Harbour City Council, for any enclosure, obstruction to public access, or traffic control within the area resulting from construction works.	Prior to start of activity.

Other environmental requirements of the proposal (as raised by stakeholders) are provided in Table 5-3.

Table 5-3 Other requirements.

Requirement		
Construction environmental management plan (CEMP) to be prepared and sent to EM for review.	☑ Yes	☐ No
Dredge Management Plan (DMP) to be prepared and sent to EM for review.	☑ Yes	☐ No
Any works impacting on navigation during the construction phase must seek Roads and Maritime support 21 days prior to works commencing. A full scope of works including dates is to be provided to ***NavigationAdviceNorth@rms.nsw.gov.au***.	☑ Yes	☐ No
Dewatered sediment must be retested once dried to confirm suitability as Excavated Natural Material (ENM) before any TfNSW roadside reuse. If this is not applicable further testing under the NSW EPA Waste	☑ Yes	☐ No

Requirement		
Classification Guidelines may be required by a local waste facility.		
A water quality monitoring program must be developed and implemented during dredging, construction and dewatering activities.	☑ Yes	☐ No

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:

Dr Katie Newton
Senior Marine Environmental Consultant
Advisian Pty Ltd
Date: 17 December 2020

Minor Works REF reviewed by:

Harry Houridis
Principal Marine Environmental Consultant
Advisian Pty Ltd
Date: 17 December 2020

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 clause 228 of the Environmental Planning and Assessment Regulation 2000.

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 the Environment and Energy for a decision by the Commonwealth Minister for the Environment and Energy 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 upgrade the existing Government Marine Centre (including minor dredging) 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 (5) years until 11 December 2025 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:

Greg Collins
TfNSW Northern Region Environment Manager

Noted by:

David Doyle

TfNSW Senior Manager Property and Commercial

6.4 Determination

In accordance with the above recommendation and sections 5.5 and 5.7 of the EP&A Act, I determine that Roads and Maritime Services may:

- Proceed with the activity

Andrew Mogg

Director, Maritime Infrastructure Delivery Office

Transport for NSW

7. References

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Appendix A

Marine Centre Concept Design and Dredge Plans

COFFS HARBOUR MARINE CENTRE UPGRADE
FOR TRANSPORT FOR NSW

LOCALITY PLAN
NTS

DRAWING LIST

DRAWING No	DRAWING TITLE
311015-00116-MA-DWG-0001	TITLE SHEET, LOCALITY PLAN AND DRAWING LIST
311015-00116-MA-DWG-0002	GENERAL NOTES
311015-00116-MA-DWG-0003	SITE GENERAL ARRANGEMENT
311015-00116-MA-DWG-0004	DREDGE PLAN
311015-00116-MA-DWG-0005	DREDGE PLAN SECTIONS
311015-00116-MA-DWG-0006	DEMOLITION PLAN

REV	DATE	REVISION DESCRIPTION	DRAWN	DRAFT CHK	DESIGNED	ENG CHK	APPROVED	CUSTOMER	REF DRAWING No	REFERENCE DRAWING TITLE
B	02.12.20	ISSUED FOR TENDER	PK	BB	AN	PM	PM			
A	23.10.20	ISSUED FOR CLIENT REVIEW	PK	BB	PM					

A1 SHEET SCALE AS SHOWN

OneWay to zero harm

ADVISIAN PROJECT No.
311015-00116

ENGINEERING AND PERMIT STAMPS (As Required)

ISSUED FOR TENDER

CUSTOMER
NSW GOVERNMENT Transport for NSW

Advisian

COFFS HARBOUR MARINE CENTRE UPGRADE
TITLE SHEET, LOCALITY PLAN
AND DRAWING LIST

DRG No 311015-00116-MA-DWG-0001 REV B

ADVISIAN_A1_L

MARINA DRIVE

EXISTING FOOTPATH

UC

EXIST. TANKS

HARDSTAND

TRAVEL LIFT (BY OTHERS)

EXIST. OFFICE AND STORES

WATER POLICE

FISHERIES

GATE

NEW ROLL OVER KERB

LOT1 DP855465

32m

9.5m | 1.8m | 14m | 1.8m

2.4m | 7m | 1.8m | 9m | 1.8m

SOP 1
513827.056 E
6647599.411 N

SOP 2
513856.893 E
6647587.188 N

DO NOT REMOVE OR DISTURB ARMOUR ROCK

90°

NOTES:

1. COFFS HARBOUR PORT DATUM IS 0.882m BELOW AHD.
2. HORIZONTAL DATUM: MGA94 ZONE 56.
3. SEABED CONTOURS ARE APPROXIMATE, SHOWN RELATIVE TO CHART DATUM (C.D).
4. ESTIMATED TOTAL VOLUME (EXCLUDING OVERDREDGE ALLOWANCE) IS ~350 BANK CUBIC METRES.
5. DIMENSIONS AND SETOUT INDICATIVE ONLY. CONTRACTOR SHALL COMPLETE THE DESIGN IN ACCORDANCE WITH AS 3962:2020 AND OTHER RELEVANT AUSTRALIAN STANDARDS.

PLAN
SCALE 1:250

LEGEND:
- DREDGE TO -3.0m
- BATTER 1:4 (MAXIMUM SLOPE)
- BATTER 1:2 (MAXIMUM SLOPE)
- SOL

5 0 5 10 15 20 25m
1:250 (A1) 1:500 (A3)

REV	DATE	REVISION DESCRIPTION	DRAWN	DRAFT CHK	DESIGNED	ENG CHK	APPROVED	CUSTOMER	REF DRAWING No	REFERENCE DRAWING TITLE
B	02.12.20	ISUED FOR TENDER	PK	BB	AN	PM	PM			
A	23.10.20	ISSUED FOR CLIENT REVIEW	PK	BB	PM	–	–			

A1 SHEET SCALE AS SHOWN

OneWay™ to zero harm

ADVISIAN PROJECT No.
311015-00116

ENGINEERING AND PERMIT STAMPS (As Required)

ISSUED FOR TENDER

NSW GOVERNMENT | Transport for NSW

Advisian
WorleyParsons Group

COFFS HARBOUR MARINE CENTRE UPGRADE DREDGE PLAN

DRG No 311015-00116-MA-DWG-0004
REV B

ADVISIAN_A1_REV1

LOCATION: B:\COFFS HARBOUR\MARINE CENTRE REVB\311015-00116-MA-DWG-0004_B.DWG
USER NAME: brendon.boyle
PLOT DATE & TIME: 2/12/2020 3:23:13 PM
SAVE DATE & TIME: 2/12/2020 2:49:46 PM

NOTES:

1. COFFS HARBOUR PORT DATUM IS 0.882m BELOW AHD.
2. HEIGHTS ARE SHOWN TO CHART DATUM (CD)
3. ALL SETOUT COORDINATES AND DIMENSIONS ARE APPROXIMATE. FINAL POSITION SHALL BE SUBJECT TO CONTRACTORS DETAIL DESIGN WHICH SHALL BE APPROVED BY THE PRINCIPAL PRIOR ORDER OF MATERIAL.
4. PONTOON RESTRAINT PILES TO BE LOCATED IN ACCORDANCE WITH CONTRACTOR'S DESIGN. UNLESS APPROVED OTHERWISE, THE CONTRACTORS DESIGN MUST INCLUDE A RESTRAINT PILE ON THE FREE END OF ALL FINGERS. RESTRAINT PILES FOR THE WALKWAYS ARE NOT SHOWN.

VESSEL DATA:

Agency	Ref	Vessel Particulars				Air berth Dimensions			Electrical Water Requirements
		LOA (m)	BOA (m)	Dmax (m)	isplacemer (t)	LOA (m)	BOA (m)	Dmax (m)	
DPI	1	7	2.75	1	3	9	4	1.8	15 amp 240V and water
	2	9	3.5	1	5	9.55	4.09	1.8	15 amp 240V and water
	3	22	6.4	1.9	41				32 amp, 2 x 15 amp plugs, 3 phase and single phase, 415V isolation transformer
Water Police	4	20	5.6	1.8	47.5				32 amp, 2 x 15 amp plugs, 3 phase and single phase
	5	8.5	2.8	0.8	4				15 amp 240V and water
RMS	6	7.9	2.5	1	4				15 amp 240V and water
	7	10.3	3.3	2	4.3	9.55	4.09	2.2	15 amp 240V and water
Seized/Visiting Vessel	8	20	6.4	2	40				32 amp, 2 x 15 amp plugs, 3 phase and single phase
	9	8.5	2.5	1	10				15 amp 240V and water

LEGEND

- MOORING PILES
- RESTRAINT PILES

5 0 5 10 15 20 25m
1:250 (A1) 1:500 (A3)

REV	DATE	REVISION DESCRIPTION	DRAWN	DRAFT CHK	DESIGNED	ENG CHK	APPROVED	CUSTOMER	REF DRAWING No	REFERENCE DRAWING TITLE
B	02.12.20	ISSUED FOR TENDER	PK	BB	AN	PM	PM			
A	23.10.20	ISSUED FOR CLIENT REVIEW	PK	BB	PM					

A1 SHEET SCALE AS SHOWN

OneWay to and from

ADVISIAN PROJECT No.
311015-00116

ENGINEERING AND PERMIT STAMPS (As Required)

ISSUED FOR TENDER

NSW GOVERNMENT Transport for NSW

Advisian
WorleyParsons Group

COFFS HARBOUR MARINE CENTRE UPGRADE
SITE GENERAL ARRANGEMENT

DRG No 311015-00116-MA-DWG-0003
REV B

GENERAL NOTES

1. THESE DRAWINGS SHALL BE READ IN CONJUNCTION WITH ALL OTHER DRAWINGS AND SPECIFICATIONS AND WITH SUCH OTHER INSTRUCTIONS AS MAY BE ISSUED DURING THE COURSE OF THE CONTRACT. ANY DISCREPANCIES SHALL BE REFERRED TO THE PRINCIPAL'S REPRESENTATIVE BEFORE PROCEEDING WITH THE WORKS.

2. DURING CONSTRUCTION THE CONTRACTOR SHALL BE RESPONSIBLE FOR MAINTAINING THE PROPOSED AND EXISTING STRUCTURES IN A STABLE CONDITION AND ENSURING THAT NO PART IS OVERSTRESSED DURING CONSTRUCTION ACTIVITIES. TEMPORARY BRACING AND PROPS SHALL BE PROVIDED BY THE CONTRACTOR TO KEEP THE WORKS STABLE AT ALL TIMES.

3. ALL MATERIAL AND WORKMANSHIP SHALL BE IN ACCORDANCE WITH THE RELEVANT AND CURRENT AUSTRALIAN STANDARDS AND WITH THE BY-LAWS AND ORDINANCES OF THE RELEVANT BUILDING AUTHORITIES EXCEPT WHERE VARIED BY THESE DRAWINGS AND SPECIFICATIONS.

4. ALL CRITICAL ARRANGEMENTS AND DIMENSIONS SHOWN SHALL BE VERIFIED BY THE CONTRACTOR ON SITE BEFORE WORK COMMENCES. DRAWING SHALL NOT BE SCALED FOR DIMENSIONS.

5. BEFORE UNDERTAKING ANY WORKS, THE CONTRACTOR SHALL ESTABLISH THE LOCATION OF ALL EXISTING SERVICES AFFECTED BY THE WORKS AND ADVISE THE PRINCIPAL IF THERE ARE ANY UNIDENTIFIED SERVICES THAT CAN POTENTIALLY BE AFFECTED BY THE WORKS.

6. THE CONTRACTOR SHALL PROVIDE TEST CERTIFICATES FROM NATA APPROVED BODY CERTIFYING THAT THE MATERIAL USED COMPLY WITH THE RELEVANT SPECIFICATIONS.

7. ALL DIMENSIONS ARE IN MILLIMETRES UNLESS NOTED OTHERWISE.

DESIGN NOTES

1. THE CONTRACTOR SHALL DESIGN ALL COMPONENTS OF THE PONTOON SYSTEM INCLUDING PONTOON RESTRAINTS PILES, PONTOONS, MOORING PILES AND GANGWAY.

2. ALL DESIGN SHALL BE IN ACCORDANCE WITH THE RELEVANT AUSTRALIAN STANDARDS.

3. THE CONTRACTOR IS RESPONSIBLE FOR PREPARATION OF DETAILED DESIGN DRAWINGS, SHOP FABRICATION DRAWINGS, SITE SURVEYS (LAND AND HYDROGRAPHIC), GEOTECHNICAL INVESTIGATIONS (IF REQUIRED), STRUCTURAL DESIGN CERTIFICATION.

4. DESIGN LOAD SHALL COMPLY WITH AS 3962:2020 AND THE SPECIFICATION.

DATUMS & TIDAL DATA

1. VERTICAL DATUM IS COFFS HARBOUR PORT DATUM (CHART DATUM).

2. ALL LEVELS AND COORDINATES ARE IN METRES (UNO).

TIDAL INFORMATION :

SITE	HAT (CHPD)	LAT (CHPD)	HAT (AHD)	LAT (AHD)	RANGE (HAT-LAT)	MSL (CHPD)	MSL (AHD)
COFFS HARBOUR	2.12	-0.11	1.24	-0.99	2.23	0.9	0.02

(MHL2574 - Ocean Tides Annual Report 2016-17)
(CHPD) - Coffs Harbour Port Datum

REV	DATE	REVISION DESCRIPTION	DRAWN	DRAFT CHK	DESIGNED	ENG CHK	APPROVED	CUSTOMER	REF DRAWING No	REFERENCE DRAWING TITLE
B	02.12.20	ISSUED FOR TENDER	PK	BB	AN	PM	PM			
A	23.10.20	ISSUED FOR CLIENT REVIEW	PK	BB	PM					

A1 SHEET SCALE AS SHOWN

OneWay to zero harm

ADVISIAN PROJECT No.
311015-00116

ENGINEERING AND PERMIT STAMPS (As Required)

ISSUED FOR TENDER

CUSTOMER

NSW GOVERNMENT | Transport for NSW

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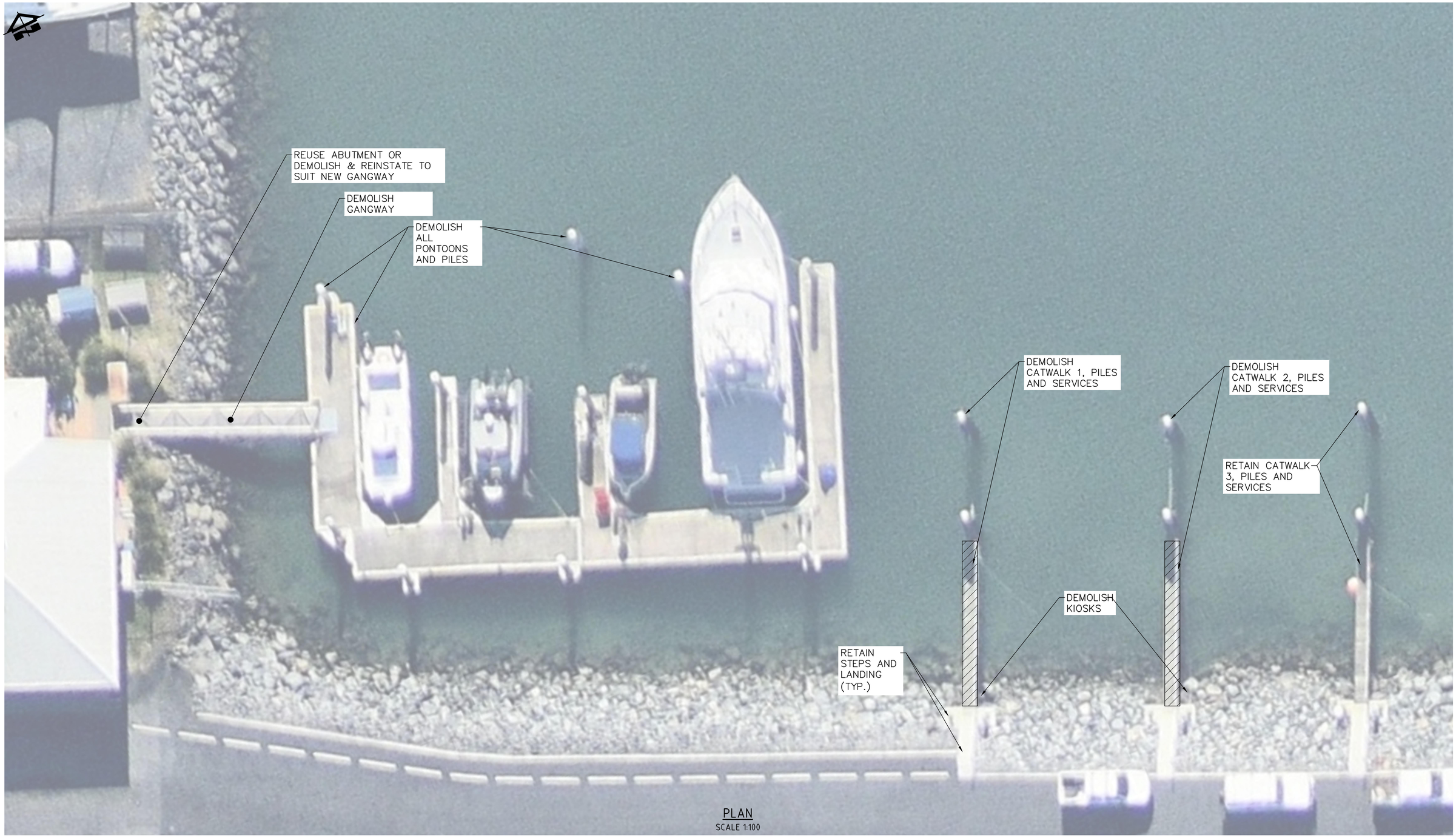
COFFS HARBOUR MARINE CENTRE UPGRADE
GENERAL NOTES

DRG No 311015-00116-MA-DWG-0002 REV B

ADVISIAN_A1_C



PLAN
SCALE 1:100

2 0 2 4 6 8 10m
1:100 (A1) 1:200 (A3)

REV	DATE	REVISION DESCRIPTION	DRAWN	DRAFT CHK	DESIGNED	ENG CHK	APPROVED	CUSTOMER	REF DRAWING No	REFERENCE DRAWING TITLE
B	02.12.20	ISSUED FOR TENDER	PK	BB	AN	PM	PM			
A	23.10.20	ISSUED FOR CLIENT REVIEW	PK	BB	PM	-	-			

A1 SHEET SCALE AS SHOWN

OneWay to zero harm

ADVISIAN PROJECT No.
311015-00116

ENGINEERING AND PERMIT STAMPS (As Required)

ISSUED FOR TENDER

NSW GOVERNMENT | Transport for NSW

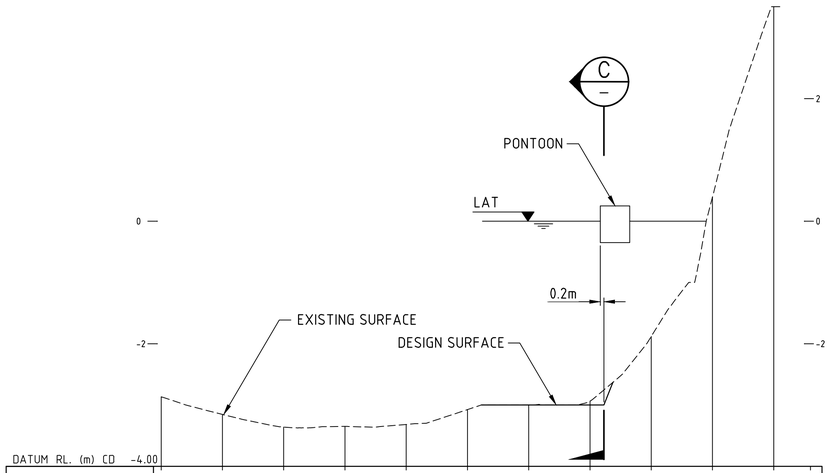
Advisian
WorleyParsons Group

COFFS HARBOUR MARINE CENTRE UPGRADE DEMOLITION PLAN

DRG No 311015-00116-MA-DWG-0006 REV B

ADVISIAN_A1_REV1

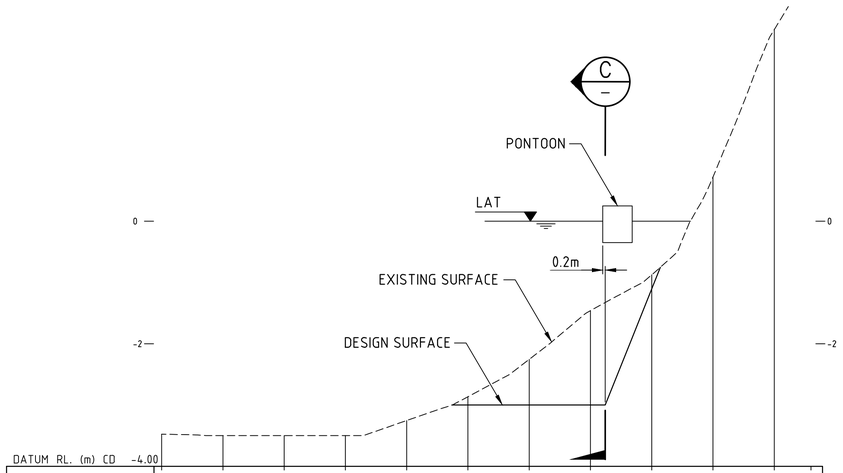
LOCATION: B:\COFFS HARBOUR\MARINE CENTRE REV B\311015-00116-MA-DWG-0006_B.DWG
USER NAME: brendon.boyle
PLOT DATE & TIME: 2/12/2020 2:58:59 PM
SAVE DATE & TIME: 2/12/2020 2:55:50 PM



-FILL/+CUT								0.000	0.064	
DREDGE DESIGN								-3.000	-3.000	
NATURAL SURFACE	-2.867	-3.153	-3.360	-3.349	-3.317	-3.075	-3.000	-2.936	-1.881	0.395	3.500

SECTION A - DWG-0004

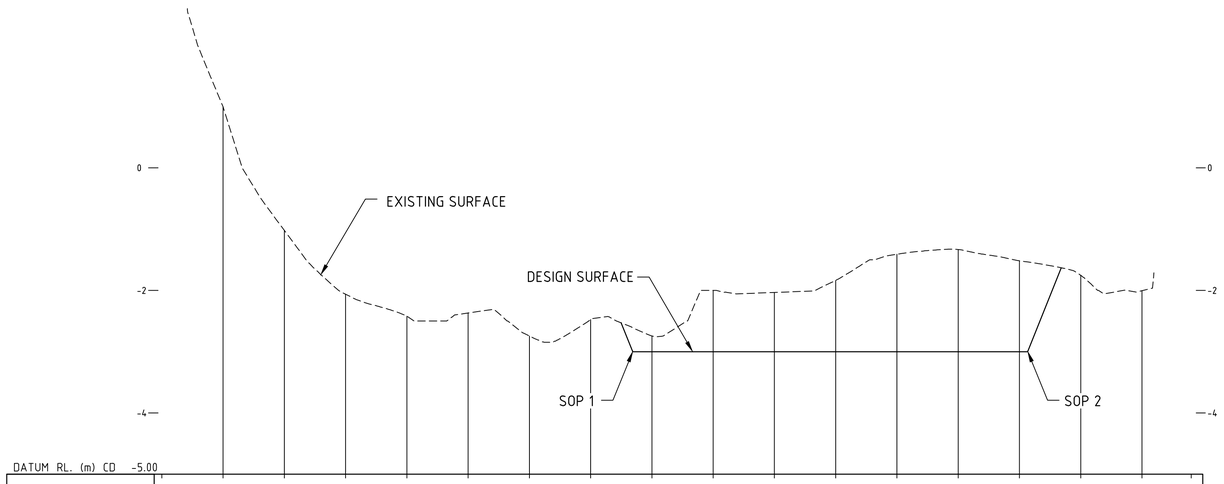
SCALE:H 1:250
V 1:50



-FILL/+CUT						0.135	0.775	0.541	0.228	
DREDGE DESIGN						-3.000	-3.000	-3.000	-1.103	
NATURAL SURFACE	-3.476	-3.500	-3.500	-3.500	-3.253	-2.865	-2.255	-1.459	-0.875	0.722	3.126

SECTION B - DWG-0004

SCALE:H 1:250
V 1:50



-FILL/+CUT							0.258	1.000	0.967	1.163	1.590	1.668	1.483			
DREDGE DESIGN							-3.000	-3.000	-3.000	-3.000	-3.000	-3.000	-3.000			
NATURAL SURFACE	0.994	-1.020	-2.062	-2.421	-2.368	-2.744	-2.475	-2.742	-2.000	-2.033	-1.837	-1.410	-1.332	-1.517	-1.754	-2.005

SECTION C - DWG-0004

SCALE:H 1:250
V 1:50

NOTES:

1. SEABED CONTOURS ARE APPROXIMATE AND SHOWN TO COFFS HARBOUR PORT DATUM OR CHART DATUM (C.D).

1 0 1 2 3 4 5
SCALE OF METRES 1:50

5 0 5 10 15 20 25
SCALE OF METRES 1:250

REV	DATE	REVISION DESCRIPTION	DRAWN	DRAFT CHK	DESIGNED	ENG CHK	APPROVED	CUSTOMER	REF DRAWING No	REFERENCE DRAWING TITLE
B	02.12.20	ISSUED FOR TENDER	PK	BB	AN	PM	PM			
A	23.10.20	ISSUED FOR CLIENT REVIEW	PK	BB	PM	-	-			

A1 SHEET SCALE AS SHOWN

OneWay to zero harm

ADVISIAN PROJECT No.
301015-03860

ENGINEERING AND PERMIT STAMPS (As Required)

ISSUED FOR TENDER

NSW GOVERNMENT Transport for NSW

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WorleyParsons Group

COFFS HARBOUR MARINE CENTRE UPGRADE
DREDGE PLAN - SECTIONS

DRG No 311015-00116-MA-DWG-0005
REV B

ADVISIAN_A1_REV1

LOCATION: B:\COFFS HARBOUR\MARINE CENTRE REVB\311015-00116-MA-DWG-0005_B.DWG
USER NAME: brendon.boyle
PLOT DATE & TIME: 2/12/2020 3:20:10 PM
SAVE DATE & TIME: 2/12/2020 2:53:47 PM

Appendix B

EPBC Act 1999 Protected Matters Search

Australian Government
Department of the Environment and Energy

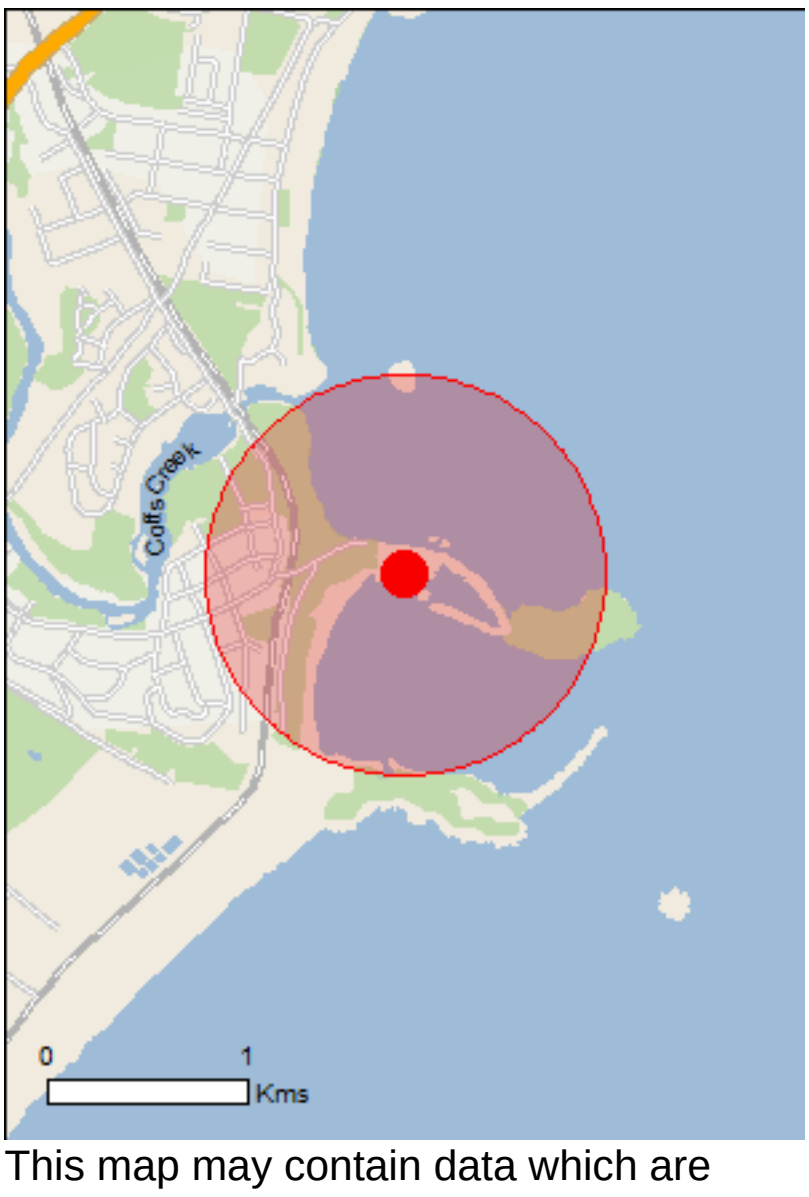
EPBC Act Protected Matters Report

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.

Information on the coverage of this report and qualifications on data supporting this report are contained in the caveat at the end of the report.

Information is available about Environment Assessments and the EPBC Act including significance guidelines, forms and application process details.

Report created: 25/08/20 17:15:59



This map may contain data which are ©Commonwealth of Australia (Geoscience Australia), ©PSMA 2010

Coordinates
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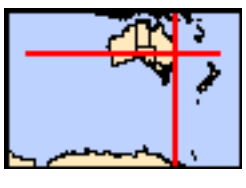

Summary

Matters of National Environmental 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:	None
Great Barrier Reef Marine Park:	None
Commonwealth Marine Area:	None
Listed Threatened Ecological Communities:	2
Listed Threatened Species:	70
Listed Migratory Species:	57

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 http://www.environment.gov.au/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 Land:	None
Commonwealth Heritage Places:	None
Listed Marine Species:	90
Whales and Other Cetaceans:	12
Critical Habitats:	None
Commonwealth Reserves Terrestrial:	None
Australian Marine Parks:	None

Extra Information

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

State and Territory Reserves:	1
Regional Forest Agreements:	1
Invasive Species:	36
Nationally Important Wetlands:	None
Key Ecological Features (Marine)	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.

Name	Status	Type of Presence
Coastal Swamp Oak (Casuarina glauca) Forest of New South Wales and South East Queensland ecological community	Endangered	Community may occur within area
Subtropical and Temperate Coastal Saltmarsh	Vulnerable	Community likely to occur within area

Listed Threatened Species [Resource Information]

Name	Status	Type of Presence
Birds		
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
Calidris ferruginea Curlew Sandpiper [856]	Critically Endangered	Species or species habitat may occur within area
Diomedea antipodensis Antipodean Albatross [64458]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Diomedea antipodensis gibsoni Gibson's Albatross [82270]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Diomedea epomophora Southern Royal Albatross [89221]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Diomedea exulans Wandering Albatross [89223]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Diomedea sanfordi Northern Royal Albatross [64456]	Endangered	Foraging, feeding or related behaviour likely to occur within area
Erythrotriorchis radiatus Red Goshawk [942]	Vulnerable	Species or species habitat likely to occur within area

Name	Status	Type of Presence
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
Hirundapus caudacutus White-throated Needletail [682]	Vulnerable	Species or species habitat known to occur within area
Lathamus discolor Swift Parrot [744]	Critically Endangered	Species or species habitat likely to occur within area
Limosa lapponica baueri Bar-tailed Godwit (baueri), Western Alaskan Bar-tailed Godwit [86380]	Vulnerable	Species or species habitat likely to occur within area
Limosa lapponica menzbieri Northern Siberian Bar-tailed Godwit, Bar-tailed Godwit (menzbieri) [86432]	Critically Endangered	Species or species habitat may 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	Species or species habitat may 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
Phoebetria fusca Sooty Albatross [1075]	Vulnerable	Species or species habitat may occur within area
Pterodroma leucoptera leucoptera Gould's Petrel, Australian Gould's Petrel [26033]	Endangered	Species or species habitat may occur within area
Pterodroma neglecta neglecta Kermadec Petrel (western) [64450]	Vulnerable	Foraging, feeding or related behaviour may occur within area
Rostratula australis Australian Painted Snipe [77037]	Endangered	Species or species habitat likely to occur within area
Sternula nereis nereis Australian Fairy Tern [82950]	Vulnerable	Species or species habitat may occur within area
Thalassarche bulleri Buller's Albatross, Pacific Albatross [64460]	Vulnerable	Species or species habitat may occur within area
Thalassarche bulleri platei Northern Buller's Albatross, Pacific Albatross [82273]	Vulnerable	Species or species habitat may occur within area
Thalassarche cauta Shy Albatross [89224]	Endangered	Species or species habitat may occur within area

Name	Status	Type of Presence
Thalassarche eremita		
Chatham Albatross [64457]	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	Species or species habitat may occur within area
Thalassarche salvini		
Salvin's Albatross [64463]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Thalassarche steadi		
White-capped Albatross [64462]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Thinornis cucullatus cucullatus		
Hooded Plover (eastern), Eastern Hooded Plover [90381]	Vulnerable	Species or species habitat may occur within area
Fish		
Epinephelus daemelii		
Black Rockcod, Black Cod, Saddled Rockcod [68449]	Vulnerable	Species or species habitat likely to occur within area
Frogs		
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]	Endangered	Species or species habitat likely to occur within area
Insects		
Argynnis hyperbius inconstans		
Australian Fritillary [88056]	Critically Endangered	Species or species habitat may occur within area
Mammals		
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 likely to 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
Megaptera novaeangliae		
Humpback Whale [38]	Vulnerable	Species or species habitat known to occur within area
Petauroides volans		
Greater Glider [254]	Vulnerable	Species or species habitat likely to occur within area
Phascolarctos cinereus (combined populations of Qld, NSW and the ACT)		
Koala (combined populations of Queensland, New South Wales and the Australian Capital Territory) [85104]	Vulnerable	Species or species habitat known to occur within area

Name	Status	Type of Presence
Potorous tridactylus tridactylus Long-nosed Potoroo (SE Mainland) [66645]	Vulnerable	Species or species habitat likely to occur within area
Pseudomys novaehollandiae New Holland Mouse, Pookila [96]	Vulnerable	Species or species habitat likely to occur within area
Pteropus poliocephalus Grey-headed Flying-fox [186]	Vulnerable	Foraging, feeding or related behaviour known to occur within area
Plants		
Acronychia littoralis Scented Acronychia [8582]	Endangered	Species or species habitat known to occur within area
Allocasuarina thalassoscopica [21927]	Endangered	Species or species habitat likely to occur within area
Arthraxon hispidus Hairy-joint Grass [9338]	Vulnerable	Species or species habitat likely to occur within area
Cryptostylis hunteriana Leafless Tongue-orchid [19533]	Vulnerable	Species or species habitat may occur within area
Cynanchum elegans White-flowered Wax Plant [12533]	Endangered	Species or species habitat likely to occur within area
Endiandra hayesii Rusty Rose Walnut, Velvet Laurel [13866]	Vulnerable	Species or species habitat may occur within area
Macadamia integrifolia Macadamia Nut, Queensland Nut Tree, Smooth-shelled Macadamia, Bush Nut, Nut Oak [7326]	Vulnerable	Species or species habitat may occur within area
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
Marsdenia longiloba Clear Milkvine [2794]	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 may occur within area
Samadera sp. Moonee Creek (J.King s.n. Nov. 1949) [86885]	Endangered	Species or species habitat may occur within area
Thesium australe Austral Toadflax, Toadflax [15202]	Vulnerable	Species or species habitat known to occur within area
Zieria prostrata Headland Zieria [56782]	Endangered	Species or species habitat may occur within area
Reptiles		
Caretta caretta Loggerhead Turtle [1763]	Endangered	Congregation or aggregation known to

Name	Status	Type of Presence
		occur within area
Chelonia mydas Green Turtle [1765]	Vulnerable	Species or species habitat known to occur within area
Dermochelys coriacea Leatherback Turtle, Leathery Turtle, Luth [1768]	Endangered	Breeding likely to occur within area
Eretmochelys imbricata Hawksbill Turtle [1766]	Vulnerable	Species or species habitat known to occur within area
Natator depressus Flatback Turtle [59257]	Vulnerable	Breeding likely to occur within area
Sharks		
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
Rhincodon typus Whale Shark [66680]	Vulnerable	Species or species habitat may occur within area

Listed Migratory Species		[Resource Information]
* Species is listed under a different scientific name on the EPBC Act - Threatened Species list.		
Name	Threatened	Type of Presence
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
Ardenna carneipes Flesh-footed Shearwater, Fleshy-footed Shearwater [82404]		Foraging, feeding or related behaviour likely to occur within area
Ardenna grisea Sooty Shearwater [82651]		Breeding known to occur within area
Ardenna pacifica Wedge-tailed Shearwater [84292]		Breeding known to occur within area
Ardenna tenuirostris Short-tailed Shearwater [82652]		Breeding known to occur within area
Calonectris leucomelas Streaked Shearwater [1077]		Species or species habitat may occur within area
Diomedea antipodensis Antipodean Albatross [64458]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Diomedea epomophora Southern Royal Albatross [89221]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Diomedea exulans Wandering Albatross [89223]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Diomedea sanfordi Northern Royal Albatross [64456]	Endangered	Foraging, feeding or

Name	Threatened	Type of Presence
		related behaviour likely to occur within area
Fregata ariel Lesser Frigatebird, Least Frigatebird [1012]		Species or species habitat known to occur within area
Fregata minor Great Frigatebird, Greater Frigatebird [1013]		Species or species habitat likely to occur within area
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	Species or species habitat may occur within area
Phoebetria fusca Sooty Albatross [1075]	Vulnerable	Species or species habitat may occur within area
Sternula albifrons Little Tern [82849]		Species or species habitat may occur within area
Thalassarche bulleri Buller's Albatross, Pacific Albatross [64460]	Vulnerable	Species or species habitat may occur within area
Thalassarche cauta Shy Albatross [89224]	Endangered	Species or species habitat may occur within area
Thalassarche eremita Chatham Albatross [64457]	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	Species or species habitat may occur within area
Thalassarche salvini Salvin's Albatross [64463]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Thalassarche steadi White-capped Albatross [64462]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Migratory Marine Species		
Balaena glacialis australis Southern Right Whale [75529]	Endangered*	Species or species habitat likely to 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
Carcharodon carcharias White Shark, Great White Shark [64470]	Vulnerable	Species or species habitat known to occur within area
Caretta caretta Loggerhead Turtle [1763]	Endangered	Congregation or

Name	Threatened	Type of Presence
		aggregation known to occur within area
[Chelonia mydas](#) Green Turtle [1765]	Vulnerable	Species or species habitat known to occur within area
[Dermochelys coriacea](#) Leatherback Turtle, Leathery Turtle, Luth [1768]	Endangered	Breeding likely to occur within area
[Dugong dugon](#) Dugong [28]		Species or species habitat may occur within area
[Eretmochelys imbricata](#) Hawksbill Turtle [1766]	Vulnerable	Species or species habitat known to occur within area
[Lamna nasus](#) Porbeagle, Mackerel Shark [83288]		Species or species habitat may occur within area
[Manta alfredi](#) Reef Manta Ray, Coastal Manta Ray, Inshore Manta Ray, Prince Alfred's Ray, Resident Manta Ray [84994]		Species or species habitat known to occur within area
[Manta birostris](#) Giant Manta Ray, Chevron Manta Ray, Pacific Manta Ray, Pelagic Manta Ray, Oceanic Manta Ray [84995]		Species or species habitat may occur within area
[Megaptera novaeangliae](#) Humpback Whale [38]	Vulnerable	Species or species habitat known to occur within area
[Natator depressus](#) Flatback Turtle [59257]	Vulnerable	Breeding likely to occur within area
[Orcinus orca](#) Killer Whale, Orca [46]		Species or species habitat may occur within area
[Rhincodon typus](#) Whale Shark [66680]	Vulnerable	Species or species habitat may occur within area
[Sousa chinensis](#) Indo-Pacific Humpback Dolphin [50]		Species or species habitat likely to 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
[Monarcha trivirgatus](#) Spectacled Monarch [610]		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

Name	Threatened	Type of Presence
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
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
Gallinago hardwickii Latham's Snipe, Japanese Snipe [863]		Species or species habitat may 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]
* Species is listed under a different scientific name on the EPBC Act - Threatened Species list.		
Name	Threatened	Type of Presence
Birds		
Actitis hypoleucos Common Sandpiper [59309]		Species or species habitat may occur within area
Anous stolidus Common Noddy [825]		Species or species habitat likely to occur within area
Apus pacificus Fork-tailed Swift [678]		Species or species habitat likely to occur within area
Ardea alba Great Egret, White Egret [59541]		Breeding known to occur within area
Ardea ibis Cattle Egret [59542]		Species or species habitat may occur within area
Calidris acuminata Sharp-tailed Sandpiper [874]		Species or species

Name	Threatened	Type of Presence
		habitat may occur within area
[Calidris canutus](#) Red Knot, Knot [855]	Endangered	Species or species habitat known to occur within area
[Calidris ferruginea](#) Curlew Sandpiper [856]	Critically Endangered	Species or species habitat may occur within area
[Calidris melanotos](#) Pectoral Sandpiper [858]		Species or species habitat may occur within area
[Calonectris leucomelas](#) Streaked Shearwater [1077]		Species or species habitat may occur within area
[Diomedea antipodensis](#) Antipodean Albatross [64458]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
[Diomedea epomophora](#) Southern Royal Albatross [89221]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
[Diomedea exulans](#) Wandering Albatross [89223]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
[Diomedea gibsoni](#) Gibson's Albatross [64466]	Vulnerable*	Foraging, feeding or related behaviour likely to occur within area
[Diomedea sanfordi](#) Northern Royal Albatross [64456]	Endangered	Foraging, feeding or related behaviour likely to occur within area
[Fregata ariel](#) Lesser Frigatebird, Least Frigatebird [1012]		Species or species habitat known to occur within area
[Fregata minor](#) Great Frigatebird, Greater Frigatebird [1013]		Species or species habitat likely to occur within area
[Gallinago hardwickii](#) Latham's Snipe, Japanese Snipe [863]		Species or species habitat may occur within 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
[Larus novaehollandiae](#) Silver Gull [810]		Breeding known to occur within area
[Lathamus discolor](#) Swift Parrot [744]	Critically Endangered	Species or species habitat likely to occur within area
[Limosa lapponica](#) Bar-tailed Godwit [844]		Species or species habitat known to occur within area
[Macronectes giganteus](#) Southern Giant-Petrel, Southern Giant Petrel [1060]	Endangered	Species or species habitat may occur within area

Name	Threatened	Type of Presence
Macronectes halli Northern Giant Petrel [1061]	Vulnerable	Species or species habitat may occur within area
Merops ornatus Rainbow Bee-eater [670]		Species or species habitat may occur within area
Monarcha melanopsis Black-faced Monarch [609]		Species or species habitat known to occur within area
Monarcha trivirgatus Spectacled Monarch [610]		Species or species habitat known to occur within area
Myiagra cyanoleuca Satin Flycatcher [612]		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
Pachyptila turtur Fairy Prion [1066]		Species or species habitat known to occur within area
Pandion haliaetus Osprey [952]		Breeding known to occur within area
Pelagodroma marina White-faced Storm-Petrel [1016]		Breeding known to occur within area
Phoebetria fusca Sooty Albatross [1075]	Vulnerable	Species or species habitat may occur within area
Pterodroma nigripennis Black-winged Petrel [1038]		Breeding known to occur within area
Puffinus carneipes Flesh-footed Shearwater, Fleshy-footed Shearwater [1043]		Foraging, feeding or related behaviour likely to occur within area
Puffinus griseus Sooty Shearwater [1024]		Breeding known to occur within area
Puffinus pacificus Wedge-tailed Shearwater [1027]		Breeding known to occur within area
Puffinus tenuirostris Short-tailed Shearwater [1029]		Breeding known to occur within area
Rhipidura rufifrons Rufous Fantail [592]		Species or species habitat known to occur within area
Rostratula benghalensis (sensu lato) Painted Snipe [889]	Endangered*	Species or species habitat likely to occur within area
Sterna albifrons Little Tern [813]		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 cauta Shy Albatross [89224]	Endangered	Species or species habitat may occur within

Name	Threatened	Type of Presence
		area
Thalassarche eremita Chatham Albatross [64457]	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	Species or species habitat may occur within area
Thalassarche salvini Salvin's Albatross [64463]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Thalassarche sp. nov. Pacific Albatross [66511]	Vulnerable*	Species or species habitat may occur within area
Thalassarche steadi White-capped Albatross [64462]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Thinornis rubricollis rubricollis Hooded Plover (eastern) [66726]	Vulnerable*	Species or species habitat may occur within area
Tringa nebularia Common Greenshank, Greenshank [832]		Species or species habitat may occur within 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
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

Name	Threatened	Type of Presence
		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]		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 thorntail Pipefish, Thorn-tailed Pipefish [66254]		Species or species habitat may occur within area
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

Name	Threatened	Type of Presence
[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
Mammals		
[Dugong dugon](#) Dugong [28]		Species or species habitat may occur within area
Reptiles		
[Caretta caretta](#) Loggerhead Turtle [1763]	Endangered	Congregation or aggregation known to occur within area
[Chelonia mydas](#) Green Turtle [1765]	Vulnerable	Species or species habitat known to occur within area
[Dermochelys coriacea](#) Leatherback Turtle, Leathery Turtle, Luth [1768]	Endangered	Breeding likely to occur within area
[Eretmochelys imbricata](#) Hawksbill Turtle [1766]	Vulnerable	Species or species habitat known 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]

Name	Status	Type of Presence
Mammals		
[Balaenoptera acutorostrata](#) Minke Whale [33]		Species or species habitat may occur within area
[Balaenoptera edeni](#) Bryde's Whale [35]		Species or species habitat may occur within area
[Balaenoptera musculus](#) Blue Whale [36]	Endangered	Species or species habitat may occur within area
[Delphinus delphis](#) Common Dophin, 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]	Vulnerable	Species or species habitat known to occur within area

Name	Status	Type of Presence
Orcinus orca Killer Whale, Orca [46]		Species or species habitat may occur within area
Sousa chinensis Indo-Pacific Humpback Dolphin [50]		Species or species habitat likely to 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]

Name	State
Muttonbird Island	NSW

Regional Forest Agreements [Resource Information]

Note that all areas with completed RFAs have been included.

Name	State
North East NSW RFA	New South Wales

Invasive Species [Resource Information]

Weeds reported here are the 20 species of national significance (WoNS), along with other introduced plants that are considered by the States and Territories to pose a particularly significant threat to biodiversity. The following feral animals are reported: Goat, Red Fox, Cat, Rabbit, Pig, Water Buffalo and Cane Toad. Maps from Landscape Health Project, National Land and Water Resouces Audit, 2001.

Name	Status	Type of Presence
Birds		
Acridotheres tristis Common Myna, Indian Myna [387]		Species or species habitat likely to occur within area
Anas platyrhynchos Mallard [974]		Species or species habitat likely to occur within area
Carduelis carduelis European Goldfinch [403]		Species or species habitat likely to occur within area
Columba livia Rock Pigeon, Rock Dove, Domestic Pigeon [803]		Species or species habitat likely to occur within area
Lonchura punctulata Nutmeg Mannikin [399]		Species or species habitat likely to occur within area
Passer domesticus House Sparrow [405]		Species or species habitat likely to occur within area
Pycnonotus jocosus Red-whiskered Bulbul [631]		Species or species habitat likely to occur within area
Streptopelia chinensis Spotted Turtle-Dove [780]		Species or species habitat likely to occur

Name	Status	Type of Presence
		within area
Sturnus vulgaris Common Starling [389]		Species or species habitat likely to occur within area
Turdus merula Common Blackbird, Eurasian Blackbird [596]		Species or species habitat likely to occur within area
Frogs		
Rhinella marina Cane Toad [83218]		Species or species habitat known to occur within area
Mammals		
Bos taurus Domestic Cattle [16]		Species or species habitat likely to occur within area
Canis lupus familiaris Domestic Dog [82654]		Species or species habitat likely to occur within area
Felis catus Cat, House Cat, Domestic Cat [19]		Species or species habitat likely to occur within area
Feral deer Feral deer species in Australia [85733]		Species or species habitat likely to occur within area
Lepus capensis Brown Hare [127]		Species or species habitat likely to occur within area
Mus musculus House Mouse [120]		Species or species habitat likely to occur within area
Oryctolagus cuniculus Rabbit, European Rabbit [128]		Species or species habitat likely to occur within area
Rattus norvegicus Brown Rat, Norway Rat [83]		Species or species habitat likely to occur within area
Rattus rattus Black Rat, Ship Rat [84]		Species or species habitat likely to occur within area
Sus scrofa Pig [6]		Species or species habitat likely to occur within area
Vulpes vulpes Red Fox, Fox [18]		Species or species habitat likely to occur within area
Plants		
Alternanthera philoxeroides Alligator Weed [11620]		Species or species habitat likely to occur within area
Asparagus aethiopicus Asparagus Fern, Ground Asparagus, Basket Fern, Sprengi's Fern, Bushy Asparagus, Emerald Asparagus [62425]		Species or species habitat likely to occur within area
Asparagus plumosus Climbing Asparagus-fern [48993]		Species or species habitat likely to occur within area

Name	Status	Type of Presence
Cabomba caroliniana Cabomba, Fanwort, Carolina Watershield, Fish Grass, Washington Grass, Watershield, Carolina Fanwort, Common Cabomba [5171]		Species or species habitat likely to occur within area
Chrysanthemoides monilifera Bitou Bush, Boneseed [18983]		Species or species habitat likely to occur within area
Chrysanthemoides monilifera subsp. rotundata Bitou Bush [16332]		Species or species habitat likely to occur within area
Genista sp. X Genista monspessulana Broom [67538]		Species or species habitat may occur within area
Lantana camara Lantana, Common Lantana, Kamara Lantana, Large-leaf Lantana, Pink Flowered Lantana, Red Flowered Lantana, Red-Flowered Sage, White Sage, Wild Sage [10892]		Species or species habitat likely to occur within area
Pinus radiata Radiata Pine Monterey Pine, Insignis Pine, Wilding Pine [20780]		Species or species habitat may occur within area
Rubus fruticosus aggregate Blackberry, European Blackberry [68406]		Species or species habitat likely to occur within area
Salix spp. except S.babylonica, S.x calodendron & S.x reichardtii Willows except Weeping Willow, Pussy Willow and Sterile Pussy Willow [68497]		Species or species habitat likely to occur within area
Salvinia molesta Salvinia, Giant Salvinia, Aquarium Watermoss, Kariba Weed [13665]		Species or species habitat likely to occur within area
Senecio madagascariensis Fireweed, Madagascar Ragwort, Madagascar Groundsel [2624]		Species or species habitat likely to occur within area
Reptiles		
Hemidactylus frenatus Asian House Gecko [1708]		Species or species habitat likely to occur within area

Caveat

The information presented in this report has been provided by a range of data sources as acknowledged at the end of the report.

This report is designed to assist in identifying the locations of places which may be relevant in determining obligations under the Environment Protection and Biodiversity Conservation Act 1999. It holds mapped locations of World and National Heritage properties, Wetlands of International and National Importance, Commonwealth and State/Territory reserves, listed threatened, migratory and marine species and listed threatened ecological communities. Mapping of Commonwealth land is not complete at this stage. Maps have been collated from a range of sources at various resolutions.

Not all species listed under the EPBC Act have been mapped (see below) and therefore a report is a general guide only. Where available data supports mapping, the type of presence that can be determined from the data is indicated in general terms. People using this information in making a referral may need to consider the qualifications below and may need to seek and consider other information sources.

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.

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

Where very little information is available for 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 reliable distribution mapping methods are used to update these distributions as time permits.

Only selected species covered by the following provisions of the EPBC Act have been mapped:

- migratory and
- marine

The following species and ecological communities have not been mapped and do not appear in reports produced from this database:

- threatened species listed as extinct or considered as vagrants
- some species and ecological communities that have only recently been listed
- some terrestrial species that overfly the Commonwealth marine area
- migratory species that are very widespread, vagrant, or only occur in small numbers

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

- non-threatened seabirds which have only been mapped for recorded breeding sites
- seals which have only been mapped for breeding sites near the Australian continent

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

Coordinates

-30.30318 153.14396

Acknowledgements

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

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

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

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

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Appendix C

FM Act 1994 Search Results

Fisheries Management Act 1994 No 38

Current version for 24 September 2018 to date (accessed 26 October 2018 at 19:27)

Schedule 4

Schedule 4 Endangered species, populations and ecological communities

(Section 220C)

Part 1 Endangered species

Fish

Archaeophya adamsi Fraser, 1959	Adam's Emerald Dragonfly
Austrocordulia leonardi	Sydney Hawk Dragonfly
**Maccullochella ikei* Rowland	Eastern Freshwater Cod
**Maccullochella macquariensis* (Cuvier)	Trout Cod
**Macquaria australasica* (Cuvier, 1830)	Macquarie Perch
Mogurnda adspersa (Castelnau, 1878)	Southern Purplespotted Gudgeon, Purple Spotted Gudgeon
Nannoperca australis Günther, 1861	Southern Pygmy Perch
**Nannoperca oxleyana* Whitley	Oxleyan Pygmy Perch
**Prototroctes maraena* (Günther, 1864)	Australian Grayling
Sphyrna lewini (Griffith & Smith, 1834)	Scalloped Hammerhead Shark
Thunnus maccoyii	Southern Bluefin Tuna

Marine vegetation

Part 2 Endangered populations

Fish

Ambassis agassizii Steindachner, 1866, Agassiz's glassfish, olive perchlet, western New South Wales population

Craterocephalus amniculus (Crowley and Ivanstoff, 1990), Darling River Hardyhead, Hunter River population

Gadopsis marmoratus, river blackfish, Snowy River population

Tandanus tandanus (Mitchell, 1838), freshwater catfish, eel tailed catfish, Murray-Darling Basin population

Marine vegetation

**Posidonia australis* Hook.*f.* (1858), seagrass, Port Hacking, Botany Bay, Sydney Harbour, Pittwater, Brisbane Waters and Lake Macquarie populations

Part 3 Endangered ecological communities

Aquatic ecological community in the natural drainage system of the lower Murray River catchment (as described in the recommendation of the Fisheries Scientific Committee to list the ecological community)

Aquatic ecological community in the natural drainage system of the lowland catchment of the Darling River (described in the recommendation of the Fisheries Scientific Committee to list that aquatic ecological community, as the area covered by that recommendation)

Aquatic ecological community in the natural drainage system of the lowland catchment of the Lachlan River (described in the recommendation of the Fisheries Scientific Committee to list that aquatic ecological community, as the area covered by that recommendation)

Aquatic ecological community in the catchment of the Snowy River in NSW (as described in the final determination of the Fisheries Scientific Committee to list that aquatic ecological community)

Part 4 Species presumed extinct

Fish

Hadrachaeta aspeta Hutchings, 1977	Marine Worm
**Pristis zijsron* Bleeker, 1851	Green Sawfish
Metaprotella haswelliana Mayer, 1882	Haswells Caprellid

Marine vegetation

**Vanvoorstia bennettiana* (Harvey) Papenfuss (1956)	Bennetts Seaweed

Fisheries Management Act 1994 No 38

Current version for 24 September 2018 to date (accessed 26 October 2018 at 19:30)

Schedule 6

Schedule 6 Key threatening processes

(Section 220C)

Degradation of native riparian vegetation along New South Wales water courses

Hook and line fishing in areas important for the survival of threatened fish species

Human-caused climate change

Installation and operation of instream structures and other mechanisms that alter natural flow regimes of rivers and streams

Introduction of fish to waters within a river catchment outside their natural range

Introduction of non-indigenous fish and marine vegetation to the coastal waters of New South Wales

Removal of large woody debris from New South Wales rivers and streams

The current shark meshing program in New South Wales waters

Fisheries Management Act 1994 No 38

Current version for 24 September 2018 to date (accessed 26 October 2018 at 19:29)

Schedule 5

Schedule 5 Vulnerable species and ecological communities

(Section 220C)

Part 1 Vulnerable species

Fish

Austropetalia tonyana (Theischinger, 1995)	Alpine Redspot Dragonfly
Bidyanus bidyanus (Mitchell, 1838)	Silver Perch
Branchinella buchananensis Geddes, 1981	Buchanans Fairy Shrimp
**Carcharodon carcharias* (Linnaeus, 1758)	White Shark, Great White Shark
Epinephelus daemelii (Günther, 1876)	Black Rockcod, Black Cod
Euastacus armatus (von Martens 1866)	Murray Crayfish
Microrchestia bousfieldi Lowry & Peart, 2010	Bousfields Marsh-hopper
Sphyrna mokarran Ruppell, 1837	Great Hammerhead Shark

Marine vegetation

Part 2 Vulnerable ecological communities

Fisheries Management Act 1994 No 38

Current version for 24 September 2018 to date (accessed 26 October 2018 at 19:29)

Schedule 4A

Schedule 4A Critically endangered species and ecological communities

(Section 220C)

Part 1 Critically endangered species

Fish

**Carcharias taurus* Rafinesque, 1810	Greynurse Shark
**Craterocephalus fluviatilis* (McCulloch, 1913)	Murray Hardyhead
Euastacus dharawalus (Morgan, 1997)	Fitzroy Falls Spiny Crayfish
Galaxias rostratus	Flathead Galaxias
Galaxias tantangara (Raadik, 2014)	Stocky Galaxias
Notopala hanleyi (Frauenfeld, 1864)	Hanley's River Snail
Notopala sublineata (Conrad, 1850)	Darling River Snail
Smeagol hilaris Tillier & Ponder, 1992	Marine Slug

Marine vegetation

Nereia lophocladia J. Agardh (1897)	Marine Brown Alga

Part 2 Critically endangered ecological communities

Appendix D

BC Act 2016 Search Results

Data from the BioNet Atlas website, which holds records from a number of custodians. The data are only indicative and cannot be considered a comprehensive inventory, and may contain errors and omissions. Species listed under the Sensitive Species Data Policy may have their locations denatured (^ rounded to 0.1°C; ^^ rounded to 0.01°C. Copyright the State of NSW through the Department of Planning, Industry and Environment. Search criteria : Public Report of all Valid Records of Animals in selected area [North: -30.26 West: 153.10 East: 153.20 South: -30.36] returned a total of 61,209 records of 406 species.

Report generated on 25/08/2020 4:53 PM

Kingdom	Class	Family	Species Code	Scientific Name	Exotic	Common Name	NSW status	Comm. status	Records	Info
Animalia	Amphibia	Myobatrachidae	3001	*Adelotus brevis*		Tusked Frog	P		1	
Animalia	Amphibia	Myobatrachidae	3134	*Crinia signifera*		Common Eastern Froglet	P		16	
Animalia	Amphibia	Myobatrachidae	3137	*Crinia tinnula*		Wallum Froglet	V,P		20	
Animalia	Amphibia	Myobatrachidae	3058	*Limnodynastes dumerilii*		Eastern Banjo Frog	P		1	
Animalia	Amphibia	Myobatrachidae	3061	*Limnodynastes peronii*		Brown-striped Frog	P		8	
Animalia	Amphibia	Myobatrachidae	3063	*Limnodynastes tasmaniensis*		Spotted Grass Frog	P		1	
Animalia	Amphibia	Myobatrachidae	3075	*^Mixophyes iteratus*		Giant Barred Frog	E1,P,2	E	1	
Animalia	Amphibia	Myobatrachidae	3112	*Platyplectrum ornatum*		Ornate Burrowing Frog	P		1	
Animalia	Amphibia	Myobatrachidae	3118	*Pseudophryne coriacea*		Red-backed Toadlet	P		5	
Animalia	Amphibia	Myobatrachidae	3035	*Uperoleia fusca*		Dusky Toadlet	P		2	
Animalia	Amphibia	Hylidae	3171	*Litoria caerulea*		Green Tree Frog	P		21	
Animalia	Amphibia	Hylidae	3180	*Litoria dentata*		Bleating Tree Frog	P		4	
Animalia	Amphibia	Hylidae	3183	*Litoria fallax*		Eastern Dwarf Tree Frog	P		7	
Animalia	Amphibia	Hylidae	3187	*Litoria gracilenta*		Dainty Green Tree Frog	P		1	
Animalia	Amphibia	Hylidae	3191	*Litoria latopalmata*		Broad-palmed Frog	P		1	
Animalia	Amphibia	Hylidae	3199	*Litoria nasuta*		Rocket Frog	P		1	
Animalia	Amphibia	Hylidae	3204	*Litoria peronii*		Peron's Tree Frog	P		5	
Animalia	Amphibia	Hylidae	3219	*Litoria revelata*		Revealed Frog	P		1	
Animalia	Amphibia	Hylidae	3214	*Litoria tyleri*		Tyler's Tree Frog	P		5	
Animalia	Amphibia	Bufonidae	3269	*Rhinella marina*	*	Cane Toad			5	
Animalia	Reptilia	Cheloniidae	2004	*Caretta caretta*		Loggerhead Turtle	E1,P	E	1	
Animalia	Reptilia	Cheloniidae	2007	*Chelonia mydas*		Green Turtle	V,P	V	28	
Animalia	Reptilia	Cheloniidae	2008	*Eretmochelys imbricata*		Hawksbill Turtle	P	V	4	
Animalia	Reptilia	Cheloniidae	2006	*Natator depressus*		Flatback Turtle	P		1	
Animalia	Reptilia	Chelidae	2017	*Chelodina longicollis*		Eastern Snake-necked Turtle	P		24	
Animalia	Reptilia	Chelidae	9057	*Emydura sp.*		Unidentified Emydura	P		9	
Animalia	Reptilia	Gekkonidae	2104	*Hemidactylus frenatus*	*	House Gecko			3	
Animalia	Reptilia	Gekkonidae	2687	*Saltuarius swaini*		Southern Leaf-tailed Gecko	P		5	
Animalia	Reptilia	Pygopodidae	2170	*Lialis burtonis*		Burton's Snake-lizard	P		4	
Animalia	Reptilia	Scincidae	2411	*Bellatorias frerei*		Major Skink	P		1	
Animalia	Reptilia	Scincidae	2417	*Bellatorias major*		Land Mullet	P		4	
Animalia	Reptilia	Scincidae	2031	*Calyptotis ruficauda*		Red-tailed Calyptotis	P		7	
Animalia	Reptilia	Scincidae	2375	*Ctenotus robustus*		Robust Ctenotus	P		3	
Animalia	Reptilia	Scincidae	2575	*Cyclodomorphus gerrardii*		Pink-tongued Lizard	P		16	
Animalia	Reptilia	Scincidae	2213	*Egernia mcpheei*		Eastern Crevice Skink	P		2	
Animalia	Reptilia	Scincidae	2720	*Eulamprus martini*		Dark Barsided Skink	P		1	
Animalia	Reptilia	Scincidae	2552	*Eulamprus murrayi*		Murray's Skink	P		1	
Animalia	Reptilia	Scincidae	2559	*Eulamprus tenuis*		Barred-sided Skink	P		1	
Animalia	Reptilia	Scincidae	2450	*Lampropholis delicata*		Dark-flecked Garden Sunskink	P		11	
Animalia	Reptilia	Scincidae	2451	*Lampropholis guichenoti*		Pale-flecked Garden Sunskink	P		1	
Animalia	Reptilia	Scincidae	T117	*Lampropholis sp.*		unidentified grass skink	P		1	
Animalia	Reptilia	Scincidae	2294	*Ophioscincus truncatus*		Short-limbed Snake-skink	P		1	
Animalia	Reptilia	Scincidae	2542	*Saiphos equalis*		Three-toed Skink	P		1	
Animalia	Reptilia	Scincidae	2580	*Tiliqua scincoides*		Eastern Blue-tongue	P		353	
Animalia	Reptilia	Agamidae	2194	*Amphibolurus muricatus*		Jacky Lizard	P		1	
Animalia	Reptilia	Agamidae	2252	*Intellagama lesueurii*		Eastern Water Dragon	P		201	
Animalia	Reptilia	Agamidae	5075	*Intellagama lesueurii lesueurii*		Eastern Water Dragon	P		1	
Animalia	Reptilia	Agamidae	2177	*Pogona barbata*		Bearded Dragon	P		8	
Animalia	Reptilia	Varanidae	2283	*Varanus varius*		Lace Monitor	P		18	
Animalia	Reptilia	Typhlopidae	2599	*Anilios nigrescens*		Blackish Blind Snake	P		5	
Animalia	Reptilia	Pythonidae	2625	*Morelia spilota*		Carpet & Diamond Pythons	P		2	
Animalia	Reptilia	Pythonidae	5095	*Morelia spilota mcdowelli*		Eastern Carpet Python	P		871	
Animalia	Reptilia	Pythonidae	5096	*Morelia spilota spilota*		Diamond Python	P		1	
Animalia	Reptilia	Colubridae	2630	*Boiga irregularis*		Brown Tree Snake	P		26	
Animalia	Reptilia	Colubridae	2633	*Dendrelaphis punctulatus*		Common Tree Snake	P		220	
Animalia	Reptilia	Elapidae	2640	*Acanthophis antarcticus*		Common Death Adder	P		1	
Animalia	Reptilia	Elapidae	2646	*Cacophis krefftii*		Southern Dwarf Crowned Snake	P		9	
Animalia	Reptilia	Elapidae	2647	*Cacophis squamulosus*		Golden-crowned Snake	P		8	
Animalia	Reptilia	Elapidae	5136	*Cryptophis nigrescens*		Eastern Small-eyed Snake	P		4	
Animalia	Reptilia	Elapidae	2655	*Demansia psammophis*		Yellow-faced Whip Snake	P		23	
Animalia	Reptilia	Elapidae	2674	*Hemiaspis signata*		Black-bellied Swamp Snake	P		2	
Animalia	Reptilia	Elapidae	2677	*Hoplocephalus stephensii*		Stephens' Banded Snake	V,P		1	
Animalia	Reptilia	Elapidae	2681	*Notechis scutatus*		Tiger Snake	P		2	
Animalia	Reptilia	Elapidae	2770	*Pelamis platurus*		Yellow-bellied Seasnake	P		1	
Animalia	Reptilia	Elapidae	2693	*Pseudechis porphyriacus*		Red-bellied Black Snake	P		261	
Animalia	Reptilia	Elapidae	T033	*Pseudonaja sp.*		Unidentified Brown Snake	P		1	
Animalia	Reptilia	Elapidae	2699	*Pseudonaja textilis*		Eastern Brown Snake	P		7	

Animalia	Reptilia	Elapidae	2723	*Tropidechis carinatus*		Rough-scaled Snake	P		5	
Animalia	Reptilia	Elapidae	2734	*Vermicella annulata*		Bandy-bandy	P		6	
Animalia	Aves	Megapodiidae	0008	*Alectura lathami*		Australian Brush-turkey	P		203	
Animalia	Aves	Phasianidae	9046	*Coturnix sp.*		Unidentified Quail	P		2	
Animalia	Aves	Phasianidae	0011	*Coturnix ypsilophora*		Brown Quail	P		10	
Animalia	Aves	Phasianidae	0012	*Excalfactoria chinensis*		King Quail	P		1	
Animalia	Aves	Anatidae	0948	*Anas platyrhynchos*	*	Mallard			2	
Animalia	Aves	Anatidae	0208	*Anas superciliosa*		Pacific Black Duck	P		74	
Animalia	Aves	Anatidae	0202	*Chenonetta jubata*		Australian Wood Duck	P		159	
Animalia	Aves	Phaethontidae	0108	*Phaethon lepturus*		White-tailed Tropicbird	P	C,J	8	
Animalia	Aves	Phaethontidae	0107	*Phaethon rubricauda*		Red-tailed Tropicbird	V,P	C,J	1	
Animalia	Aves	Podicipedidae	0062	*Poliocephalus poliocephalus*		Hoary-headed Grebe	P		1	
Animalia	Aves	Podicipedidae	0061	*Tachybaptus novaehollandiae*		Australasian Grebe	P		1	
Animalia	Aves	Columbidae	0028	*Columba leucomela*		White-headed Pigeon	P		33	
Animalia	Aves	Columbidae	0957	*Columba livia*	*	Rock Dove			49	
Animalia	Aves	Columbidae	0032	*Geopelia humeralis*		Bar-shouldered Dove	P		15	
Animalia	Aves	Columbidae	9931	*Geopelia striata*		Peaceful Dove	P		11	
Animalia	Aves	Columbidae	0044	*Leucosarcia melanoleuca*		Wonga Pigeon	P		11	
Animalia	Aves	Columbidae	0027	*Lopholaimus antarcticus*		Topknot Pigeon	P		3	
Animalia	Aves	Columbidae	0029	*Macropygia amboinensis*		Brown Cuckoo-Dove	P		21	
Animalia	Aves	Columbidae	0043	*Ocyphaps lophotes*		Crested Pigeon	P		152	
Animalia	Aves	Columbidae	0025	*Ptilinopus magnificus*		Wompoo Fruit-Dove	V,P		10	
Animalia	Aves	Columbidae	0021	*Ptilinopus regina*		Rose-crowned Fruit-Dove	V,P		5	
Animalia	Aves	Columbidae	0023	*Ptilinopus superbus*		Superb Fruit-Dove	V,P		1	
Animalia	Aves	Columbidae	0989	*Streptopelia chinensis*	*	Spotted Turtle-Dove			163	
Animalia	Aves	Podargidae	0313	*Podargus strigoides*		Tawny Frogmouth	P		365	
Animalia	Aves	Aegothelidae	0317	*Aegotheles cristatus*		Australian Owlet-nightjar	P		2	
Animalia	Aves	Apodidae	0335	*Apus pacificus*		Fork-tailed Swift	P	C,J,K	1	
Animalia	Aves	Apodidae	0334	*Hirundapus caudacutus*		White-throated Needletail	P	V,C,J,K	16	
Animalia	Aves	Oceanitidae	0065	*Pelagodroma marina*		White-faced Storm-Petrel	P		6	
Animalia	Aves	Diomedeidae	0091	*Thalassarche cauta*		Shy Albatross	V,P	V	1	
Animalia	Aves	Procellariidae	0072	*Ardenna carneipes*		Flesh-footed Shearwater	V,P	J,K	1	
Animalia	Aves	Procellariidae	0070	*Ardenna grisea*		Sooty Shearwater	P	J	8	
Animalia	Aves	Procellariidae	0069	*Ardenna pacifica*		Wedge-tailed Shearwater	P	J	46176	
Animalia	Aves	Procellariidae	0071	*Ardenna tenuirostris*		Short-tailed Shearwater	P	C,J,K	65	
Animalia	Aves	Procellariidae	0937	*Macronectes halli*		Northern Giant-Petrel	V,P	V	1	
Animalia	Aves	Procellariidae	0083	*Pachyptila turtur*		Fairy Prion	P		4	
Animalia	Aves	Procellariidae	8684	*Pterodroma leucoptera leucoptera*		Gould's Petrel	V,P	E	1	
Animalia	Aves	Procellariidae	0955	*Pterodroma nigripennis*		Black-winged Petrel	V,P		15	
Animalia	Aves	Procellariidae	T009	*Puffinus sp.*		Unidentified Shearwater	P		1	
Animalia	Aves	Spheniscidae	0005	*Eudyptula minor*		Little Penguin	P		1	
Animalia	Aves	Fregatidae	0095	*Fregata ariel*		Lesser Frigatebird	P	C,J,K	1	
Animalia	Aves	Sulidae	0104	*Morus serrator*		Australasian Gannet	P		10	
Animalia	Aves	Sulidae	0105	*Sula dactylatra*		Masked Booby	V,P	J,K	1	
Animalia	Aves	Sulidae	0102	*Sula leucogaster*		Brown Booby	P	C,J,K	2	
Animalia	Aves	Anhingidae	8731	*Anhinga novaehollandiae*		Australasian Darter	P		19	
Animalia	Aves	Phalacrocoracidae	0100	*Microcarbo melanoleucos*		Little Pied Cormorant	P		12	
Animalia	Aves	Phalacrocoracidae	0096	*Phalacrocorax carbo*		Great Cormorant	P		5	
Animalia	Aves	Phalacrocoracidae	T021	*Phalacrocorax sp.*		Unidentified Cormorant	P		6	
Animalia	Aves	Phalacrocoracidae	0097	*Phalacrocorax sulcirostris*		Little Black Cormorant	P		8	
Animalia	Aves	Phalacrocoracidae	0099	*Phalacrocorax varius*		Pied Cormorant	P		15	
Animalia	Aves	Pelecanidae	0106	*Pelecanus conspicillatus*		Australian Pelican	P		16	
Animalia	Aves	Ciconiidae	0183	*Ephippiorhynchus asiaticus*		Black-necked Stork	E1,P		5	
Animalia	Aves	Ardeidae	0977	*Ardea ibis*		Cattle Egret	P		12	
Animalia	Aves	Ardeidae	0186	*Ardea intermedia*		Intermediate Egret	P		3	
Animalia	Aves	Ardeidae	8712	*Ardea modesta*		Eastern Great Egret	P		9	
Animalia	Aves	Ardeidae	0189	*Ardea pacifica*		White-necked Heron	P		1	
Animalia	Aves	Ardeidae	T179	*Ardea/Egretta sp.*		Unidentified Egret	P		7	
Animalia	Aves	Ardeidae	0193	*Butorides striatus*		Striated Heron	P		3	
Animalia	Aves	Ardeidae	0185	*Egretta garzetta*		Little Egret	P		3	
Animalia	Aves	Ardeidae	0188	*Egretta novaehollandiae*		White-faced Heron	P		44	
Animalia	Aves	Ardeidae	0191	*Egretta sacra*		Eastern Reef Egret	P		3	
Animalia	Aves	Ardeidae	0196	*Ixobrychus flavicollis*		Black Bittern	V,P		2	
Animalia	Aves	Ardeidae	0192	*Nycticorax caledonicus*		Nankeen Night Heron	P		1	
Animalia	Aves	Threskiornithidae	0181	*Platalea regia*		Royal Spoonbill	P		7	
Animalia	Aves	Threskiornithidae	0179	*Threskiornis molucca*		Australian White Ibis	P		88	
Animalia	Aves	Threskiornithidae	0180	*Threskiornis spinicollis*		Straw-necked Ibis	P		15	
Animalia	Aves	Accipitridae	0222	*Accipiter cirrocephalus*		Collared Sparrowhawk	P		13	
Animalia	Aves	Accipitridae	0221	*Accipiter fasciatus*		Brown Goshawk	P		6	
Animalia	Aves	Accipitridae	0220	*Accipiter novaehollandiae*		Grey Goshawk	P		2	
Animalia	Aves	Accipitridae	0224	*Aquila audax*		Wedge-tailed Eagle	P		1	
Animalia	Aves	Accipitridae	0234	*Aviceda subcristata*		Pacific Baza	P		39	
Animalia	Aves	Accipitridae	0232	*Elanus axillaris*		Black-shouldered Kite	P		9	
Animalia	Aves	Accipitridae	0226	*Haliaeetus leucogaster*		White-bellied Sea-Eagle	V,P		20	

Animalia	Aves	Accipitridae	0227	*Haliastur indus*	Brahminy Kite	P		52	
Animalia	Aves	Accipitridae	0228	*Haliastur sphenurus*	Whistling Kite	P		7	
Animalia	Aves	Accipitridae	0225	*Hieraaetus morphnoides*	Little Eagle	V,P		1	
Animalia	Aves	Accipitridae	0230	*^^Lophoictinia isura*	Square-tailed Kite	V,P,3		9	
Animalia	Aves	Accipitridae	8739	*^^Pandion cristatus*	Eastern Osprey	V,P,3		49	
Animalia	Aves	Falconidae	0239	*Falco berigora*	Brown Falcon	P		2	
Animalia	Aves	Falconidae	0240	*Falco cenchroides*	Nankeen Kestrel	P		3	
Animalia	Aves	Falconidae	0235	*Falco longipennis*	Australian Hobby	P		3	
Animalia	Aves	Falconidae	0237	*Falco peregrinus*	Peregrine Falcon	P		4	
Animalia	Aves	Rallidae	0053	*Amaurornis moluccana*	Pale-vented Bush-hen	V,P		1	
Animalia	Aves	Rallidae	0059	*Fulica atra*	Eurasian Coot	P		3	
Animalia	Aves	Rallidae	0056	*Gallinula tenebrosa*	Dusky Moorhen	P		7	
Animalia	Aves	Rallidae	0046	*Gallirallus philippensis*	Buff-banded Rail	P		14	
Animalia	Aves	Rallidae	0045	*Lewinia pectoralis*	Lewin's Rail	P		2	
Animalia	Aves	Rallidae	0058	*Porphyrio porphyrio*	Purple Swamphen	P		77	
Animalia	Aves	Rallidae	0050	*Porzana pusilla*	Baillon's Crake	P		1	
Animalia	Aves	Haematopodidae	0131	*Haematopus fuliginosus*	Sooty Oystercatcher	V,P		44	
Animalia	Aves	Haematopodidae	0130	*Haematopus longirostris*	Pied Oystercatcher	E1,P		22	
Animalia	Aves	Charadriidae	0143	*Charadrius ruficapillus*	Red-capped Plover	P		1	
Animalia	Aves	Charadriidae	8006	*Pluvialis fulva*	Pacific Golden Plover	P	C,J,K	2	
Animalia	Aves	Charadriidae	0133	*Vanellus miles*	Masked Lapwing	P		135	
Animalia	Aves	Scolopacidae	0168	*Gallinago hardwickii*	Latham's Snipe	P	J,K	2	
Animalia	Aves	Scolopacidae	0153	*Limosa lapponica*	Bar-tailed Godwit	P	C,J,K	1	
Animalia	Aves	Scolopacidae	0149	*Numenius madagascariensis*	Eastern Curlew	P	CE,C,J,K	2	
Animalia	Aves	Scolopacidae	0155	*Tringa brevipes*	Grey-tailed Tattler	P	C,J,K	1	
Animalia	Aves	Turnicidae	0014	*Turnix varius*	Painted Button-quail	P		3	
Animalia	Aves	Laridae	0124	*Anous minutus*	Black Noddy	P		1	
Animalia	Aves	Laridae	0125	*Chroicocephalus novaehollandiae*	Silver Gull	P		219	
Animalia	Aves	Laridae	0120	*Onychoprion fuscata*	Sooty Tern	V,P		3	
Animalia	Aves	Laridae	0953	*Sterna hirundo*	Common Tern	P	C,J,K	1	
Animalia	Aves	Laridae	0117	*Sternula albifrons*	Little Tern	E1,P	C,J,K	9	
Animalia	Aves	Laridae	0115	*Thalasseus bergii*	Crested Tern	P	J	12	
Animalia	Aves	Cacatuidae	0269	*Cacatua galerita*	Sulphur-crested Cockatoo	P		18	
Animalia	Aves	Cacatuidae	0271	*Cacatua sanguinea*	Little Corella	P		5	
Animalia	Aves	Cacatuidae	0267	*Calyptorhynchus funereus*	Yellow-tailed Black-Cockatoo	P		41	
Animalia	Aves	Cacatuidae	0265	*^Calyptorhynchus lathami*	Glossy Black-Cockatoo	V,P,2		57	
Animalia	Aves	Cacatuidae	0273	*Eolophus roseicapillus*	Galah	P		107	
Animalia	Aves	Psittacidae	0281	*Alisterus scapularis*	Australian King-Parrot	P		20	
Animalia	Aves	Psittacidae	8028	*^Cyclopsitta diophthalma coxeni*	Coxen's Fig-Parrot	E4A,P,2	E	3	
Animalia	Aves	Psittacidae	0258	*Glossopsitta concinna*	Musk Lorikeet	P		8	
Animalia	Aves	Psittacidae	0260	*Glossopsitta pusilla*	Little Lorikeet	V,P		11	
Animalia	Aves	Psittacidae	0309	*^^Lathamus discolor*	Swift Parrot	E1,P,3	CE	6	
Animalia	Aves	Psittacidae	0310	*Melopsittacus undulatus*	Budgerigar	P		6	
Animalia	Aves	Psittacidae	0282	*Platycercus elegans*	Crimson Rosella	P		9	
Animalia	Aves	Psittacidae	0288	*Platycercus eximius*	Eastern Rosella	P		69	
Animalia	Aves	Psittacidae	T039	*Platycercus sp.*	Unidentified Rosella	P		3	
Animalia	Aves	Psittacidae	0256	*Trichoglossus chlorolepidotus*	Scaly-breasted Lorikeet	P		92	
Animalia	Aves	Psittacidae	9947	*Trichoglossus haematodus*	Rainbow Lorikeet	P		811	
Animalia	Aves	Centropodidae	0349	*Centropus phasianinus*	Pheasant Coucal	P		15	
Animalia	Aves	Cuculidae	0338	*Cacomantis flabelliformis*	Fan-tailed Cuckoo	P		37	
Animalia	Aves	Cuculidae	0339	*Cacomantis variolosus*	Brush Cuckoo	P		11	
Animalia	Aves	Cuculidae	0343	*Chalcites lucidus*	Shining Bronze-Cuckoo	P		16	
Animalia	Aves	Cuculidae	0347	*Eudynamys orientalis*	Eastern Koel	P		41	
Animalia	Aves	Cuculidae	8930	*Eudynamys orientalis cyanocephala*		P		1	
Animalia	Aves	Cuculidae	0348	*Scythrops novaehollandiae*	Channel-billed Cuckoo	P		14	
Animalia	Aves	Strigidae	0246	*^^Ninox connivens*	Barking Owl	V,P,3		1	
Animalia	Aves	Strigidae	9922	*Ninox novaeseelandiae*	Southern Boobook	P		12	
Animalia	Aves	Strigidae	0248	*^^Ninox strenua*	Powerful Owl	V,P,3		11	
Animalia	Aves	Tytonidae	9923	*Tyto javanica*	Eastern Barn Owl	P		21	
Animalia	Aves	Tytonidae	0252	*^^Tyto longimembris*	Eastern Grass Owl	V,P,3		1	
Animalia	Aves	Alcedinidae	0319	*Ceyx azureus*	Azure Kingfisher	P		48	
Animalia	Aves	Alcedinidae	0322	*Dacelo novaeguineae*	Laughing Kookaburra	P		314	
Animalia	Aves	Alcedinidae	0327	*Todiramphus chloris*	Collared Kingfisher	V,P		8	
Animalia	Aves	Alcedinidae	0324	*Todiramphus macleayii*	Forest Kingfisher	P		8	
Animalia	Aves	Alcedinidae	0326	*Todiramphus sanctus*	Sacred Kingfisher	P		116	
Animalia	Aves	Meropidae	0329	*Merops ornatus*	Rainbow Bee-eater	P		11	
Animalia	Aves	Coraciidae	0318	*Eurystomus orientalis*	Dollarbird	P		37	
Animalia	Aves	Pittidae	0352	*Pitta versicolor*	Noisy Pitta	P		9	
Animalia	Aves	Menuridae	0350	*Menura novaehollandiae*	Superb Lyrebird	P		2	
Animalia	Aves	Climacteridae	0560	*Climacteris erythrops*	Red-browed Treecreeper	P		1	
Animalia	Aves	Climacteridae	0558	*Cormobates leucophaea*	White-throated Treecreeper	P		86	
Animalia	Aves	Ptilonorhynchidae	0676	*Ailuroedus crassirostris*	Green Catbird	P		13	
Animalia	Aves	Ptilonorhynchidae	0679	*Ptilonorhynchus violaceus*	Satin Bowerbird	P		87	
Animalia	Aves	Ptilonorhynchidae	0684	*Sericulus chrysocephalus*	Regent Bowerbird	P		22	

Animalia	Aves	Maluridae	0529	*Malurus cyaneus*	Superb Fairy-wren	P		47	
Animalia	Aves	Maluridae	0536	*Malurus lamberti*	Variegated Fairy-wren	P		161	
Animalia	Aves	Maluridae	0541	*Malurus melanocephalus*	Red-backed Fairy-wren	P		66	
Animalia	Aves	Maluridae	0526	*Stipiturus malachurus*	Southern Emu-wren	P		3	
Animalia	Aves	Acanthizidae	0470	*Acanthiza lineata*	Striated Thornbill	P		13	
Animalia	Aves	Acanthizidae	0471	*Acanthiza nana*	Yellow Thornbill	P		14	
Animalia	Aves	Acanthizidae	0475	*Acanthiza pusilla*	Brown Thornbill	P		186	
Animalia	Aves	Acanthizidae	0460	*Gerygone levigaster*	Mangrove Gerygone	P		17	
Animalia	Aves	Acanthizidae	0454	*Gerygone mouki*	Brown Gerygone	P		29	
Animalia	Aves	Acanthizidae	0453	*Gerygone olivacea*	White-throated Gerygone	P		31	
Animalia	Aves	Acanthizidae	0493	*Sericornis citreogularis*	Yellow-throated Scrubwren	P		4	
Animalia	Aves	Acanthizidae	0488	*Sericornis frontalis*	White-browed Scrubwren	P		285	
Animalia	Aves	Acanthizidae	0494	*Sericornis magnirostra*	Large-billed Scrubwren	P		71	
Animalia	Aves	Pardalotidae	0565	*Pardalotus punctatus*	Spotted Pardalote	P		56	
Animalia	Aves	Pardalotidae	0976	*Pardalotus striatus*	Striated Pardalote	P		33	
Animalia	Aves	Meliphagidae	0591	*Acanthorhynchus tenuirostris*	Eastern Spinebill	P		131	
Animalia	Aves	Meliphagidae	0638	*Anthochaera carunculata*	Red Wattlebird	P		5	
Animalia	Aves	Meliphagidae	0710	*Anthochaera chrysoptera*	Little Wattlebird	P		50	
Animalia	Aves	Meliphagidae	0603	*Anthochaera phrygia*	Regent Honeyeater	E4A,P	CE	5	
Animalia	Aves	Meliphagidae	T210	*Anthochaera sp.*	Unidentified Wattlebird	P		8	
Animalia	Aves	Meliphagidae	0614	*Caligavis chrysops*	Yellow-faced Honeyeater	P		282	
Animalia	Aves	Meliphagidae	0641	*Entomyzon cyanotis*	Blue-faced Honeyeater	P		43	
Animalia	Aves	Meliphagidae	0598	*Grantiella picta*	Painted Honeyeater	V,P	V	1	
Animalia	Aves	Meliphagidae	0597	*Lichmera indistincta*	Brown Honeyeater	P		48	
Animalia	Aves	Meliphagidae	0634	*Manorina melanocephala*	Noisy Miner	P		263	
Animalia	Aves	Meliphagidae	0605	*Meliphaga lewinii*	Lewin's Honeyeater	P		323	
Animalia	Aves	Meliphagidae	0579	*Melithreptus albogularis*	White-throated Honeyeater	P		2	
Animalia	Aves	Meliphagidae	0578	*Melithreptus lunatus*	White-naped Honeyeater	P		8	
Animalia	Aves	Meliphagidae	0586	*Myzomela sanguinolenta*	Scarlet Honeyeater	P		62	
Animalia	Aves	Meliphagidae	0646	*Philemon citreogularis*	Little Friarbird	P		4	
Animalia	Aves	Meliphagidae	0645	*Philemon corniculatus*	Noisy Friarbird	P		42	
Animalia	Aves	Meliphagidae	0632	*Phylidonyris niger*	White-cheeked Honeyeater	P		287	
Animalia	Aves	Orthonychidae	0434	*Orthonyx temminckii*	Logrunner	P		1	
Animalia	Aves	Psophodidae	0421	*Psophodes olivaceus*	Eastern Whipbird	P		101	
Animalia	Aves	Neosittidae	0549	*Daphoenositta chrysoptera*	Varied Sittella	V,P		18	
Animalia	Aves	Campephagidae	0428	*Coracina lineata*	Barred Cuckoo-shrike	V,P		3	
Animalia	Aves	Campephagidae	0424	*Coracina novaehollandiae*	Black-faced Cuckoo-shrike	P		69	
Animalia	Aves	Campephagidae	0425	*Coracina papuensis*	White-bellied Cuckoo-shrike	P		2	
Animalia	Aves	Campephagidae	0429	*Coracina tenuirostris*	Cicadabird	P		20	
Animalia	Aves	Campephagidae	0431	*Lalage leucomela*	Varied Triller	P		19	
Animalia	Aves	Pachycephalidae	0408	*Colluricincla harmonica*	Grey Shrike-thrush	P		57	
Animalia	Aves	Pachycephalidae	0413	*Colluricincla megarhyncha*	Little Shrike-thrush	P		3	
Animalia	Aves	Pachycephalidae	0416	*Falcunculus frontatus frontatus*	Eastern Shrike-tit	P		2	
Animalia	Aves	Pachycephalidae	0398	*Pachycephala pectoralis*	Golden Whistler	P		137	
Animalia	Aves	Pachycephalidae	0401	*Pachycephala rufiventris*	Rufous Whistler	P		36	
Animalia	Aves	Oriolidae	0671	*Oriolus sagittatus*	Olive-backed Oriole	P		52	
Animalia	Aves	Oriolidae	0432	*Sphecotheres vieilloti*	Australasian Figbird	P		135	
Animalia	Aves	Artamidae	8519	*Artamus cyanopterus cyanopterus*	Dusky Woodswallow	V,P		2	
Animalia	Aves	Artamidae	0543	*Artamus leucorynchus*	White-breasted Woodswallow	P		3	
Animalia	Aves	Artamidae	0700	*Cracticus nigrogularis*	Pied Butcherbird	P		85	
Animalia	Aves	Artamidae	T022	*Cracticus sp.*	Unidentified Butcherbird	P		8	
Animalia	Aves	Artamidae	0705	*Cracticus tibicen*	Australian Magpie	P		312	
Animalia	Aves	Artamidae	0702	*Cracticus torquatus*	Grey Butcherbird	P		57	
Animalia	Aves	Artamidae	0694	*Strepera graculina*	Pied Currawong	P		160	
Animalia	Aves	Dicruridae	0673	*Dicrurus bracteatus*	Spangled Drongo	P		69	
Animalia	Aves	Rhipiduridae	0361	*Rhipidura albiscapa*	Grey Fantail	P		127	
Animalia	Aves	Rhipiduridae	0364	*Rhipidura leucophrys*	Willie Wagtail	P		33	
Animalia	Aves	Rhipiduridae	0362	*Rhipidura rufifrons*	Rufous Fantail	P		26	
Animalia	Aves	Corvidae	0930	*Corvus coronoides*	Australian Raven	P		45	
Animalia	Aves	Corvidae	9902	*Corvus orru*	Torresian Crow	P		99	
Animalia	Aves	Corvidae	9067	*Corvus sp.*	Unidentified Corvid	P		3	
Animalia	Aves	Corvidae	0868	*Corvus tasmanicus*	Forest Raven	P		10	
Animalia	Aves	Monarchidae	0415	*Grallina cyanoleuca*	Magpie-lark	P		214	
Animalia	Aves	Monarchidae	0373	*Monarcha melanopsis*	Black-faced Monarch	P		35	
Animalia	Aves	Monarchidae	0366	*Myiagra cyanoleuca*	Satin Flycatcher	P		1	
Animalia	Aves	Monarchidae	9955	*Myiagra inquieta*	Restless Flycatcher	P		1	
Animalia	Aves	Monarchidae	0365	*Myiagra rubecula*	Leaden Flycatcher	P		35	
Animalia	Aves	Monarchidae	0375	*Symposiachrus trivirgatus*	Spectacled Monarch	P		43	
Animalia	Aves	Paradisaeidae	0686	*Ptiloris paradiseus*	Paradise Riflebird	P		2	
Animalia	Aves	Petroicidae	0392	*Eopsaltria australis*	Eastern Yellow Robin	P		253	
Animalia	Aves	Petroicidae	0377	*Microeca fascinans*	Jacky Winter	P		2	
Animalia	Aves	Petroicidae	0384	*Petroica rosea*	Rose Robin	P		11	
Animalia	Aves	Petroicidae	0396	*Tregellasia capito*	Pale-yellow Robin	P		10	
Animalia	Aves	Cisticolidae	0525	*Cisticola exilis*	Golden-headed Cisticola	P		3	

Animalia	Aves	Acrocephalidae	0524	*Acrocephalus australis*		Australian Reed-Warbler	P		2	
Animalia	Aves	Megaluridae	0508	*Cincloramphus cruralis*		Brown Songlark	P		1	
Animalia	Aves	Megaluridae	0523	*Megalurus timoriensis*		Tawny Grassbird	P		1	
Animalia	Aves	Timaliidae	0574	*Zosterops lateralis*		Silvereye	P		502	
Animalia	Aves	Hirundinidae	0357	*Hirundo neoxena*		Welcome Swallow	P		67	
Animalia	Aves	Hirundinidae	0360	*Petrochelidon ariel*		Fairy Martin	P		1	
Animalia	Aves	Hirundinidae	0359	*Petrochelidon nigricans*		Tree Martin	P		1	
Animalia	Aves	Pycnonotidae	0990	*Pycnonotus jocosus*	*	Red-whiskered Bulbul			46	
Animalia	Aves	Turdidae	0779	*Zoothera lunulata*		Bassian Thrush	P		6	
Animalia	Aves	Turdidae	7000	*Zoothera sp.*		unidentified ground thrush	P		8	
Animalia	Aves	Sturnidae	0998	*Sturnus tristis*	*	Common Myna			7	
Animalia	Aves	Sturnidae	0999	*Sturnus vulgaris*	*	Common Starling			9	
Animalia	Aves	Nectariniidae	0564	*Dicaeum hirundinaceum*		Mistletoebird	P		25	
Animalia	Aves	Estrildidae	0657	*Lonchura castaneothorax*		Chestnut-breasted Mannikin	P		6	
Animalia	Aves	Estrildidae	0662	*Neochmia temporalis*		Red-browed Finch	P		267	
Animalia	Aves	Estrildidae	0655	*Taeniopygia bichenovii*		Double-barred Finch	P		19	
Animalia	Aves	Passeridae	0995	*Passer domesticus*	*	House Sparrow			8	
Animalia	Aves	Motacillidae	0647	*Anthus novaeseelandiae*		Australian Pipit	P		1	
Animalia	Mammalia	Ornithorhynchidae	1001	*Ornithorhynchus anatinus*		Platypus	P		3	
Animalia	Mammalia	Tachyglossidae	1003	*Tachyglossus aculeatus*		Short-beaked Echidna	P		83	
Animalia	Mammalia	Dasyuridae	1027	*Antechinus flavipes*		Yellow-footed Antechinus	P		4	
Animalia	Mammalia	Dasyuridae	T093	*Antechinus sp.*		Unidentified Antechinus	P		1	
Animalia	Mammalia	Dasyuridae	1674	*Antechinus stuartii*		Brown Antechinus	P		9	
Animalia	Mammalia	Dasyuridae	1033	*Antechinus swainsonii*		Dusky Antechinus	P		2	
Animalia	Mammalia	Dasyuridae	1008	*Dasyurus maculatus*		Spotted-tailed Quoll	V,P	E	7	
Animalia	Mammalia	Peramelidae	1093	*Isoodon macrourus*		Northern Brown Bandicoot	P		68	
Animalia	Mammalia	Peramelidae	T081	*Isoodon/Perameles sp.*		unidentified Bandicoot	P		18	
Animalia	Mammalia	Peramelidae	1097	*Perameles nasuta*		Long-nosed Bandicoot	P		6	
Animalia	Mammalia	Phascolarctidae	1162	*Phascolarctos cinereus*		Koala	V,P	V	399	
Animalia	Mammalia	Vombatidae	1165	*Vombatus ursinus*		Common Wombat	P		1	
Animalia	Mammalia	Petauridae	1138	*Petaurus breviceps*		Sugar Glider	P		21	
Animalia	Mammalia	Petauridae	1137	*Petaurus norfolcensis*		Squirrel Glider	V,P		13	
Animalia	Mammalia	Pseudocheiridae	1129	*Pseudocheirus peregrinus*		Common Ringtail Possum	P		110	
Animalia	Mammalia	Acrobatidae	1147	*Acrobates pygmaeus*		Feathertail Glider	P		22	
Animalia	Mammalia	Phalangeridae	T082	*Trichosurus sp.*		brushtail possum	P		8	
Animalia	Mammalia	Phalangeridae	1113	*Trichosurus vulpecula*		Common Brushtail Possum	P		316	
Animalia	Mammalia	Macropodidae	1265	*Macropus giganteus*		Eastern Grey Kangaroo	P		45	
Animalia	Mammalia	Macropodidae	1259	*Macropus parryi*		Whiptail Wallaby	P		1	
Animalia	Mammalia	Macropodidae	1266	*Macropus robustus*		Common Wallaroo	P		3	
Animalia	Mammalia	Macropodidae	1261	*Macropus rufogriseus*		Red-necked Wallaby	P		15	
Animalia	Mammalia	Macropodidae	T085	*Macropus sp.*		kangaroo / wallaby	P		32	
Animalia	Mammalia	Macropodidae	1236	*Thylogale thetis*		Red-necked Pademelon	P		2	
Animalia	Mammalia	Macropodidae	1242	*Wallabia bicolor*		Swamp Wallaby	P		33	
Animalia	Mammalia	Pteropodidae	1282	*Pteropus alecto*		Black Flying-fox	P		51	
Animalia	Mammalia	Pteropodidae	1280	*Pteropus poliocephalus*		Grey-headed Flying-fox	V,P	V	88	
Animalia	Mammalia	Pteropodidae	1281	*Pteropus scapulatus*		Little Red Flying-fox	P		5	
Animalia	Mammalia	Pteropodidae	T087	*Pteropus sp.*		Flying-fox	P		12	
Animalia	Mammalia	Pteropodidae	1294	*Syconycteris australis*		Common Blossom-bat	V,P		6	
Animalia	Mammalia	Rhinolophidae	1303	*Rhinolophus megaphyllus*		Eastern Horseshoe-bat	P		3	
Animalia	Mammalia	Molossidae	1324	*Austronomus australis*		White-striped Freetail-bat	P		2	
Animalia	Mammalia	Molossidae	1938	*Mormopterus ridei*		Eastern Free-tailed Bat	P		1	
Animalia	Mammalia	Molossidae	T091	*Mormopterus sp.*		mastiff-bat	P		1	
Animalia	Mammalia	Vespertilionidae	1349	*Chalinolobus gouldii*		Gould's Wattled Bat	P		8	
Animalia	Mammalia	Vespertilionidae	1357	*Myotis macropus*		Southern Myotis	V,P		2	
Animalia	Mammalia	Vespertilionidae	1336	*Nyctophilus bifax*		Eastern Long-eared Bat	V,P		5	
Animalia	Mammalia	Vespertilionidae	1335	*Nyctophilus geoffroyi*		Lesser Long-eared Bat	P		10	
Animalia	Mammalia	Vespertilionidae	1334	*Nyctophilus gouldi*		Gould's Long-eared Bat	P		12	
Animalia	Mammalia	Vespertilionidae	T092	*Nyctophilus sp.*		long-eared bat	P		1	
Animalia	Mammalia	Vespertilionidae	1365	*Scotorepens orion*		Eastern Broad-nosed Bat	P		3	
Animalia	Mammalia	Vespertilionidae	T089	*Scotorepens sp.*		Unidentified broad-nosed bat	P		2	
Animalia	Mammalia	Vespertilionidae	1377	*Vespadelus pumilus*		Eastern Forest Bat	P		10	
Animalia	Mammalia	Vespertilionidae	1379	*Vespadelus vulturnus*		Little Forest Bat	P		1	
Animalia	Mammalia	Muridae	1415	*Hydromys chrysogaster*		Water-rat	P		1	
Animalia	Mammalia	Muridae	1412	*Mus musculus*	*	House Mouse			7	
Animalia	Mammalia	Muridae	1854	*Mus musculus domesticus*	*				5	
Animalia	Mammalia	Muridae	1455	*Pseudomys novaehollandiae*		New Holland Mouse	P	V	2	
Animalia	Mammalia	Muridae	1395	*Rattus fuscipes*		Bush Rat	P		16	
Animalia	Mammalia	Muridae	1398	*Rattus lutreolus*		Swamp Rat	P		24	
Animalia	Mammalia	Muridae	1409	*Rattus norvegicus*	*	Brown Rat			3	
Animalia	Mammalia	Muridae	1408	*Rattus rattus*	*	Black Rat			22	
Animalia	Mammalia	Dugongidae	1558	*Dugong dugon*		Dugong	E1,P		1	
Animalia	Mammalia	Otariidae	1882	*Arctocephalus pusillus doriferus*		Australian Fur-seal	V,P		2	
Animalia	Mammalia	Otariidae	1539	*Neophoca cinerea*		Australian Sea-lion	P		1	
Animalia	Mammalia	Canidae	1531	*Canis lupus*	*	Dingo, domestic dog			3	

Animalia	Mammalia	Canidae	1904	*Canis lupus dingo*	*	Dingo			10
Animalia	Mammalia	Canidae	1905	*Canis lupus familiaris*	*	Dog			2
Animalia	Mammalia	Canidae	1532	*Vulpes vulpes*	*	Fox			16
Animalia	Mammalia	Felidae	1536	*Felis catus*	*	Cat			18
Animalia	Mammalia	Leporidae	1511	*Lepus capensis*	*	Brown Hare			6
Animalia	Mammalia	Leporidae	1510	*Oryctolagus cuniculus*	*	Rabbit			11
Animalia	Mammalia	Bovidae	1518	*Bos taurus*	*	European cattle			2
Animalia	Mammalia	Bovidae	1521	*Capra hircus*	*	Goat			1
Animalia	Mammalia	Cervidae	9112	*Cervus sp.*	*	Unidentified Deer			3
Animalia	Mammalia	Cervidae	1523	*Dama dama*	*	Fallow Deer			8
Animalia	Mammalia	Balaenidae	1561	*Eubalaena australis*		Southern Right Whale	E1,P	E	2
Animalia	Mammalia	Balaenopteridae	1570	*Balaenoptera acutorostrata*		Dwarf Minke Whale	P		9
Animalia	Mammalia	Balaenopteridae	1572	*Balaenoptera edeni*		Bryde's Whale	P		2
Animalia	Mammalia	Balaenopteridae	1567	*Balaenoptera musculus*		Blue Whale	E1,P	E	1
Animalia	Mammalia	Balaenopteridae	1575	*Megaptera novaeangliae*		Humpback Whale	V,P	V	17
Animalia	Mammalia	Kogiidae	1581	*Kogia breviceps*		Pygmy Sperm Whale	P		1
Animalia	Mammalia	Ziphiidae	1593	*Mesoplodon grayi*		Gray's Beaked Whale	P		1
Animalia	Mammalia	Ziphiidae	1591	*Mesoplodon layardii*		Strap-toothed Beaked Whale	P		1
Animalia	Mammalia	Ziphiidae	T098	*Mesoplodon sp.*		Unidentified Beaked Whale	P		1
Animalia	Mammalia	Delphinidae	1616	*Delphinus delphis*		Common Dolphin	P		3
Animalia	Mammalia	Delphinidae	1650	*Feresa attenuata*		Pygmy Killer Whale	P		1
Animalia	Mammalia	Delphinidae	1609	*Grampus griseus*		Risso's Dolphin	P		2
Animalia	Mammalia	Delphinidae	1624	*Lagenodelphis hosei*		Fraser's Dolphin	P		2
Animalia	Mammalia	Delphinidae	1639	*Peponocephala electra*		Melon-headed Whale	P		2
Animalia	Mammalia	Delphinidae	1603	*Pseudorca crassidens*		False Killer Whale	P		2
Animalia	Mammalia	Delphinidae	1621	*Stenella attenuata*		Spotted Dolphin	P		1
Animalia	Mammalia	Delphinidae	1619	*Stenella coeruleoalba*		Striped Dolphin	P		1
Animalia	Mammalia	Delphinidae	1620	*Stenella longirostris*		Long-snouted Spinner Dolphin	P		1
Animalia	Mammalia	Delphinidae	1900	*Tursiops truncatus*		Bottlenose Dolphin	P		7
Animalia	Insecta	Cicadidae	I034	*Cystosoma saundersii*		Bladder Cicada			2
Animalia	Insecta	Hesperiidae	I023	*Ocybadistes knightorum*		Black Grass-dart Butterfly	E1		43
Animalia	Insecta	Nymphalidae	I027	*Danaus plexippus*	*	Monarch Butterfly			1
Animalia	Insecta	Nymphalidae	I032	*Junonia villida calybe*		Meadow Argus Butterfly			1
Animalia	Insecta	Nymphalidae	I033	*Polyura sempronius*		Tailed Emperor Butterfly			1
Animalia	Insecta	Nymphalidae	I029	*Tisiphone abeona*		Swordgrass Brown Butterfly			1
Animalia	Insecta	Papilionidae	I030	*Papilio aegeus*		Large Citrus Butterfly			1
Animalia	Insecta	Pieridae	I031	*Catopsilia gorgophone gorgophone*		Yellow Migrant Butterfly			1
Animalia	Insecta	Pieridae	I028	*Pieris rapae*	*	Cabbage White Butterfly			1
Animalia	Insecta	Petaluridae	I138	*Petalura litorea*		Coastal Petaltail	E1		1
Animalia	Unknown	Unknown Fauna	T350	*Fauna sp.*		Unidentified Fauna			439
Animalia	Unknown	Unknown Fauna	T202	*Microchiroptera suborder*		Unidentified Microbat			7
Animalia	Mammalia	Miniopteridae	1346	*Miniopterus australis*		Little Bent-winged Bat	V,P		12
Animalia	Mammalia	Miniopteridae	3330	*Miniopterus orianae oceanensis*		Large Bent-winged Bat	V,P		6

Appendix E

Heritage Search Results

AHIMS Web Services (AWS)
Search Result

Purchase Order/Reference : coffs 2

Client Service ID : 530807

Thea Kane

Date: 27 August 2020

141 Walker Street
North Sydney New South Wales 2204

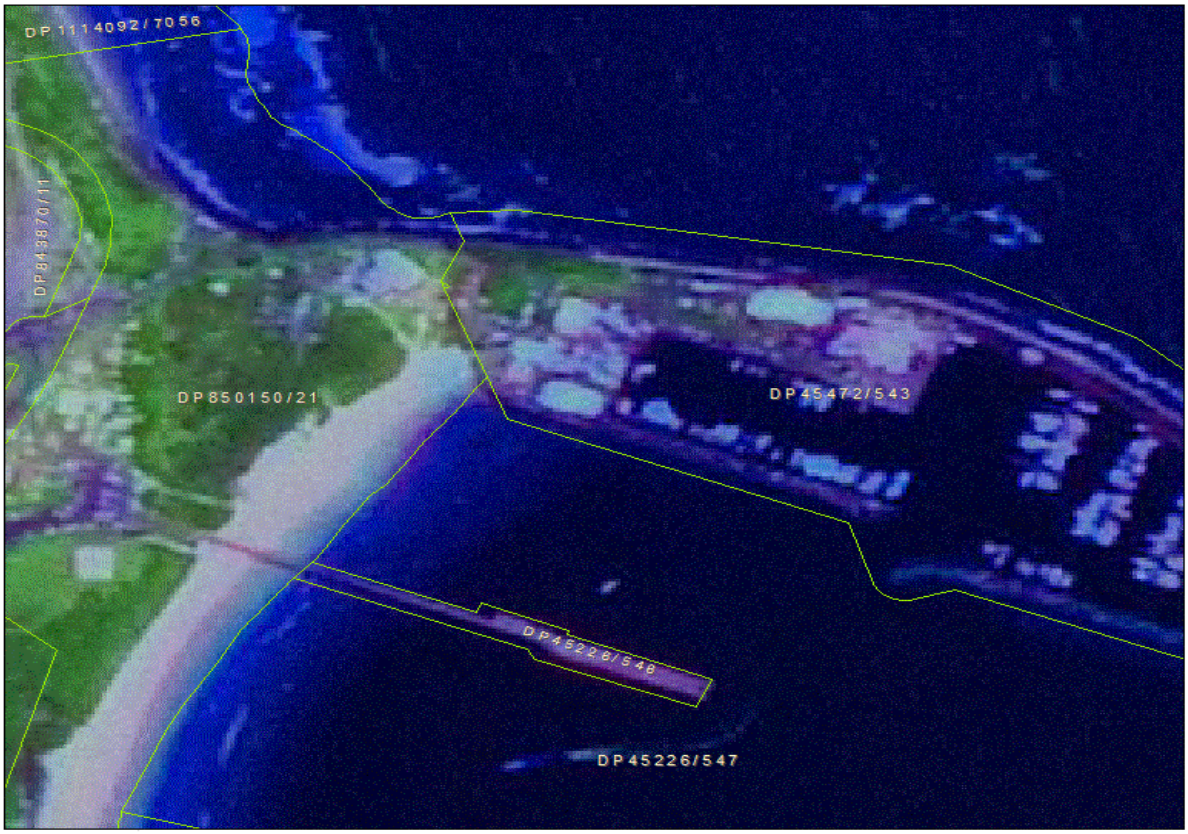
Attention: Thea Kane

Email: thea.kane@advisian.com

Dear Sir or Madam:

AHIMS Web Service search for the following area at Lat, Long From : -30.3042, 153.1428 - Lat, Long To : -30.3023, 153.1439 with a Buffer of 200 meters, conducted by Thea Kane on 27 August 2020.

The context area of your search is shown in the map below. Please note that the map does not accurately display the exact boundaries of the search as defined in the paragraph above. The map is to be used for general reference purposes only.



A search of the Office of the Environment and Heritage AHIMS Web Services (Aboriginal Heritage Information Management System) has shown that:

0	**Aboriginal sites are recorded in or near the above location.**
0	**Aboriginal places have been declared in or near the above location. ***

AHIMS Web Services (AWS)
Search Result

Purchase Order/Reference : Coffs 1

Client Service ID : 530805

Thea Kane

Date: 27 August 2020

141 Walker Street
North Sydney New South Wales 2204

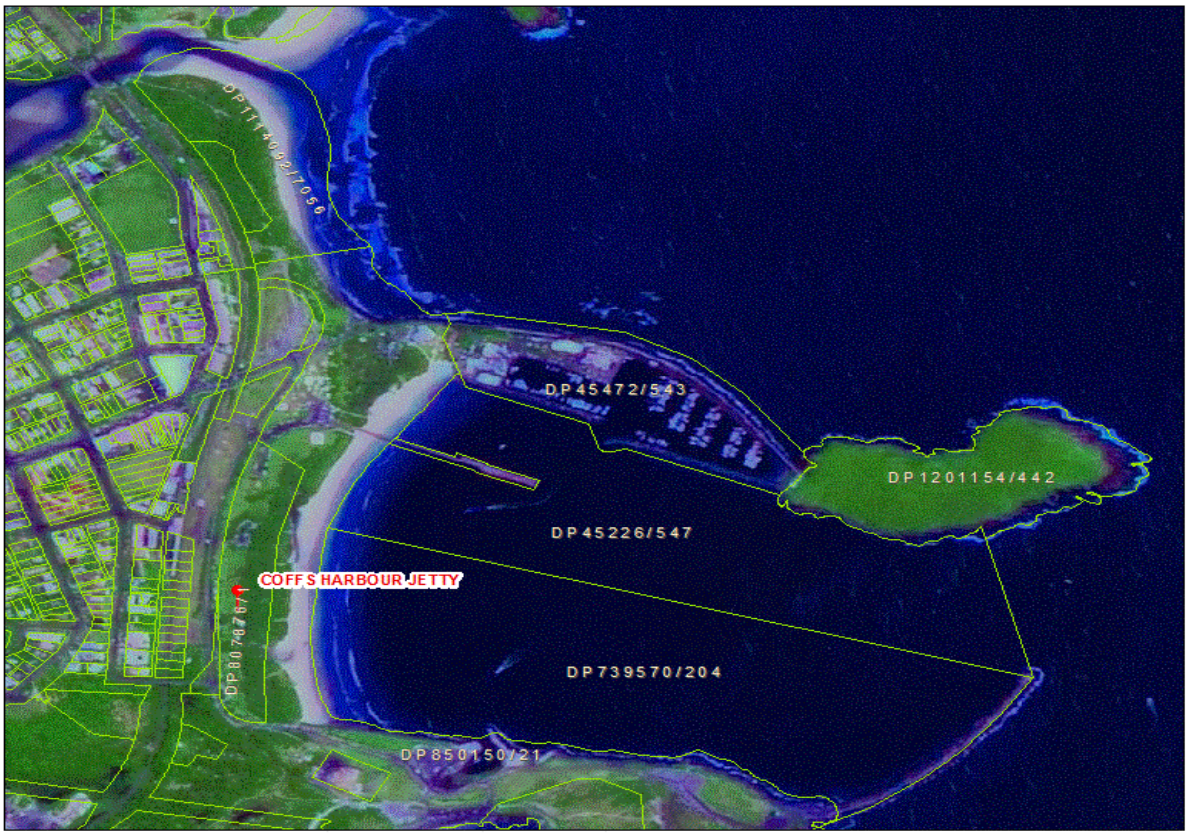
Attention: Thea Kane

Email: thea.kane@advisian.com

Dear Sir or Madam:

AHIMS Web Service search for the following area at Lat, Long From : -30.3091, 153.1368 - Lat, Long To : -30.2987, 153.1533 with a Buffer of 200 meters, conducted by Thea Kane on 27 August 2020.

The context area of your search is shown in the map below. Please note that the map does not accurately display the exact boundaries of the search as defined in the paragraph above. The map is to be used for general reference purposes only.



A search of the Office of the Environment and Heritage AHIMS Web Services (Aboriginal Heritage Information Management System) has shown that:

4	**Aboriginal sites are recorded in or near the above location.**
0	**Aboriginal places have been declared in or near the above location. ***

If your search shows Aboriginal sites or places what should you do?

- You must do an extensive search if AHIMS has shown that there are Aboriginal sites or places recorded in the search area.
- If you are checking AHIMS as a part of your due diligence, refer to the next steps of the Due Diligence Code of practice.
- You can get further information about Aboriginal places by looking at the gazettal notice that declared it. Aboriginal places gazetted after 2001 are available on the NSW Government Gazette (http://www.nsw.gov.au/gazette) website. Gazettal notices published prior to 2001 can be obtained from Office of Environment and Heritage's Aboriginal Heritage Information Unit upon request

Important information about your AHIMS search

- The information derived from the AHIMS search is only to be used for the purpose for which it was requested. It is not be made available to the public.
- AHIMS records information about Aboriginal sites that have been provided to Office of Environment and Heritage and Aboriginal places that have been declared by the Minister;
- Information recorded on AHIMS may vary in its accuracy and may not be up to date .Location details are recorded as grid references and it is important to note that there may be errors or omissions in these recordings,
- Some parts of New South Wales have not been investigated in detail and there may be fewer records of Aboriginal sites in those areas. These areas may contain Aboriginal sites which are not recorded on AHIMS.
- Aboriginal objects are protected under the National Parks and Wildlife Act 1974 even if they are not recorded as a site on AHIMS.
- This search can form part of your due diligence and remains valid for 12 months.

3 Marist Place, Parramatta NSW 2150
Locked Bag 5020 Parramatta NSW 2220
Tel: (02) 9585 6380 Fax: (02) 9873 8599

ABN 30 841 387 271
Email: ahims@environment.nsw.gov.au
Web: www.environment.nsw.gov.au

If your search shows Aboriginal sites or places what should you do?

- You must do an extensive search if AHIMS has shown that there are Aboriginal sites or places recorded in the search area.
- If you are checking AHIMS as a part of your due diligence, refer to the next steps of the Due Diligence Code of practice.
- You can get further information about Aboriginal places by looking at the gazettal notice that declared it. Aboriginal places gazetted after 2001 are available on the NSW Government Gazette (http://www.nsw.gov.au/gazette) website. Gazettal notices published prior to 2001 can be obtained from Office of Environment and Heritage's Aboriginal Heritage Information Unit upon request

Important information about your AHIMS search

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- Information recorded on AHIMS may vary in its accuracy and may not be up to date .Location details are recorded as grid references and it is important to note that there may be errors or omissions in these recordings,
- Some parts of New South Wales have not been investigated in detail and there may be fewer records of Aboriginal sites in those areas. These areas may contain Aboriginal sites which are not recorded on AHIMS.
- Aboriginal objects are protected under the National Parks and Wildlife Act 1974 even if they are not recorded as a site on AHIMS.
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EPI Heritage

- Aboriginal Place of Heritage Significance
- Conservation Area - General
- Conservation Area - Landscape
- Heritage Conservation Area
- Item - Aboriginal
- Item - Archaeological
- Item - General
- Item - Landscape

EPI Heritage

- Aboriginal Place of Heritage Significance
- Conservation Area - General
- Conservation Area - Landscape
- Heritage Conservation Area
- Item - Aboriginal
- Item - Archaeological
- Item - General
- Item - Landscape

State Heritage Register Curtilage

State Heritage Register Curtilage

Appendix F

Consultation Responses

Newton, Katie (Newcastle)

From: Coffs Harbour Marina <admin.coffs@starmarinas.com.au>
Sent: Monday, 14 December 2020 11:16 AM
To: Newton, Katie (Tomago)
Subject: RE: Stakeholder Consultation - Coffs Harbour Marine Centre Upgrade[External Sender]

Hi Katie,
There are no major concerns from our perspective in relation to the REF.
Kind Regards,

Elise Currey
Marina Manager IMM
Port Officer, Ocean Cruising Club
T (02) 6651 4222
E admin.coffs@starmarinas.com.au
W www.starmarinas.com.au
Coffs Harbour International Marina Pty Ltd
1 Marina Drive
Coffs Harbour NSW 2450

From: Newton, Katie (Tomago) [mailto:katie.newton@advisian.com]
Sent: Thursday, December 10, 2020 11:14 AM
To: Coffs Harbour Marina
Cc: WarrenRussell@qm.com.au
Subject: RE: Stakeholder Consultation - Coffs Harbour Marine Centre Upgrade
Importance: High

Hi Elise,

The final REF for the proposed Marine Centre Upgrade is now being prepared for submission to TfNSW.
I note we have not received any comments back from the marina in response to our consultation request.
In their review, TfNSW have requested that an official 'no response' or 'no issues' or similar is provided please if you don't have any comments to make.
Could you please get back to me ASAP.

Thanks very much,
Katie.

Dr Katie Newton
Senior Marine Environmental Consultant

Suite 2, 8-14 Telford Street | Newcastle East NSW 2300
M +61425325410
E katie.newton@advisian.com
www.advisian.com

From: Coffs Harbour Marina <admin.coffs@starmarinas.com.au>
Sent: Tuesday, 13 October 2020 9:07 AM
To: Newton, Katie (Newcastle) <katie.newton@advisian.com>
Cc: WarrenRussell@qm.com.au
Subject: RE: Stakeholder Consultation - Coffs Harbour Marine Centre Upgrade[External Sender]

Hi Katie,
Thank you for the information.
I will have a look and get back to you asap with any questions.
Kind Regards,

Elise Currey
Marina Manager IMM
Port Officer, Ocean Cruising Club
T (02) 6651 4222
E admin.coffs@starmarinas.com.au
W www.starmarinas.com.au
Coffs Harbour International Marina Pty Ltd
1 Marina Drive
Coffs Harbour NSW 2450

From: Newton, Katie (Newcastle) [mailto:katie.newton@advisian.com]
Sent: Monday, October 12, 2020 1:35 PM
To: Coffs Harbour Marina
Subject: Stakeholder Consultation - Coffs Harbour Marine Centre Upgrade
Importance: High

Hi Elise,

Advisian are undertaking stakeholder consultation on behalf of TfNSW for proposed upgrades to the Coffs Harbour Marine Centre (inner harbour government berth area). This upgrade would also require some

dredging to accommodate larger vessels (~650 m3). All proposed work would be undertaken in the existing Marine Centre and slipway area.

Advisian are undertaking an environmental assessment for the works and as part of this are consulting with all relevant stakeholders. I have attached a letter which provides more detail about the proposal as well as the concept design plans.

It would really be appreciated if you could reply with any concerns or comments regarding the proposal to this email by the end of the week. My sincere apologies, I thought I had sent this to you a couple of weeks ago.

Please give me a call if you would like to discuss anything in more detail.

Thanks,
Katie.

Dr Katie Newton
Senior Marine Environmental Consultant

Suite 2, 8-14 Telford Street | Newcastle East NSW 2300
M +61425325410
E katie.newton@advisian.com
www.advisian.com

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Newton, Katie (Newcastle)

From: Garth Mcgilvray <gmcgilvr@provet.com.au>
Sent: Wednesday, 14 October 2020 6:23 PM
To: Newton, Katie (Newcastle)
Subject: Re: Coffs Harbour Marine Centre Upgrade - Stakeholder Consultation[External Sender]

Hi Katie,
Sorry for the delay in replying to the stakeholder consultation for the Coffs Harbour Marine Centre Proposal.
The Board of the Coffs Harbour Yacht Club (CHYC) considered the document dated 23rd September 2020 on Tuesday 13th October 2020.
The Board thanks you for seeking our input. The club's on water activities will not be impinged by this proposal and therefore we make no comment.
However, the Board would like to draw attention to the rate of siltation of the harbour as the ability of keel sailing boats to enter the harbour has already been impacted.
If the silting of the harbour is not addressed soon the value of your current proposal amount to little as the harbour will not be a safe entrance in the future. It will only take a small amount of swell to make exiting or entering the habour unsafe.
Regards,
Garth McGilvray, Vice Commodore CHYC
0411563370

Sent: Monday, October 12, 2020 12:43 PM
To: Garth Mcgilvray <gmcgilvr@provet.com.au>
Subject: Coffs Harbour Marine Centre Upgrade - Stakeholder Consultation

Hi Garth,

Apologies this has slipped by you!

I am writing to you in regards to proposed upgrades to the Coffs Harbour Marine Centre Government Berths (located in the inner harbour, Coffs Harbour). This upgrade would also require some dredging to accommodate larger vessels (~650 m3). Advisian are undertaking an environmental assessment in the form of a Review of Environmental Factors (REF) on behalf of TfNSW for the proposal and as part of this are consulting with all relevant stakeholders. I have attached a letter which provides more detail about the proposal as well as the concept design plans. We are seeking feedback from you for any concerns / comments by the end of this week.

Please give me a call if you would like to discuss anything in more detail. An email response will be sufficient.

Thanks,
Katie.

Dr Katie Newton
Senior Marine Environmental Consultant

Suite 2, 8-14 Telford Street | Newcastle East NSW 2300
M +61425325410
E katie.newton@advisian.com
www.advisian.com

Newton, Katie (Newcastle)

From: Newton, Katie (Newcastle)
Sent: Friday, 16 October 2020 11:24 AM
To: 'Silas Sutherland'
Cc: 'Crownland Grafton Mailbox'; 'Tina Clemens'
Subject: RE: Coffs Harbour Marine Centre Upgrade - Stakeholder Consultation[External Sender]

Hi Silas,

Additional information just back from TfNSW regarding third party use and tenure below:

"Transport are Crown Land Managers for Coffs Harbour area for the Marina."

"The existing tenure will continue for government emergency agencies vessels such as Police, Fisheries, Maritime, Boarder Security."

I hope this addresses your queries, if not let me know and I can seek further information.

Thanks.
Katie.

Dr Katie Newton
Senior Marine Environmental Consultant

Suite 2, 8-14 Telford Street | Newcastle East NSW 2300
M +61425325410
E katie.newton@advisian.com
www.advisian.com

From: Newton, Katie (Newcastle)
Sent: Friday, 16 October 2020 10:09 AM
To: Silas Sutherland <silas.sutherland@crownland.nsw.gov.au>
Cc: Crownland Grafton Mailbox <grafton.crownlands@crownland.nsw.gov.au>; Tina Clemens <tina.clemens@crownland.nsw.gov.au>
Subject: RE: Coffs Harbour Marine Centre Upgrade - Stakeholder Consultation[External Sender]

Hi Silas,

Thanks for your response.
We have now decided against the beach nourishment option due to feedback from Council, NSW DPI and Marine Parks on that option.
The disposal option will hopefully be beneficial reuse by TfNSW (in a TfNSW roadside corridor most likely) dependent on testing of dried sediment and satisfactory classification as ENM at that stage. Otherwise it will go to a licenced landfill. Would this reuse by TfNSW require royalties to be paid? And if so can you advise what kind of royalty values we are talking for ~650m3 of material?
I have put your query regarding tenure to TfNSW as am not aware, but the users will be the same government offices that are currently using the facility.

I'll get back to you when I hear from TfNSW and in the meantime could you provide more information on the royalties.

Thanks,
Katie.

Dr Katie Newton
Senior Marine Environmental Consultant

Suite 2, 8-14 Telford Street | Newcastle East NSW 2300
M +61425325410
E katie.newton@advisian.com
www.advisian.com

From: Silas Sutherland <silas.sutherland@crownland.nsw.gov.au>
Sent: Friday, 16 October 2020 9:54 AM
To: Newton, Katie (Newcastle) <katie.newton@advisian.com>
Cc: Crownland Grafton Mailbox <grafton.crownlands@crownland.nsw.gov.au>; Tina Clemens <tina.clemens@crownland.nsw.gov.au>
Subject: Coffs Harbour Marine Centre Upgrade - Stakeholder Consultation[External Sender]

Hi Katie,

Apologies in the delay in getting back to you WRT the stakeholder consultation for the Coffs Harbour Marine Centre Upgrade.

Crown Lands main matter of consideration is the proposed management of the dredge spoil material. If the material is to be taken off site for use by a third party it will require an extractive Licence and royalties to be paid. Similarly if the material is to be used for beach nourishment the department will need to be satisfied the material is suitable for deposition in a public place and require a Licence for the deposition activities.

Can you please also advise what sort of a tenure is proposed for the users of the site once the works are completed?

Please don't hesitate to contact me if you have any questions or require additional information.

Cheers

Silas

Silas Sutherland
Area Manager North Coast

Crown Lands I Department of Planning, Industry and Environment
Level 3 | 49-51 Victoria Street | Grafton | PO Box 2215 | DANGAR | NSW | 2309
P: (02) 6591 3580 | **M**: 0429 499 597 | **F**: (02) 6642 5375 | **E**: silas.sutherland@crownland.nsw.gov.au
W: www.crownland.nsw.gov.au | www.dpie.nsw.gov.au

The Department of Planning, Industry and Environment acknowledges that it stands on Aboriginal land. We acknowledge the traditional custodians of the land and we show our respect for elders past, present and emerging through thoughtful and collaborative approaches to our work, seeking to demonstrate our ongoing commitment to providing places in which Aboriginal people are included socially, culturally and economically.

NSW Police Force

Dr Katie Newton
Senior Marine Environmental Consultant
Suite 2, 8-14 Telford Street
Newcastle East NSW 2300

RE: Coffs Harbour Marine Centre – Upgrades to marina

Hi Katie,

Thank you for your previous email in regards to the proposed marina upgrades for the Coffs Harbour Marine Centre. As a result, we have been in consultation with our Coffs Harbour Water Police Sector Coordinator, Sergeant Simon, for her input on the conceptual design as one of the relevant stakeholders.

From the subsequent proposal, no major issues or changes have been flagged. However, one facet of the design has been noted by Sergeant Simon. It has been proposed that two (2) wharf pylons be placed between the off-shore class 2 Water Police vessel and the DPIs 22m off-shore patrol vessel, in their allotted berth. From the attached image of the proposed design, these vessels are assigned as vessels **"4"** and **"3"** respectively and the pylons have been added for a visual reference. These have been requested to assist with berthing and securing the vessels, and to alleviate any issues encountered whilst berthing in adverse weather conditions.

Understandably, these pylons may have already been factored into the design and are/will be indicated on later diagrams, however we wanted to raise the concerns early on in the development.

Should you have any questions, please feel free to contact the MAC at any stage.

Thanks again for your time,

Regards,

Gerard Hollands

Gerard Hollands
Acting Inspector – Fleet Operations
12th October 2020

[

Sydney Water Police/ Marine Area Command
4 Jubilee Place BALMAIN NSW 2040
T 02 93207499 **F** 02 93207427 **W** www.police.nsw.gov.au
TTY 02 9211 3776 for the hearing and speech impaired ABN 43 408 613 180

Newton, Katie (Newcastle)

From: Matthew Smith <programs@coffsharbourlalc.com.au>
Sent: Thursday, 15 October 2020 1:32 PM
To: Newton, Katie (Newcastle); Nathan Brennan
Subject: RE: Coffs Harbour Marine Centre Upgrade - Stakeholder Consultation[External Sender]

Hi Katie,

We have no significant cultural concerns as far as your proposal goes as is mapped.

I would only advise that you again consult with us, if you were to plan the sediment material from dredging be used for beach replenishment purpose to ensure landscape/cultural values are protected.

Kind Regards,

Yaarri Yarraang

Matthew Smith

Working Days – Monday to Friday

Programs Coordinator
Coffs Harbour and District Local Aboriginal Land Council
PO Box 6150 Coffs Harbour NSW 2450
|Ph| 02 6652 8740 **|M|** 0417 419 344 **|E|** programs@coffsharbourlalc.com.au

Gumbaynggirr - Ngiyaala junga-ngarraanga Girrwaanbi-biin gungangulam wajaarrgundi gilinggal-wanggaan-wiil,
I acknowledge the traditional owners of country throughout Australia and their continuing connection to land, sea and community.
I respect the Elders past and present on Gumbaynggirr country.

From: Newton, Katie (Newcastle) <katie.newton@advisian.com>
Sent: Monday, October 12, 2020 12:23 PM
To: Nathan Brennan <ceo@coffsharbourlalc.com.au>; Matthew Smith <programs@coffsharbourlalc.com.au>
Subject: RE: Coffs Harbour Marine Centre Upgrade - Stakeholder Consultation
Importance: High

Hi Nathan and Matt,

Just following up on the attached consultation request sent to you a couple of weeks ago. We are hoping to have any comments/concerns back from stakeholders by the end of the week. If you do have anything could you please email me with this ASAP.

Thanks very much,
Katie.

Dr Katie Newton
Senior Marine Environmental Consultant

Suite 2, 8-14 Telford Street | Newcastle East NSW 2300
M +61425325410
E katie.newton@advisian.com
www.advisian.com

From: Newton, Katie (Newcastle)
Sent: Wednesday, 23 September 2020 2:43 PM
To: Ceo <Ceo@coffsharbourlalc.com.au>; programs@coffsharbourlalc.com.au
Subject: Coffs Harbour Marine Centre Upgrade - Stakeholder Consultation

Hi Nathan and Matt,

I am writing to you in regards to proposed upgrades to the Coffs Harbour Marine Centre Government Berths (located in the inner harbour, Coffs Harbour). This upgrade would also require some dredging to accommodate larger vessels (~650 m3). All proposed work would be undertaken in the existing Marine Centre and slipway area.

Advisian are undertaking an environmental assessment in the form of a Review of Environmental Factors (REF) on behalf of TfNSW for the proposal and as part of this are consulting with all relevant stakeholders. I have attached a letter which provides more detail about the proposal as well as the concept design plans.

It would be appreciated if you could reply with any concerns or comments regarding the proposal to this email within 21 days.

Please give me a call if you would like to discuss anything in more detail.

Thanks,
Katie.

Dr Katie Newton
Senior Marine Environmental Consultant

Suite 2, 8-14 Telford Street | Newcastle East NSW 2300
M +61425325410
E katie.newton@advisian.com
www.advisian.com

Newton, Katie (Newcastle)

From: Brett Andrew <brett.andrew@dpi.nsw.gov.au>
Sent: Tuesday, 13 October 2020 4:09 PM
To: Newton, Katie (Newcastle)
Subject: FW: Coffs Harbour Marine Centre Upgrade - Stakeholder Consultation[External Sender]
Attachments: Coffs Harbour Marine Centre Consultation_Final 2020.pdf

Hi Katie,

Please find DPI comments on the proposal below.

Regards,
Brett

Brett Andrew | Program Leader Fisheries Compliance
Fisheries Compliance Unit
NSW Department of Primary Industries | Fisheries
The University of Newcastle, Ourimbah Campus | North Loop Road | Ourimbah NSW 2258
T: +61 2 4328 8602 M: 0409 232 671| E: brett.andrew@dpi.nsw.gov.au
W: www.dpi.nsw.gov.au

From: Anthony Harding <anthony.harding@dpi.nsw.gov.au>
Sent: Tuesday, 13 October 2020 3:35 PM
To: Brett Andrew <brett.andrew@dpi.nsw.gov.au>
Cc: Nicole Strehling <nicole.strehling@dpi.nsw.gov.au>; Paul Blade <paul.blade@dpi.nsw.gov.au>
Subject: RE: Coffs Harbour Marine Centre Upgrade - Stakeholder Consultation

Hi Brett

Following on from yesterday, please see my comments below.

1. Fisheries does not support the use of dredge spoils for future beach nourishment within the Solitary Islands Marine Park by Coffs Harbour City Council.
   Justification - dredge site was classified as “probably contaminated” based on historical sediment quality data and historical site usage. Sediment sampling locations within the inner harbour although consistent with the recommendations of the NAGD (for small dredging projects, up to 50,000m3), still has the potential to have missed contaminates. Marine Park management is supportive on the beneficial reuse by either TfNSW (e.g. road corridor) and private property (as clean fill).

2. Vessel location. Referring to the *Coffs Harbour Marine Centre Dredging, Dredge Plan (*Attachment A – Dredge Plan and Concept Design). For the stake of explaining this, Vessel 5 is in position one, Vessel 9 is in position two, Vessel 1 is in position 3 and so on.

   A recommendation would be to remove vessel 9 from position two and replace it with vessel 1, leaving position one free. Position one would be used as a loading and unloading, emergency and refuelling bay for vessels 1, 2, 5 and 6. Vessel 9 may use position nine when free, if position nine is being use, Vessel 9 may use position one on a temporary basis.

   Works on two levels;

   1. WHS – removes the need for employees to carry heavy loads along the jetty to the load and unload vessel i.e. dive equipment, seized fishing gear, research equipment, etc
   2. Environmental – removing the need to carry fuel, 20L jerry cans along the jetty to refuel vessels with outboards (that is if no fuel bunker is put in). Certain vessels can use over 200L in a day and its only a matter of time before an accident occurs.

Regards,

Anthony Harding

Acting Manager Solitary Islands Marine Park
Aquatic Environment | Marine Operations
M 0436 485 185 | **E** anthony.harding@dpi.nsw.gov.au
18a River Street, Maclean NSW 2464
www.dpie.nsw.gov.au

The Department of Planning, Industry and Environment acknowledges that it stands on Aboriginal land. We acknowledge the traditional custodians of the land and we show our respect for elders past, present and emerging through thoughtful and collaborative approaches to our work, seeking to demonstrate our ongoing commitment to providing places in which Aboriginal people are included socially, culturally and economically.

From: Brett Andrew <brett.andrew@dpi.nsw.gov.au>
Sent: Monday, 12 October 2020 3:26 PM
To: Anthony Harding <anthony.harding@dpi.nsw.gov.au>
Subject: FW: Coffs Harbour Marine Centre Upgrade - Stakeholder Consultation

Hi Anthony,

Can you please have a look at this email then give me a call to discuss – I meant to seek your input on this previously; sorry it slipped through to the keeper.

We are being asked for any comments by the end of the week.

Regards,
Brett

Brett Andrew | Program Leader Fisheries Compliance
Fisheries Compliance Unit
NSW Department of Primary Industries | Fisheries
The University of Newcastle, Ourimbah Campus | North Loop Road | Ourimbah NSW 2258
T: +61 2 4328 8602 M: 0409 232 671| E: brett.andrew@dpi.nsw.gov.au
W: www.dpi.nsw.gov.au

From: Newton, Katie (Newcastle) <katie.newton@advisian.com>
Sent: Wednesday, 23 September 2020 2:47 PM
To: Brett Andrew <brett.andrew@dpi.nsw.gov.au>
Subject: Coffs Harbour Marine Centre Upgrade - Stakeholder Consultation

Hi Brett,

I am writing to you in regards to proposed upgrades to the Coffs Harbour Marine Centre Government Berths (located in the inner harbour, Coffs Harbour). This upgrade would also require some dredging to accommodate larger vessels (~650 m3). All proposed work would be undertaken in the existing Marine Centre and slipway area.

Advisian are undertaking an environmental assessment in the form of a Review of Environmental Factors (REF) on behalf of TfNSW for the proposal and as part of this are consulting with all relevant stakeholders. I have attached a letter which provides more detail about the proposal as well as the concept design plans.

It would be appreciated if you could reply with any concerns or comments regarding the proposal to this email within 21 days.

Please give me a call if you would like to discuss anything in more detail.

Thanks,
Katie.

Dr Katie Newton
Senior Marine Environmental Consultant

Suite 2, 8-14 Telford Street | Newcastle East NSW 2300
M +61425325410
E katie.newton@advisian.com
www.advisian.com

Advisian
Worley Group

Newton, Katie (Newcastle)

From: David Carlin <carl1dav@police.nsw.gov.au>
Sent: Monday, 19 October 2020 3:08 PM
To: Newton, Katie (Newcastle)
Cc: Joseph Mcnulty
Subject: FW: Coffs Marine Centre Consultation Response - NSW Police [DLM=For-Official-Use-Only] [External Sender]
Attachments: 20201019_133530.jpg

Good Afternoon Katie

Thanks for the updated version of the concept design drawing with piles included.

We have reviewed this in consultation with Sgt Simon at Coffs Harbour Water Police and believe the piles were positioned too far from the wharf for the Class 2 vessel (number 4 on the plan).

Attached is a marked version of where police believe the piles will be most effective for both vessels (4 and 3) when berthing and when securing the vessels.

If anything further is required please do not hesitate to contact me.

Regards

NSW Police Force
David Carlin
A/Inspector
Fleet/Regional Controller
NSW Marine Area Command
4 Jubilee Place, Balmain NSW 2041
E: carl1dav@police.nsw.gov.au P: 93207410 E: 57420 M: 0488100083

From: Heidrun Simon <simo2hei@police.nsw.gov.au>
Sent: Monday, 19 October 2020 2:32 PM
To: David Carlin <carl1dav@police.nsw.gov.au>
Subject: RE: Coffs Marine Centre Consultation Response - NSW Police [DLM=For-Official-Use-Only]

Hi Dave,
Here you go, as discussed, the pylons were a bit too far out and if they could be put further back as indicated that would be great.

Thanks
Heida

NSW Police Force
Heida Simon
Sergeant
Coordinator Coffs Harbour Water Police
34 Marina Drive, Coffs Harbour, NSW 2450
E: simo2hei@police.nsw.gov.au P: 02 6651 4981 M: 0418 244448

From: David Carlin <carl1dav@police.nsw.gov.au>
Sent: Monday, 19 October 2020 11:20 AM
To: Heidrun Simon <simo2hei@police.nsw.gov.au>
Cc: Joseph Mcnulty <mcnu1jos@police.nsw.gov.au>
Subject: FW: Coffs Marine Centre Consultation Response - NSW Police [DLM=For-Official-Use-Only]

Good Morning Heida

See attached response and drawings in relation to adding pylons for vessel berths.

Please review and get back to me.

Regards

NSW Police Force
David Carlin
A/Inspector
Fleet/Regional Controller
NSW Marine Area Command
4 Jubilee Place, Balmain NSW 2041
E: carl1dav@police.nsw.gov.au P: 93207410 E: 57420 M: 0488100083

From: Bronwyn Simone <simo1bro@police.nsw.gov.au>
Sent: Monday, 19 October 2020 8:44 AM
To: David Carlin <carl1dav@police.nsw.gov.au>
Subject: FW: Coffs Marine Centre Consultation Response - NSW Police [DLM=For-Official-Use-Only]

Sir,

Please find attached DR Katie Newtons Email.

Thank You,

Kindest Regards

Bronwyn Simone
Support Administrative Officer

Marine Area Command | Police Transport & Public Safety Command | NSW Police
4 Jubilee Place | Balmain NSW 2041
Ph: 9320 7406 | **EN**: 57406 | Monday - Friday
Email: simo1bro@police.nsw.gov.au

From: Newton, Katie (Newcastle) <katie.newton@advisian.com>
Sent: Thursday, 15 October 2020 4:18 PM
To: Bronwyn Simone <simo1bro@police.nsw.gov.au>
Subject: FW: Coffs Marine Centre Consultation Response - NSW Police

Hi Simone,

Just sending through an updated concept design drawing to show the location of the piles noted in the consultation response from Gerard that were missing.

Could you please pass this onto Gerard Hollands and Joseph McNulty.

Much appreciated,
Katie.

Dr Katie Newton
Senior Marine Environmental Consultant

Suite 2, 8-14 Telford Street | Newcastle East NSW 2300
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E katie.newton@advisian.com
www.advisian.com

Advisian
Worley Group

From: Moses, Paul (Newcastle) <paul.moses@advisian.com>
Sent: Tuesday, 13 October 2020 12:57 PM
To: David Doyle <David.Doyle@transport.nsw.gov.au>; Newton, Katie (Newcastle) <katie.newton@advisian.com>
Cc: Julian Burgess <Julian.BURGESS2@transport.nsw.gov.au>
Subject: RE: Coffs Marine Centre Consultation Response - NSW Police[External Sender]

Dave,
How's attached look? If you are happy please fwd to the stakeholder ?

With this option it may be feasible to reduce the two fingers but you would need to consult with the users before doing that.

Regards,
Paul

From: David Doyle <David.Doyle@transport.nsw.gov.au>
Sent: Tuesday, 13 October 2020 11:28 AM
To: Newton, Katie (Newcastle) <katie.newton@advisian.com>; Moses, Paul (Newcastle) <paul.moses@advisian.com>
Cc: Julian Burgess <Julian.BURGESS2@transport.nsw.gov.au>
Subject: RE: Coffs Marine Centre Consultation Response - NSW Police[External Sender]

Hi Katie,

Thanks and Noted. We should add the mooring piles to the plan and REF.

Dave

From: Newton, Katie (Newcastle) [mailto:katie.newton@advisian.com]
Sent: Tuesday, 13 October 2020 11:15 AM
To: Moses, Paul (Newcastle) <paul.moses@advisian.com>; David Doyle <David.Doyle@transport.nsw.gov.au>
Cc: Julian Burgess <Julian.BURGESS2@transport.nsw.gov.au>
Subject: Coffs Marine Centre Consultation Response - NSW Police

Hi Paul / David,

Just back in form boat. We have received a consultation response from Police this morning which is attached. Just to ensure its already being incorporated into design. Snapshot below.

From the subsequent proposal, no major issues or changes have been flagged. However, one facet of the design has been noted by Sergeant Simon. It has been proposed that two (2) wharf pylons be placed between the off-shore class 2 Water Police vessel and the DPIs 22m off-shore patrol vessel, in their allotted berth. From the attached image of the proposed design, these vessels are assigned as vessels **"4"** and **"3"** respectively and the pylons have been added for a visual reference. These have been requested to assist with berthing and securing the vessels, and to alleviate any issues encountered whilst berthing in adverse weather conditions.

Understandably, these pylons may have already been factored into the design and are/will be indicated on later diagrams, however we wanted to raise the concerns early on in the development.

Katie.

Dr Katie Newton
Senior Marine Environmental Consultant

Suite 2, 8-14 Telford Street | Newcastle East NSW 2300
M +61425325410
E katie.newton@advisian.com
www.advisian.com

Advisian
Worley Group

From: Bronwyn Simone <simo1bro@police.nsw.gov.au>
Sent: Tuesday, 13 October 2020 8:40 AM
To: Newton, Katie (Newcastle) <katie.newton@advisian.com>
Subject: Coffs Harbour Marine Centre Upgrades [DLM=For-Official-Use-Only][External Sender]

Good Morning Dr Katie Newton,

Please find the above PDF relating to the Coffs Harbour Marine upgrades.

Thank You,

Kindest Regards

Bronwyn Simone
Support Administrative Officer

Marine Area Command | Police Transport & Public Safety Command | NSW Police
4 Jubilee Place | Balmain NSW 2041
Ph: 9320 7406 | **EN**: 57406 | Monday - Friday
Email: simo1bro@police.nsw.gov.au

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DOC20/813810-1
14 October 2020

Katie Newton
Senior Marine Environmental Consultant
Advisian Pty Ltd

katie.newton@advisian.com

Dear Katie,

Re: Coffs Harbour Marine Centre Proposal – Stakeholder Consultation

I refer to your letter dated 23 September 2020 regarding the development of an REF in accordance with Part 5 of the *Environmental Planning and Assessment Act 1979* for the design, demolition and reconstruction of the Government Marine Centre Berths at Coffs Harbour. The EPA has reviewed the preliminary information and provides the following comments.

Dredged Sediment Assessment
The information provided states that '*The dredge material is able to be classed as ENM'*. Any proposed reuse of ENM must be conducted in accordance with the Excavated Natural Material Order and Exemption 2014. Importantly, dredged sediments are not considered as ENM under the Order.

The EPA recommends that dredged sediments be classified in accordance with the waste classification guidelines, which will help the proponent determine the most appropriate disposal pathway. I note that the reported levels of TBT within these sediments indicates that disposal as general solid waste is likely to be the minimum requirement.

Sediment Dewatering & Water Quality
To ensure the protection of water quality, the proponent needs to clearly demonstrate how water quality impacts will be prevented at both the dredge site and sediment dewatering area, including:

- Demonstrate how an appropriate level of treatment and control will be implemented that ensures wastewater from the sediment dewatering process meets ANZECC water quality trigger values.
- Demonstrate how sediment fines will be managed to prevent turbidity impacts;
- Demonstrate how fuel, hydraulic fluids, chemicals, etc involved with site activities will be managed to prevent spillage and subsequent water quality impacts;
- Any use of flocculants or coagulant associated with the dewatering process will need careful consideration to prevent water quality impacts from these additives;
- Detail the management practices or operating procedures that will be implemented to ensure water quality issues are detected and promptly acted upon to prevent impacts; and
- Implementation of a water quality monitoring program for the duration of the project.

Waste Management
The proponent needs to clearly demonstrate how all wastes generated through the life of the project will be managed and lawfully disposed of.

Noise
All practical measures should be implemented to mitigate the impacts of noise on receivers. This includes taking into account the following recommended hours of operation:

- Monday to Friday – 7:00am to 6:00pm
- Saturday – 8:00 am to 1 pm; and
- No work on Sundays or Public Holidays

Air Quality
The potential risks to human health from exposure to airborne particulates (from uncontrolled dust emissions) must be assessed and managed. This is of particular importance given the position of the site within a high public use area. The proponent must minimise the generation of dust and prevent dust leaving the site.

Pollution Incident Notification
The proponent should note and be aware of its responsibility to notify each relevant authority of any pollution incident, in accordance with Section 148 of the *Protection of the Environment Operations Act 1997*.

Development of Construction Environmental Management Plan (CEMP)
It is essential that a CEMP or similar be developed that provides clear detail on the management of all environmental risks associated with the proposal, including but not limited to the issues outlined above.

If you have any questions please contact me on 66402522 or 0447 142 916.

Yours sincerely

Scott Ensbey
Senior Operations Officer – Regional Operations
Environment Protection Authority

Appendix G

Sediment Assessment Results Summary

Newton, Katie (Newcastle)

From: Terry Thorn <terry.thorn@coastalworks.com.au>
Sent: Tuesday, 6 October 2020 12:35 PM
To: Newton, Katie (Newcastle)
Cc: CoastalWorksAdmin; Nat Redman
Subject: RE: Coffs Harbour Marine Centre Upgrade - Stakeholder Consultation (ATTN Terry Thorn) [External Sender]

Thanks Katie
Please use this email trail as part of the formal consultation process
Kind regards Terry

Terry Thorn
Section Leader
Roads & Open Spaces Coffs Harbour City Council
Ph 02 66484501
terry.thorn@chcc.nsw.gov.au www.coffsharbour.nsw.gov.au @coffscouncil
@heartofcoffs www.heartofcoffs.com.au

From: Newton, Katie (Newcastle) <katie.newton@advisian.com>
Sent: Tuesday, 6 October 2020 11:45 AM
To: Terry Thorn <terry.thorn@coastalworks.com.au>
Cc: CoastalWorksAdmin <CoastalWorksAdmin@chcc.nsw.gov.au>
Subject: RE: Coffs Harbour Marine Centre Upgrade - Stakeholder Consultation (ATTN Terry Thorn)

Hi Terry,

Thanks for this information regarding the pipeline route. I'll pass it onto TfNSW.

There was a sediment contamination assessment undertaken specifically for this work in the proposed dredge area, with summary of results attached to the consultation letter. The sediment is considered suitable for disposal to sea and also land. I do understand the historical issues with sediment here though being a part of a lot of that previous work. The sandy sediment to be removed is thought to largely have moved into the harbour along the southern breakwall. Most of the historically contaminated surface sediment here was removed during the site remediation in 2016. We can provide the full assessment report

to you guys if that's of further concern. And despite our current data, if the beach is just not an option to you or Marine Parks due to historical concerns that's good to know now too.

Will council be sending any other formal response or shall we use this as your consultation response?

Thanks,
Katie.

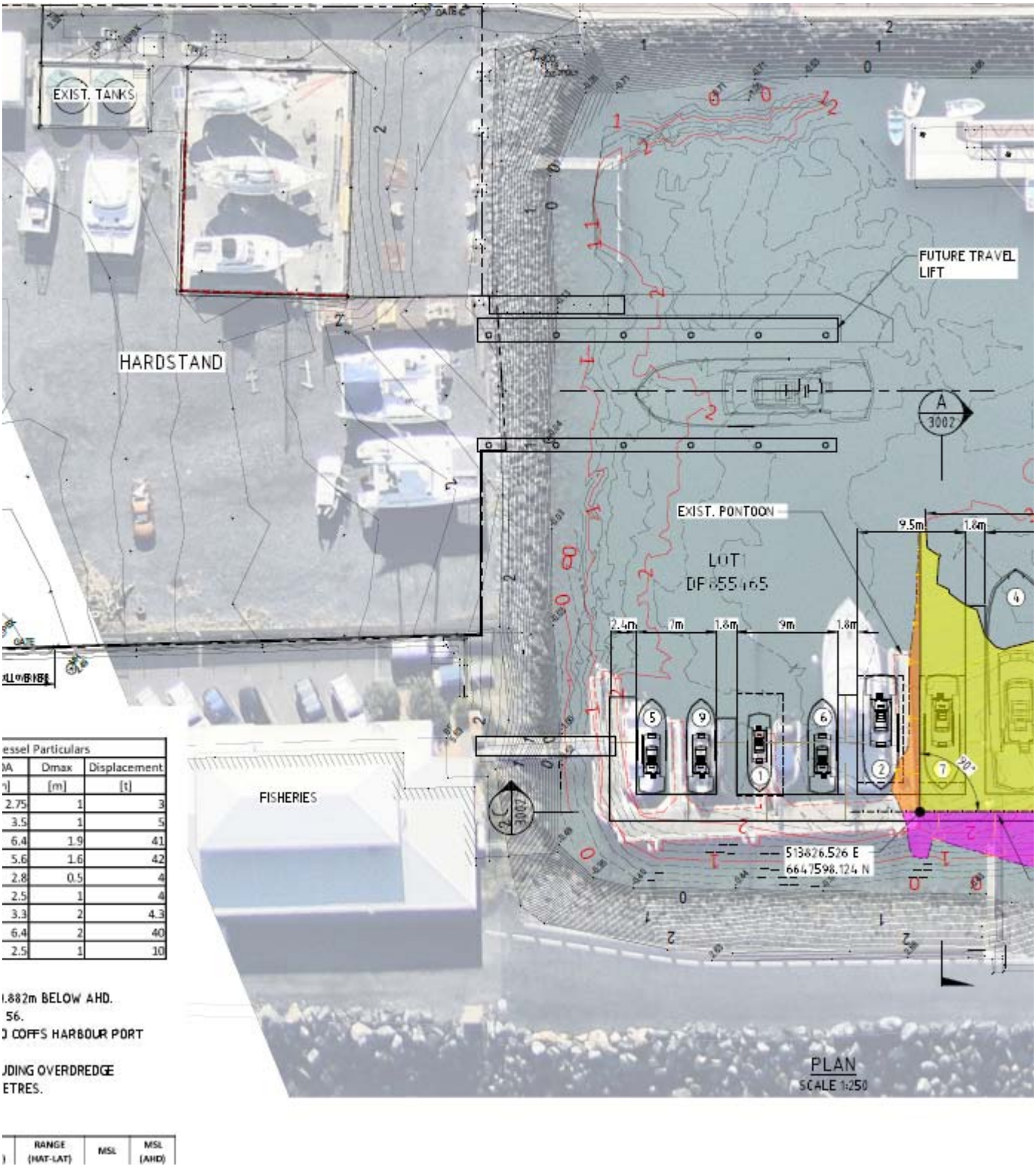
Dr Katie Newton
Senior Marine Environmental Consultant

Suite 2, 8-14 Telford Street | Newcastle East NSW 2300
M +61425325410
E katie.newton@advisian.com
www.advisian.com

Advisian
Worley Group

From: Terry Thorn <terry.thorn@coastalworks.com.au>
Sent: Wednesday, 30 September 2020 4:53 PM
To: Newton, Katie (Newcastle) <katie.newton@advisian.com>
Cc: CoastalWorksAdmin <CoastalWorksAdmin@chcc.nsw.gov.au>
Subject: FW: Coffs Harbour Marine Centre Upgrade - Stakeholder Consultation (ATTN Terry Thorn)[External Sender]

Afternoon Katie
Council does share a concern with the Solitary Islands Marine Parks Office in that contamination known to exist at the former slipway may be present in the sand immediately adjacent to the former site. Council and would not support potentially contaminated sand being placed on beaches adjacent to the Marine Park.
Have attached a copy of the pipe line route that was used for the 2019 Harbour dredging campaign. This route has a buried pipe cross under Marina Drive east of the current RAB. This may provide the opportunity to stockpile the sand on NSW Government land for later disposal.
Looking at the dredging plan the Council owned Long reach Excavator (21m reach) would be able to excavate berths 3 & 4 however unable to excavate the full extent of berth 8. There are longer excavators / draglines available



Regards Terry

Terry Thorn
Section Leader
Roads & Open Spaces Coffs Harbour City Council
Ph 02 66484501
terry.thorn@chcc.nsw.gov.au www.coffsharbour.nsw.gov.au @coffscouncil
@heartofcoffs www.heartofcoffs.com.au

From: Newton, Katie (Newcastle) <katie.newton@advisian.com>
Sent: Wednesday, 23 September 2020 3:50 PM
To: Terry Thorn <terry.thorn@coastalworks.com.au>
Subject: Coffs Harbour Marine Centre Upgrade - Stakeholder Consultation (ATTN Terry Thorn)

Hi Terry,

I am writing to you in regards to proposed upgrades to the Coffs Harbour Marine Centre Government Berths (located in the inner harbour, Coffs Harbour). This upgrade would also require some dredging to accommodate larger vessels (~650 m^3). All proposed work would be undertaken in the existing Marine Centre and slipway area.

Advisian are undertaking an environmental assessment in the form of a Review of Environmental Factors (REF) on behalf of TfNSW for the proposal and as part of this are consulting with all relevant stakeholders. I have attached a letter which provides more detail about the proposal as well as the concept design plans.

It would be appreciated if you could reply with any concerns or comments regarding the proposal to this email within 21 days.

Please give me a call if you would like to discuss anything in more detail.

Some more intel on the pump / pipeline and excavator we just spoke about would be great.

Thanks very much,
Katie.

Dr Katie Newton
Senior Marine Environmental Consultant

Suite 2, 8-14 Telford Street | Newcastle East NSW 2300
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Sediment quality data - raw data (with NAGD exceedances highlighted).

Analytical Group	Analyte	Units	LoR	Location ID	C1a	C1b	C1c	C2a	C2b	C2c	C3a	C3b	C4a	C4b	C4c	C5a
				Sample Depth	0-0.5m	0.5-1m	1-2m	0-0.5m	0.5-1m	1-2m	0-0.5m	0.5-1m	0-0.5m	0.5-1m	1-1.75m	0-0.5m
				NAGD SV												
pH	pH (F)	pH unit	0.10		8.8	8.8	8.8	8.8	8.8	8.8	8.8	8.9	8.8	9.0	9.0	8.8
	pH (Fox)	pH unit	0.10		6.9	6.9	6.7	6.8	6.9	6.8	6.9	7.0	6.9	6.8	6.8	6.8
	Reaction Rate	Reaction unit	1.00		4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
	pH KCl (23A)	pH unit	0.10		9.6	9.6	9.7	9.6	9.6	9.6	9.6	9.5	9.6	9.6	9.7	9.6
	pH OX (23B)	pH unit	0.10		8.2	8.3	8.3	8.3	8.3	8.2	8.2	8.2	8.2	8.1	8.2	8.2
Sulfur trail	KCl Extractable Sulfur (23Ce)	% S	0.02		0.111	0.122	0.097	0.107	0.105	0.138	0.132	0.138	0.123	0.130	0.106	0.106
	Peroxide Sulfur (23De)	% S	0.02		0.391	0.399	0.234	0.342	0.368	0.481	0.390	0.571	0.380	0.406	0.290	0.358
	Peroxide Oxidisable Sulfur (23E)	% S	0.02		0.280	0.278	0.136	0.234	0.263	0.343	0.257	0.433	0.257	0.275	0.184	0.251
	Acidity - Peroxide Oxidisable Sulfur (a-23E)	mole H+/t	10		174	173	85	146	164	214	160	270	160	172	115	157
Calcium Values	KCl Extractable Calcium (23Vh)	% Ca	0.02		0.198	0.207	0.174	0.204	0.192	0.227	0.219	0.209	0.219	0.194	0.174	0.210
	Peroxide Calcium (23Wh)	% Ca	0.02		17.3	14.1	8.4	15.0	16.7	18.7	17.7	19.8	15.9	16.8	12.4	13.7
	Acid Reacted Calcium (23X)	% Ca	0.02		17.1	13.9	8.23	14.8	16.5	18.5	17.5	19.6	15.7	16.6	12.3	13.4
	acidity - Acid Reacted Calcium (a-23X)	mole H+/t	10		8540	6920	4100	7380	8240	9230	8720	9780	7820	8270	6130	6710
	sulfidic - Acid Reacted Calcium (s-23X)	% S	0.02		13.7	11.1	6.58	11.8	13.2	14.8	14.0	15.7	12.5	13.2	9.8	10.8

Analytical Group	Analyte	Units	LoR	Location ID	C1a	C1b	C1c	C2a	C2b	C2c	C3a	C3b	C4a	C4b	C4c	C5a
				Sample Depth	0-0.5m	0.5-1m	1-2m	0-0.5m	0.5-1m	1-2m	0-0.5m	0.5-1m	0-0.5m	0.5-1m	1-1.75m	0-0.5m
				NAGD SV												
Magnesium Values	KCl Extractable Magnesium (23Sm)	% Mg	0.02		0.093	0.099	0.071	0.095	0.089	0.112	0.114	0.107	0.106	0.094	0.174	0.083
	Peroxide Magnesium (23Tm)	% Mg	0.02		1.14	0.958	0.512	0.953	1.060	1.230	1.170	1.310	1.040	16.800	12.400	0.840
	Acid Reacted Magnesium (23U)	% Mg	0.02		1.04	0.858	0.441	0.857	0.976	1.120	1.060	1.210	0.930	16.600	12.300	0.756
	Acidity - Acid Reacted Magnesium (a-23U)	mole H+/t	10		860	706	363	705	803	918	870	993	765	8270	6130	622
	sulfidic - Acid Reacted Magnesium (s-23U)	% S	0.02		1.38	1.13	0.58	1.13	1.29	1.47	1.40	1.59	1.23	13.20	9.83	1.00
Excess Acid Neutralising Capacity	Excess Acid Neutralising Capacity (23Q)	% CaCO3	0.02		45.7	37.7	19.8	38.6	43.7	49.9	46.5	47.8	41.0	39.4	32.6	34.4
	acidity - Excess Acid Neutralising+B53 Capacity (a-23Q)	mole H+/t	10.00		9130	7540	3960	7720	8740	9960	9290	9560	8190	7870	6520.0	6880
	sulfidic - Excess Acid Neutralising Capacity (s-23Q)	% S	0.02		14.60	12.10	6.34	12.40	14.00	16.00	14.90	15.30	13.10	12.60	10.4	11.00
Acid Base Accounting	ANC Fineness Factor	-	0.5		1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5
	Net Acidity (sulfur units)	% S	0.02		<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
	Net Acidity (acidity units)	mole H+/t	10		<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
	Liming rate	kg CaCO3/t	1		<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
	Net Acidity excluding ANC (sulfur units)	% S	0.02		0.28	0.28	0.14	0.23	0.26	0.34	0.26	0.43	0.26	0.28	0.18	0.25

Analytical Group	Analyte	Units	LoR	Location ID	C1a	C1b	C1c	C2a	C2b	C2c	C3a	C3b	C4a	C4b	C4c	C5a
				Sample Depth	0-0.5m	0.5-1m	1-2m	0-0.5m	0.5-1m	1-2m	0-0.5m	0.5-1m	0-0.5m	0.5-1m	1-1.75m	0-0.5m
				NAGD SV												
	Net Acidity excluding ANC (acidity units)	mole H+/t	10		174	173	85	146	164	214	160	270	160	172	115	157
	Liming Rate excluding ANC	kg CaCO3/t	1		13	13	6	11	12	16	12	20	12	13	9	12
Physical	Moisture Content	%	1	-	32.5	31.1	26.7	33.9	32.9	35.9	33.1	34.1	33.4**	36.4	34.3	30.9
Metals	Aluminium	mg/kg	50		2270	2140.0	1760.0	2230.0	1960.0	2200.0	1490.0	1460.0	-	-	-	1860.0
	Iron	mg/kg	50		5140	4750.0	4190.0	4980.0	4760.0	5020.0	4560.0	4420.0	-	-	-	4830.0
	Barium	mg/kg	10		10.0	<10	<10	10.0	<10	10.0	<10	<10	-	-	-	<10
	Beryllium	mg/kg	1		<1	<1	<1	<1	<1	<1	<1	<1	-	-	-	<1
	Molybdenum	mg/kg	2		<2	<2	<2	<2	<2	<2	<2	<2	-	-	-	<2
	Tin	mg/kg	5		<5	<5	<5	<5	<5	<5	<5	<5	-	-	-	<5
	Thallium	mg/kg	5		<5	<5	<5	<5	<5	<5	<5	<5	-	-	-	<5
	Antimony	mg/kg	0.50	2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	-	-	-	<0.5
	Arsenic	mg/kg	1	20	10.20	8.75	8.17	8.76	9.36	9.77	7.69	7.47	-	-	-	8.02
	Cadmium	mg/kg	0.10	1.50	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	-	-	-	<0.1
	Chromium	mg/kg	1	80	9.7	6.7	5.7	7.6	6.8	7.6	6.8	6.8	-	-	-	8.9
	Copper	mg/kg	1	65	82	16.4	3.2	57.9	43.9	59.5	61.1	52.8	-	-	-	69.2
	Cobalt	mg/kg	0.50		1	1.0	0.8	1.0	0.9	0.9	0.8	0.9	-	-	-	0.9
	Lead	mg/kg	1	50	9.4	10.1	2.4	6.8	6.0	7.8	9.3	8.1	-	-	-	7.1
	Manganese	mg/kg	10		95	72.0	48.0	81.0	84.0	95.0	81.0	84.0	-	-	-	67.0
	Nickel	mg/kg	1	21	3.4	2.7	2.0	2.8	2.5	2.3	2.2	2.6	-	-	-	2.7

Analytical Group	Analyte	Units	LoR	Location ID	C1a	C1b	C1c	C2a	C2b	C2c	C3a	C3b	C4a	C4b	C4c	C5a
				Sample Depth	0-0.5m	0.5-1m	1-2m	0-0.5m	0.5-1m	1-2m	0-0.5m	0.5-1m	0-0.5m	0.5-1m	1-1.75m	0-0.5m
				NAGD SV												
	Selenium	mg/kg	0.10		0.6	0.2	<0.1	0.5	<0.1	0.1	<0.1	<0.1	-	-	-	0.4
	Silver	mg/kg	0.10	1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	-	-	-	<0.1
	Vanadium	mg/kg	2		8.8	8.2	7.4	8.6	8.1	8.6	7.7	7.9	-	-	-	8.5
	Zinc	mg/kg	1	200	74.8	35.0	10.5	55.2	50.3	64.0	59.3	105.0	-	-	-	63.9
	Mercury	mg/kg	0.01	0.15	0.03	0.02	0.01	0.02	0.02	0.02	0.02	0.02	-	-	-	0.02
Organics	Total Organic Carbon	%	0.20		0.40	0.45	0.21	0.44	0.35	0.49	0.32	0.43	0.46	0.58	0.42	0.36
Total Recoverable Hydrocarbons (NEPM 2013 Fractions)	>C10 - C16 Fraction	mg/kg	3		<3	<3	<3	<3	<3	11	<3	<3	-	-	-	<3
	>C16 - C34 Fraction	mg/kg	3		29	20	9	60	35	40	30	35	-	-	-	16.0
	>C34 - C40 Fraction	mg/kg	5		6	<5	<5	8	9	8	8	8	-	-	-	<5
	>C10 - C40 Fraction (sum)	mg/kg	3		35	20	9	68	44	59	38	43	-	-	-	16.0
	>C10 - C16 Fraction minus Naphthalene (F2)	mg/kg	3		<3	<3	<3	<3	<3	11	<3	<3	-	-	-	<3
Total Petroleum Hydrocarbons	C6 - C9 Fraction	mg/kg	3.00	550	<3	<3	<3	<3	<3	<3	<3	<3	-	-	-	<3
	C10 - C14 Fraction	mg/kg	3.00	550	<3	<3	<3	<3	<3	5.0	<3	<3	-	-	-	<3
	C15 - C28 Fraction	mg/kg	3.00	550	20.0	13.0	7.0	47.0	24.0	33.0	20.0	23.0	-	-	-	10.0
	C29 - C36 Fraction	mg/kg	5.00	550	12.0	9.0	<5	17.0	16.0	16.0	14.0	16.0	-	-	-	8.0
	C10 - C36 Fraction (sum)	mg/kg	3.00	550	32.0	22.0	7.0	64.0	40.0	54.0	34.0	39.0	-	-	-	18.0
Organotin Compounds	Monobutyltin	µgSN/kg	1.00		4	4	<1	2	3	4	2	2	-	-	-	2.0
	Dibutyltin	µgSN/kg	1.00		4	5	1	3	8	7	5	10	-	-	-	3.0
	Tributyltin	µgSN/kg	0.50	9	11.6	3.7	0.7	5.1	21.5	18.8	9.2	37.8	-	-	-	6.7

Analytical Group	Analyte	Units	LoR	Location ID	C1a	C1b	C1c	C2a	C2b	C2c	C3a	C3b	C4a	C4b	C4c	C5a
				Sample Depth	0-0.5m	0.5-1m	1-2m	0-0.5m	0.5-1m	1-2m	0-0.5m	0.5-1m	0-0.5m	0.5-1m	1-1.75m	0-0.5m
				NAGD SV												
	Tributyltin (normalised to 1% TOC)	µgSN/kg	0.50	9	*29.0*	*8.2*	*3.3*	*11.6*	*61.4*	*38.4*	*28.8*	*87.9*	-	-	-	*18.6*
Polynuclear Aromatic Hydrocarbons	Naphthalene	µg/kg	5		<5	<5	<5	<5	<5	<5	<5	41	-	-	-	<5
	2-Methylnaphthalene	µg/kg	5		<5	<5	<5	<5	<5	<5	<5	23	-	-	-	<5
	Acenaphthylene	µg/kg	4		<4	<4	<4	5	<4	<4	<4	14	-	-	-	<4
	Acenaphthene	µg/kg	4		<4	<4	<4	<4	<4	<4	<4	42	-	-	-	<4
	Fluorene	µg/kg	4		<4	<4	<4	<4	<4	<4	<4	24	-	-	-	<4
	Phenanthrene	µg/kg	4		6	5	<4	19	<4	<4	<4	98	-	-	-	8
	Anthracene	µg/kg	4		<4	<4	<4	<4	<4	<4	<4	16	-	-	-	<4
	Fluoranthene	µg/kg	4		12	8	<4	21	5	<4	6	138	-	-	-	24.0
	Pyrene	µg/kg	4		11	8	<4	20	6	<4	6	126	-	-	-	26.0
	Benz(a)anthracene	µg/kg	4		8	4	<4	16	5	9	4	97	-	-	-	19.0
	Chrysene	µg/kg	4		14	5	<4	22	10	10	4	108	-	-	-	27.0
	Benzo(b+j)fluoranthene	µg/kg	4		13	6	<4	30	4	12	11	158	-	-	-	32.0
	Benzo(k)fluoranthene	µg/kg	4		7	<4	<4	8	<4	6	<4	51	-	-	-	15.0
	Benzo(e)pyrene	µg/kg	4		6	<4	<4	12	<4	4	<4	69	-	-	-	15.0
	Benzo(a)pyrene	µg/kg	4		8	5	<4	15	<4	6	5	101	-	-	-	19.0
	Perylene	µg/kg	4		<4	<4	<4	4	<4	<4	<4	28	-	-	-	6.0
	Benzo(g.h.i)perylene	µg/kg	4		6	<4	<4	12	<4	<4	4	61	-	-	-	14.0
	Dibenz(a.h)anthracene	µg/kg	4		<4	<4	<4	<4	<4	<4	<4	17	-	-	-	<4
	Indeno(1.2.3.cd)pyrene	µg/kg	4		5	<4	<4	11	<4	<4	<4	58	-	-	-	13.0
	Coronene	µg/kg	5		<5	<5	<5	<5	<5	<5	<5	17	-	-	-	<5

Analytical Group	Analyte	Units	LoR	Location ID	C1a	C1b	C1c	C2a	C2b	C2c	C3a	C3b	C4a	C4b	C4c	C5a
				Sample Depth	0-0.5m	0.5-1m	1-2m	0-0.5m	0.5-1m	1-2m	0-0.5m	0.5-1m	0-0.5m	0.5-1m	1-1.75m	0-0.5m
				NAGD SV												
	Sum of PAHs	µg/kg	4	10000	96	41	<4	195	30	47	40	1290	-	-	-	218.0
	Sum of PAHs (Normalised to 1% TOC)	µg/kg	4	10000	*240*	*91*	-	*443*	*86*	*96*	*125*	*3000*	-	-	-	*605.6*

Sediment quality data – summary statistics – metals.

Analyte	Units	Level of Reporting	NAGD SV	Mean	Median	95% UCL
Aluminium	mg/kg	50		1930.00	1960.00	2123.00
Iron	mg/kg	50		4738.89	4760.00	4928.00
Barium	mg/kg	10		6.67	5.00	8.22
Arsenic	mg/kg	1	20	8.69	8.75	9.27
Chromium	mg/kg	1	80	7.40	6.80	8.16
Copper	mg/kg	1	65	49.56	57.90	65.10
Cobalt	mg/kg	0.50		0.91	0.90	0.96
Lead	mg/kg	1	50	7.44	7.80	8.88
Manganese	mg/kg	10		78.56	81.00	87.65
Nickel	mg/kg	1	21	2.58	2.60	2.83
Selenium	mg/kg	0.10		0.36	0.40	0.32
Vanadium	mg/kg	2		8.20	8.20	8.49
Zinc	mg/kg	1	200	57.56	59.30	73.68
Mercury	mg/kg	0.01	0.15	0.02	0.02	0.02

Sediment quality data – summary statistics – organics.

Analytical Group	Analyte	Units	Level of Reporting	NAGD SV	Mean	Median	95% UCL
Organotin Compounds	Monobutyltin	µgSN/kg	1.00		2.88	2.50	
	Dibutyltin	µgSN/kg	1.00		5.11	5.00	
	Tributyltin	µgSN/kg	0.50	9.00	12.79	9.20	19.98
	Tributyltin (normalised to 1% TOC)	µgSN/kg	0.50	9.00	*31.91*	*28.75*	48.94
Polynuclear Aromatic Hydrocarbons	Sum of PAHs	µg/kg	4	10000	244.63	71.50	847.60
	Sum of PAHs (Normalised to 1% TOC)	µg/kg	4	10000	*585.81*	*182.50*	*1905.00*

Sediment quality data – elutriates results.

				Location ID	C1a	C2b	C3a	C3b	C5a
				Sample Depth	**0-0.5m**	**0.5-1m**	**0-0.5m**	**0.5-1m**	**0-0.5m**
Test	**Analyte**	**Units**	**Level of Reporting**	**ANZECC / ARMANZ 2018**					
Total Metals in Saline Water	Copper	µg/L	1	0.06-1.3	<1	-	5.0	-	<1
Organotin Compounds (Soluble)	Tributyltin	ngSn/L	2	6	<2	<2	-	6	-

Appendix H

WeedWise Search Results

Search results

Return to advanced search

Search terms used: Aquatic weed, North Coast

Aleman grass
Echinochloa polystachya

Alligator weed
Alternanthera philoxeroides

Anchored water hyacinth
Eichhornia azurea

Cabomba
Cabomba caroliniana

East Indian hygrophila (also known as polysperma, Indian swamp weed)
Hygrophila polysperma

Eurasian water milfoil
Myriophyllum spicatum

Frogbit (also known as Amazon frogbit)
Limnobium laevigatum

Horsetails
Equisetum species

Hydrocotyl (also known as water pennywort, floating pennywort)
Hydrocotyle ranunculoides

Hygrophila
Hygrophila costata

Hymenachne (also known as olive hymenachne)
Hymenachne amplexicaulis and hybrids

Kidney-leaf mud plantain (also known as heteranthera)
Heteranthera reniformis

Lagarosiphon
Lagarosiphon major

Long-leaf willow primrose
Ludwigia longifolia

Ludwigia (also known as Peruvian primrose, water primrose, primrose willow)
Ludwigia peruviana

Sagittaria (also known as arrowhead)
Sagittaria platyphylla

Salvinia
Salvinia molesta

Senegal tea plant
Gymnocoronis spilanthoides

Spongeplant
Limnobium spongia

Water caltrop
Trapa species

Water hyacinth
Eichhornia crassipes

Water lettuce
Pistia stratiotes

Water mimosa
Neptunia oleracea

Water soldier
Stratiotes aloides

Water star grass
Heteranthera zosterifolia

Yellow burrhead (also known as limnocharis)
Limnocharis flava

26 weed/s returned.

Appendix I

Solitary Islands Marine Parks Zoning Map

Department of Primary Industries | Australian Government Parks Australia | Australian Marine Parks

Solitary Islands Marine Park Zoning Map

0 1 2 3 4 5 Kilometres

0 1 2 3 Nautical Miles

Map Projection: Unprojected Geographic. Horizontal Datum: Geodetic Datum of Australia (GDA94) 1:90,000 @ A1. Produced 2018.

- Sanctuary Zone
- Habitat Protection Zone
- Habitat Protection Zone (Shore-based line fishing only)
- Habitat Protection Zone Greynurse Shark Key Habitat Restriction/ Prohibition on Commercial Fish Trapping)
- Habitat Protection Zone (Prohibition on Commercial Fish Trapping)
- Habitat Protection Zone (Prohibition on Crab Trapping)
- General Use Zone
- Special Purpose Zone
- Public Moorings* *Refer to SIMP user guide for conditions of use
- Zone Markers (Selected areas only)
- Zone Marker Buoys
- Boat Ramp
- National Park Zone (Commonwealth waters)
- Multiple Use Zone (Commonwealth waters)
- Special Purpose Zone (Commonwealth waters)

Activity Table – Solitary Islands Marine Park (New South Wales waters)	Sanctuary Zone	Habitat Protection Zone	General Use Zone
Recreational fishing*			
Line fishing	✗	✓ (a)	✓
Trapping	✗	✓ (h)	✓
Spearfishing	✗	✓ (b)(h)	✓
Netting	✗	✓ (c)(h)	✓
Boating and watercraft			
Recreational boating	✓	✓	✓
Personal watercraft	✓ (d)	✓ (d)	✓
Anchoring	✗	✓	✓
Non-extractive activities			
SCUBA diving/snorkelling	✓	✓	✓
Surfing	✓	✓	✓
Sailing	✓	✓	✓
Collecting			
Scientific/educational	P	P	P
Recreational: bait, shellfish, etc*	✗	✓ (e)(h)	✓
For private aquariums*	✗	P	P
For commercial aquariums	✗	✗	✗
Competitions			
Line fishing/spearfishing	✗	P	P
Surfing/sailing	P	P	P
Miscellaneous			
Aquaculture*	✗	✗	✓
Organised research (other than for personal interest)	P	P	P
Commercial tourist activties	P	P	P
Commercial fishing			
Prawn trawling	✗	✗	✓
Beach hauling	✗	✗ (f)	✓
Purse seine	✗	✗	✗
Setline/dropline	✗	✗	✗
Longlining (surface and demersal)	✗	✗	✗
Estuary mesh netting	✗	✗	✗
Line fishing	✗	✓ (a)(h)	✓
Hand gathering (pipis & beachworms)	✗	✓ (h)	✓
Spanner crab netting	✗	✓(h)	✓
Crab trapping	✗	✓ (g)(h)	✓
Lobster trapping	✗	✓ (h)	✓
Fish trapping (maximum of 10 traps)	✗	✓ (g)(h)	✓
Lift netting for bait (non-saleable only)	✗	✓ (h)	✓

A summary of activities permitted and restrictions that apply are detailed above. Refer to the Marine Estate Management (Management Rules) Regulation 1999 for full details.

Note: All other relevant legislation continues to apply in addition to the management rules.

* Requires fishing licence/permit. P Permit required.

(a) Wire traces for bottom fishing are prohibited within 500 metres of North and South Solitary Islands (greynurse shark key habitat areas). Wire traces are permitted for trolling purposes, but only whilst a vessel is underway. Fishing with bait is prohibited within 200 metres of greynurse shark aggregation sites at North and South Solitary Islands.
(b) Not permitted in estuaries or on ocean beaches (except the last 20m at each end of the beach).
(c) Recreational nets permitted for taking prawns and crabs in habitat protection zones are the scoop, landing, scissor (push) or hoop (lift) nets.
(d) Not permitted in estuaries, except when transiting the lower reaches of the Sandon, Corindi and Wooli Rivers at slow speeds from the lowest boat ramp, to exit the river.
(e) No collecting at Diggers Camp rock platform or Moonee Beach.
(f) Beach hauling is permitted in designated areas only on the following beaches within daylight hours and on weekdays only: Park Beach (south of creek mouth), Sandy Beach, Woolgoolga Front Beach, Arrawarra Beach (south of creek mouth) and Station Creek (southern end).
(g) Prohibitions apply to specific areas (see map).
(h) Not permitted at Minnie Water Back Beach, Bare Bluff to Diggers Point, or Moonee Beach.

NOTE: Commonwealth waters management plan effective from 1 July 2018.

Activity table – Solitary Islands Marine Park (Commonwealth waters)	National Park Zone	Multiple Use Zone	Special Purpose Zone (Trawl)
Commercial activities			
Net (demersal and pelagic)	✗	✗	✗
Trawl (demersal) and Danish seine	✗	✗	✓[1]
Trawl (midwater), Purse seine	✗	✓[1]	✓[1]
Dropline, Trotline, Longline (demersal, auto longline)	✗	✓[1]	✓[1]
Handline, rod & reel, trolling, squid jig, poling	✗	✓[1]	✓[1]
Trap and pot (including spanner crab net)	✗	✓[1]	✓[1]
Hand collection	✗	✓[1]	✓[1]
Commercial tourism - Charter fishing	✗	✓[1]	✓[1]
Commercial tourism - Nature watching, SCUBA diving	✓[1]	✓[1]	✓[1]
Other activities			
Recreational fishing (including spearfishing and collecting)	✗	✓[2]	✓[2]
Recreational use (non-extractive - including SCUBA diving, nature watching, and boating)	✓	✓	✓
Scientific research/monitoring	✓[1]	✓[1]	✓[1]

A summary of relevant activities that are allowed, require authorisation or are not allowed are detailed above. Refer to the Temperate East Marine Parks Network Management Plan 2018 for full details.

1 Authorisation required to carry out the activity. For further information contact Parks Australia
2 Recreational fishing must be conducted in accordance with relevant New South Wales laws.

THIS MAP IS NOT TO BE USED FOR NAVIGATION

Zoning maps for NSW marine parks are available for **free** on smart phones and tablets from the **Avenza Map Store** and as part of the **NSW DPI FishSmart app**.

To use Avenza Maps, download the app from the iTunes store or Google Play.

Once installed, go to the **Avenza Maps Store** and search for '**DPI Fisheries**' to find and download available maps.

Alternatively, the **NSW DPI FishSmart app** provides recreational fishers access to essential information needed to fish in NSW waters, including marine park maps.

Toumbaal Creek
Sandon River - see Inset A
Plover Island
Candole Creek
SANDON
Sandon Beach
PIMPERNEL ROCK NATIONAL PARK ZONE (Commonwealth waters)
29° 40.295'S
153° 20.470'E
153° 22.156'E
29° 41.631'S
29° 41.535'S
29° 42.215'S
153° 18.919'E
153° 23.475'E
153° 24.260'E
29° 42.925'S
153° 22.602'E
NORTHERN SECTION SANCTUARY ZONE
Solitary Islands Marine Park (Commonwealth waters)
153° 21.587'E
29° 45.657'S
Rocky Point
MINNIE WATER
One Tree Point
153° 21.602'E
29° 47.153'S
Minnie Water Back Beach
Shore-based recreational line fishing is the only type of fishing permitted in this zone
NORTHERN SECTION SANCTUARY ZONE
153° 21.109'E
29° 48.383'S
29° 48.929'S
50 metre depth contour
Matenga Creek
Corkscrew Creek
Woodduck Creek
DIGGERS CAMP
No collecting bait or invertebrates at Diggers Camp rock platform (other than rock lobster and slipper lobster)
WOOLI WOOLI RIVER SANCTUARY ZONE
Musicians Creek
Bookram Creek
Wilsons Headland
153° 14.607' E
Wanderer Creek
The Forks
Crab trapping prohibited upstream of 153° 14.607' E
Wooli Wooli River
Wooli Beach
WOOLI
Barcoongere River
Jones Beach and Jones Point see Inset B
153° 23.931'E
29° 53.305'S
153° 18.907'E
North-West Rock and North Solitary Island see Inset C
29° 54.523'S
Barcoongere Rocks
Freshwater Beach
CENTRAL SECTION SANCTUARY ZONE
500m
Cabbage Tree Creek
Pebbly Beach
STATION CREEK SANCTUARY ZONE
Station Creek
Station Creek Headland
153° 19.033'E
29° 56.448'S
CENTRAL SECTION SANCTUARY ZONE
Solitary Islands Marine Park (Commonwealth waters)
Saltwater Creek
Corindi River see Inset D
North Rock Nature Reserve
29° 58.385'S
153° 17.224'E
Mullet Creek
RED ROCK
Redbank Creek
Corindi River
153° 14.812'E
153° 16.620'E
29° 59.905'S
30° 01.491'S
North-West Solitary Island see Inset E
30° 01.831'S
PIPE CLAY LAKE SPECIAL PURPOSE ZONE No fishing or collecting
Pipe Clay Lake
CORINDI BEACH
153° 19.033'E
ARRAWARRA SPECIAL PURPOSE ZONE No fishing or collecting except by permit
Arrawarra Creek
200m
Ocean View Headland
MULLAWAY
Mullaway Headland
Darkum Creek
Woolgoolga Reef
Woolgoolga Lake
WOOLGOOLGA
Woolgoolga Headland
Woolgoolga Back Beach
Willis Creek
FLAT TOP POINT SANCTUARY ZONE see Inset F
50 metre depth contour
Hearnes Lake
Hearnes Lake Beach
SANDY BEACH
Witches Hats
153° 15.627'E
30° 09.372'S
South-West Solitary (Groper) Island
EMERALD BEACH
153° 14.612'E
30° 10.290'S
Moonee Beach
Moonee Creek
SOUTHERN SECTION SANCTUARY ZONE see Inset H
No collecting bait or invertebrates at Moonee Beach
153° 16.633'E
South Solitary Island see Inset G
Green Bluff
30° 13.579'S
Sapphire Beach
White Bluff
SAPPHIRE
Campbells Beach
30° 14.459'S
153° 15.627'E
Split Solitary Island see Inset I
Pine Brush Creek
Hills Beach
KORORA
Korora Beach
Charlesworth Bay
Jordans Creek
Diggers Headland
Diggers Beach
Maccauleys Headland
Park Beach
Coffs Creek
Little Muttonbird Island
COFFS HARBOUR
Muttonbird Island
Coffs Harbour
Solitary Islands Marine Park (Commonwealth waters)
50 metre depth contour
30° 18.305'S
153° 11.619'E

Inset A
SANDON RIVER SANCTUARY ZONE
Toumbaal Creek
Plover Island
SANDON RIVER SPECIAL PURPOSE ZONES (OYSTER AQUACULTURE) Fishing is permitted
Sandon River
SANDON
Sandon Bluffs
Murrays Island
Cooper Island
SANDON RIVER SANCTUARY ZONE
Sandon River
Clay Head
SANDON RIVER SANCTUARY ZONE
Sandon Beach
0 250 500 metres

Inset B
Wooli River
Breakwall
Jones Beach
JONES BEACH AND JONES POINT SANCTUARY ZONE
Jones Point
200 metres
0 100 200 metres

Inset C
NORTH-WEST ROCK SANCTUARY ZONE Extends 100m seaward of mean high water mark
North-West Rock
Commercial fish trapping prohibited
Line fishing using bait is prohibited within 200m of greynurse shark aggregation site at 29° 55.351'S 153° 23.355'E
153° 22.994' E
29° 55.364' S
North Solitary Island
NORTH SOLITARY ISLAND SANCTUARY ZONE
29° 55.978' S
153° 23.391' E
Commercial fish trapping prohibited No fishing with wire trace
0 250 500 metres

Inset D
CORINDI RIVER SANCTUARY ZONE
Saltwater Creek
Jewfish Point
CORINDI RIVER SANCTUARY ZONE
Mullet Creek
Corindi River
Corindi River
0 100 200 metres

Inset E
30° 0.758' S
153° 16.093' E
Line of sight to Red Rock Headland
Commercial fish trapping prohibited
NORTH-WEST SOLITARY ISLAND SANCTUARY ZONE
North-West Solitary Island
Line of sight to Arrawarra Headland
153° 16.048' E
30° 1.323' S
0 50 100 metres

Inset F
0 100 200 metres
FLAT TOP POINT SANCTUARY ZONE
200m
NOTE: Habitat Protection Zone is not shown here to allow clearer illustration of sanctuary zone boundaries.

Inset G
Line fishing using bait is prohibited within 200m of greynurse shark aggregation site at 30° 12.141' S 153° 16.086' E
SOUTH SOLITARY ISLAND SANCTUARY ZONE
153° 15.813' E
100m
Birdie
30° 12.219' S
South Solitary Island
200m
30° 12.445' S
153° 15.869' E
Commercial fish trapping prohibited No fishing with wire trace
0 100 200 metres

Inset H
Sandy Beach
Bare Bluff
153° 13.210' E
Shore-based recreational line fishing is the only type of fishing permitted in this zone
30° 09.496' S
Fiddamans Beach
South-West Solitary (Groper) Island
500m
Diggers Point
30° 09.884' S
30° 09.978' S
200m
EMERALD BEACH
Dammerels Head
Shelly Beach
Look At Me Now Headland
500m
Moonee Creek
SOUTHERN SECTION SANCTUARY ZONE
Moonee Beach
Shore-based recreational line fishing is the only type of fishing permitted in this zone
30° 11.893' S
Sidney Shoals (Forty Acres Reef)
200m
No collecting bait or invertebrates at Moonee Beach
Green Bluff
30° 12.860' S
153° 13.726' E
0 0.5 1 kilometres

Inset I
Line of sight through split in island
SPLIT SOLITARY ISLAND SANCTUARY ZONE
200 m
Split Solitary Island
Commercial fish trapping prohibited
0 100 200 metres

153°5'E 153°10'E 153°15'E 153°20'E 153°25'E 153°30'E
29°40'S 29°45'S 29°50'S 29°55'S 30°0'S 30°5'S 30°10'S 30°15'S

Appendix J

Construction Noise Estimator – Noisiest Plant

Transport Roads & Maritime Services

Distanced Based Assessment (Noisiest Plant)

Please pick from drop-down list in orange cells

Noise area category		R0
RBL or L_{A90} Background level (dB(A))	Day	30
	Evening	30
	Night	30
$L_{Aeq(15minute)}$ Noise Mangement Level (dB(A))	Day	40
	Day (OOHW)	35
	Evening	35
	Night	35
Noisiest plant		Bored Piling Rig
Is there line of sight to receiver?		Yes

Steps for 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 noisiest plant. If not found in drop-down list, refer to 'Source List' and select a representative plant with equivalent sound power level.
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 sightslaw to receiver" drop-down list. Solid barriers can be in the form of road cutting, timber lapped and capped fence, shipping container, site office, etc. Substantial solid barriers are barriers greater than 5 metres in height or multiple rows of houses or a sound barrier specifically designed to mitigate construction noise. 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.

5. Determine if there are any receivers (both residential and non-residential receivers) within the affected distance for each relevant time period . Consider background LA90 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.
8. 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 Noise Estimator should be investigated on a project-by-project basis. Please contact a Roads and Maritime noise specilast 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

Residential receiver

			$L_{Aeq(15minute)}$ noise level above background (L_{A90})											$L_{Aeq(15minute)}$ 75 dB(A) or greater (Highly affected)			Sleep disturbance L_{Amax} 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))	Measures	Within distance (m)	Mitigation level (dB(A))	Affected distance (m)
Undeveloped green fields, rural areas with isolated dwellings	Day	525							N	250	50	N	120	60	N, PC, RO	25	75	
	Day (OOHW)	760				N, R1, DR	525	40	N, R1, DR	250	50	N, R1, DR, PC, SN	120	60	N, PC, RO	25	75	
	Evening	760				N, R1, DR	525	40	N, R1, DR	250	50	N, R1, DR, PC, SN	120	60	N, PC, RO	25	75	
	Night	760	N	760	35	N, R2, DR	525	40	N, PC, SN, R2, DR	250	50	AA, N, PC, SN, R2, DR	120	60	N, PC, RO	25	75	175
	Highly Affected	25													N, PC, RO	25	75	
Developed settlements (urban and suburban)	Day	690							N	305	50	N	135	60	N, PC, RO	30	75	
	Day (OOHW)	1010				N, R1, DR	690	40	N, R1, DR	305	50	N, R1, DR, PC, SN	135	60	N, PC, RO	30	75	
	Evening	1010				N, R1, DR	690	40	N, R1, DR	305	50	N, R1, DR, PC, SN	135	60	N, PC, RO	30	75	
	Night	1010	N	1010	35	N, R2, DR	690	40	N, PC, SN, R2, DR	305	50	AA, N, PC, SN, R2, DR	135	60	N, PC, RO	30	75	200
	Highly Affected	30													N, PC, RO	30	75	
Propagation across a valley / over water	Day	960							N	405	50	N	160	60	N, PC, RO	35	75	
	Day (OOHW)	1420				N, R1, DR	960	40	N, R1, DR	405	50	N, R1, DR, PC, SN	160	60	N, PC, RO	35	75	
	Evening	1420				N, R1, DR	960	40	N, R1, DR	405	50	N, R1, DR, PC, SN	160	60	N, PC, RO	35	75	
	Night	1420	N	1420	35	N, R2, DR	960	40	N, PC, SN, R2, DR	405	50	AA, N, PC, SN, R2, DR	160	60	N, PC, RO	35	75	255
	Highly Affected	35													N, PC, RO	35	75	

Non-residential receiver
Undeveloped green fields, rural areas with isolated dwellings

			$L_{Aeq(15minute)}$ 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	175				N	75	65	N, PC, RO	25	75
Hospital wards and operating theatres	Day	65	75							N, PC, RO	25	75
Place of worship	Day	55	175				N	75	65	N, PC, RO	25	75
Active recreation	Day	65	75							N, PC, RO	25	75
Passive recreation	Day	60	120				N	45	70	N, PC, RO	25	75
Industrial premise	Day	75	25							N, PC, RO	25	75
Offices, retail outlets	Day	70	45							N, PC, RO	25	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	75				N, R1, DR	45	70	N, R1, DR	14	80	N, R1, DR, PC, SN	4	90
	Night	65	75	N	75	65	N, R2, NR	45	70	N, PC, SN, R2, DR	14	80	AA, N, PC, SN, R2, DR	4	90
Place of worship	Evening	55	175				N, R1, DR	120	60	N, R1, DR	45	70	N, R1, DR, PC, SN	14	80
	Night	55	175	N	175	55	N, R2, NR	120	60	N, PC, SN, R2, DR	45	70	AA, N, PC, SN, R2, DR	14	80
Active recreation	Evening	65	75				N, R1, DR	45	70	N, R1, DR	14	80	N, R1, DR, PC, SN	4	90
Passive recreation	Evening	60	120				N, R1, DR	75	65	N, R1, DR	25	75	N, R1, DR, PC, SN	8	85
Industrial premise	Evening	75	25				N, R1, DR	14	80	N, R1, DR	4	90	N, R1, DR, PC, SN	1	100
	Night	75	25	N	25	75	N, R2, NR	14	80	N, PC, SN, R2, DR	4	90	AA, N, PC, SN, R2, DR	1	100
Offices, retail outlets	Evening	70	45				N, R1, DR	25	75	N, R1, DR	8	85	N, R1, DR, PC, SN	3	95
	Night	70	45	N	45	70	N, R2, NR	25	75	N, PC, SN, R2, DR	8	85	AA, N, PC, SN, R2, DR	3	95

Non-residential receiver
Developed settlements (urban and suburban)

			$L_{Aeq(15minute)}$ 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	200				N	85	65	N, PC, RO	30	75
Hospital wards and operating theatres	Day	65	85							N, PC, RO	30	75
Place of worship	Day	55	200				N	85	65	N, PC, RO	30	75
Active recreation	Day	65	85							N, PC, RO	30	75
Passive recreation	Day	60	135				N	50	70	N, PC, RO	30	75
Industrial premise	Day	75	30							N, PC, RO	30	75
Offices, retail outlets	Day	70	50							N, PC, RO	30	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	85				N, R1, DR	50	70	N, R1, DR	17	80	N, R1, DR, PC, SN	5	90
	Night	65	85	N	85	65	N, R2, NR	50	70	N, PC, SN, R2, DR	17	80	AA, N, PC, SN, R2, DR	5	90
Place of worship	Evening	55	200				N, R1, DR	135	60	N, R1, DR	50	70	N, R1, DR, PC, SN	17	80
	Night	55	200	N	200	55	N, R2, NR	135	60	N, PC, SN, R2, DR	50	70	AA, N, PC, SN, R2, DR	17	80
Active recreation	Evening	65	85				N, R1, DR	50	70	N, R1, DR	17	80	N, R1, DR, PC, SN	5	90
Passive recreation	Evening	60	135				N, R1, DR	85	65	N, R1, DR	30	75	N, R1, DR, PC, SN	9	85
Industrial premise	Evening	75	30				N, R1, DR	17	80	N, R1, DR	5	90	N, R1, DR, PC, SN	2	100
	Night	75	30	N	30	75	N, R2, NR	17	80	N, PC, SN, R2, DR	5	90	AA, N, PC, SN, R2, DR	2	100
Offices, retail outlets	Evening	70	50				N, R1, DR	30	75	N, R1, DR	9	85	N, R1, DR, PC, SN	3	95
	Night	70	50	N	50	70	N, R2, NR	30	75	N, PC, SN, R2, DR	9	85	AA, N, PC, SN, R2, DR	3	95

Non-residential receiver
Propagation across a valley / over water

			$L_{Aeq(15minute)}$ 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	255				N	95	65	N, PC, RO	35	75
Hospital wards and operating theatres	Day	65	95							N, PC, RO	35	75
Place of worship	Day	55	255				N	95	65	N, PC, RO	35	75
Active recreation	Day	65	95							N, PC, RO	35	75
Passive recreation	Day	60	160				N	60	70	N, PC, RO	35	75
Industrial premise	Day	75	35							N, PC, RO	35	75
Offices, retail outlets	Day	70	60							N, PC, RO	35	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	95				N, R1, DR	60	70	N, R1, DR	20	80	N, R1, DR, PC, SN	5	90
	Night	65	95	N	95	65	N, R2, NR	60	70	N, PC, SN, R2, DR	20	80	AA, N, PC, SN, R2, DR	5	90
Place of worship	Evening	55	255				N, R1, DR	160	60	N, R1, DR	60	70	N, R1, DR, PC, SN	20	80
	Night	55	255	N	255	55	N, R2, NR	160	60	N, PC, SN, R2, DR	60	70	AA, N, PC, SN, R2, DR	20	80
Active recreation	Evening	65	95				N, R1, DR	60	70	N, R1, DR	20	80	N, R1, DR, PC, SN	5	90
Passive recreation	Evening	60	160				N, R1, DR	95	65	N, R1, DR	35	75	N, R1, DR, PC, SN	15	85
Industrial premise	Evening	75	35				N, R1, DR	20	80	N, R1, DR	5	90	N, R1, DR, PC, SN	2	100
	Night	75	35	N	35	75	N, R2, NR	20	80	N, PC, SN, R2, DR	5	90	AA, N, PC, SN, R2, DR	2	100
Offices, retail outlets	Evening	70	60				N, R1, DR	35	75	N, R1, DR	15	85	N, R1, DR, PC, SN	3	95
	Night	70	60	N	60	70	N, R2, NR	35	75	N, PC, SN, R2, DR	15	85	AA, N, PC, SN, R2, DR	3	95

About this release

Reference number	EIA-P05-G01-T05
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Document status	Version 3.0, 04 October 2018

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1.0	05.01.09	First issue
1.1	20.08.09	Amendments to Section 1, Section 1.2 Section 2 and Section 5 – New sign-off for the environmental assessment contractor.
2.0	01/11/11	Table formatting and style amended throughout. Best practice updates. Changes based on legislation amendments.
2.1	13/07/12	Addition of Growth Centres SEPP consultation.
2.2	02/05/13	Update to Clause 228 checklist.
2.3	15/07/13	Update to Commonwealth Minister portfolio
2.4	27/07/15	Included Maritime references and updated hyperlinks
2.5	30/09/15	Update to incorporate requirements of EPBC Act strategic assessment
2.6	11/08/17	Various minor edits. Updated hyperlinks and reference to WaterNSW. Rebranded and made web accessible.
2.7	05/03/18	Update to incorporate legislative updates (EP&A Act, ISEPP, BC Act), agency name changes, RMS delegation title changes
2.8	05/06/18	Updated to incorporate legislative updates (Coastal Management SEPP), edits to Section 3.3 (Noise and vibration), Section 3.7 (Biodiversity) and Section 3.12 (Waste) and various minor edits.
2.9	03/09/18	Marco enabled checkboxes added to replace Word standard checkboxes and minor edits.
3.0	04/10/18	Updated to incorporate legislative updates (ISEPP)

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