Newcastle to Sydney High-Speed Rail Business Case
Marine Geotechnical Investigations

Minor Works Review of Environmental Factors

October 2024

ACKNOWLEDGEMENT OF COUNTRY

The High Speed Rail Authority (HSRA) acknowledges the Traditional Custodians of Country throughout Australia and we pay our respects to their Elders past and present. We recognise their ongoing cultural connection to the lands, rivers and seas.

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1. Introduction

The High Speed Rail Authority (The Authority) is undertaking marine geotechnical investigations in the Hawkesbury River and Brisbane Water. These investigations will help inform planning for the future Newcastle to Sydney high speed rail link and business case development. To support onsite investigations, an environmental impact assessment was undertaken and prepared a minor works review of environmental factors document.

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

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

In doing so the REF helps to fulfil the requirements of section 5.5 of the EP&A Act with the Authority examining and taking into account the fullest extent possible all matters affecting or likely to affect the environment by reason of the activity.

The findings of the REF would be considered when assessing:

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

2. The proposal

2.1 Description

2.1.1 Proposal location

Table 2.1: Proposal location details

Location details	
Title	Newcastle to Sydney High Speed Rail (HSR) Business Case - Geotechnical Investigation Program – Priority 1 locations (Marine)
Location	Brisbane Water and Hawkesbury River
Local government area	Hornsby Shire Council / Central Coast Council

2.1.2 Proposal description

The Australian Government is planning for a future a high speed rail (HSR) network to connect regions, cities and communities along the east coast of Australia, connecting Brisbane, Sydney, Canberra, and Melbourne. The first stage connects Newcastle to Sydney, a nationally significant corridor and aims to connect the two cities with a fast and efficient rail service, reducing travel times and easing congestion on existing transport networks for future growth.

The Authority is currently undertaking both land and marine geotechnical investigations to support the business case development. For this REF, the geotechnical investigation program includes the drilling of six marine geotechnical boreholes, five in the Hawkesbury River and one in Brisbane Water, which would be drilled using barge mounted geotechnical drill rigs (the proposal).

The proposal location is shown in Figure 2.1 and Appendix D – Investigation Locations

Figure 2.1: Proposal location in the Hawkesbury River and Brisbane Water

2.1.3 Proposal methodology

The proposal would involve the drilling of six marine geotechnical boreholes of various depths, up to approximately 140 metres (subject to the geological conditions encountered). Five of the boreholes would be in the Hawkesbury River and one borehole would be in Brisbane Water. The boreholes would be drilled using Hanjin D&B 8D geotechnical drill rigs, mounted on the deck of jack-up barges.

The proposal would include the following methodology:

Mobilisation

Jack-up barges (Sea Lift 3 and Sea Lift 11) would be mobilised from nearby public boat ramps. Sea Lift 3 would be mobilised from Parsley Bay boat ramp at Brooklyn and Sea Lift 11 would be mobilised from Koolewong Foreshore Reserve at Koolewong.

Parsley Bay boat ramp

Heavy vehicles carrying the components of each barge would deliver barge components to Brooklyn carpark via George Street. Sections of George Street near the boat ramp would be closed off temporarily to the public during delivery and barge assembly to manage pedestrian and road users' safety.

Koolewong Foreshore Reserve

Heavy vehicles would deliver barge components to Koolewong Foreshore Reserve carpark via Brisbane Water Drive. To manage the safety of road users and pedestrians, sections of the Koolewong Foreshore Reserve and parking will be temporarily unavailable to the public. Once barge components are unloaded, and assembled, the heavy vehicles would leave the area. The barges would be assembled in the water at each boat ramp, using a crane to lift each of the barge components into place.

To manage pedestrian and ramp user safety, traffic controllers will be onsite to guide traffic and pedestrian movements. Signage would also be placed at key locations at both sites.

Positioning jack-up barges

Once assembled at the boat ramp locations, the barges would be positioned within 20 metres (m) of the proposed borehole locations, using transfer boats with onboard satellite system to determine the correct position. Once within 20 metres of the proposed borehole locations, barge legs would be lowered to the riverbed to hold it in place.

The deck of the barge would then be lifted out of the water to provide a stable work platform by raising the deck up all four legs using an onboard hydraulic jacking system (refer to Photo 2.1). It is likely that the legs may sink several metres into the riverbed where soft or loose sediments are present. The barge would remain in this position for the duration of each borehole (around two weeks).

At the start of each shift (or during the shift if settlement is suspected), the level of barge deck would be surveyed using the satellite system. The deck would be levelled or jacked further out of the water, if required, to correct for any settlement.

Photo 2.1: Example of the positioning of Jack-up Barge (Sea Lift 3)

Drilling of marine boreholes

Once the barges are positioned and jacked up, a 140 millimetre (mm) diameter steel casing would be lowered from the drill rig to the riverbed. The geotechnical boreholes would be drilled within this casing to avoid the mobilisation of sediments to the waterway using a combination of the methods such as rotary wash boring, mazier coring and HQ3 coring.

Rotary washboring

Some of the geotechnical boreholes would be advanced through riverbed sediments and soils by rotary washboring with standard penetration tests (SPTs) and/or push tube samples (U75s) completed or collected approximately every three metres. Rotary washboring would produce a 114 mm wide borehole. The sediment/soil would be broken up by the drill bit and flushed from the borehole by the drilling fluid. The sediment/soil particles would be captured in the mud tank and allowed to settle out of the drilling fluid. The following testing would also take place once the washboring is complete:

Standard penetration testing

A 650 mm long and 51 mm wide steel tube sampler with an open end and chamfered edge would be attached to the end of a smaller set of drill rods, which are lowered down inside the main drill rods. The sampler would be driven into the sediment/soil by a drive hammer attached to the top of the smaller drill rods. The drive hammer assembly would consist of a hammer that is allowed to drop approximately 0.8m. The number of hammer blows required to drive the sampler 150 mm, 300 mm, and 450 mm would vary and dependent on the density of the sediment/soil. In the process, a 35 mm diameter sample would be collected in the sampler, which would be lifted to the surface by removing the smaller,

inner drill rods from the borehole. The sample would be inspected and photographed removed from the sampler and placed in a bag to be retained for further testing.

U75 push tube sampling

U75s comprise a simple 75 mm diameter steel tube with a thin wall, open end, and chamfered edge. The U75 tube would be attached to the end of a smaller set of drill rods and lowered down inside the main drill rods to collect a sediment/soil sample. The tube would be lifted to the surface by removing the smaller, inner drill rods from the borehole. The tube would then be detached from the rods, sealed, and retained for inspection and testing.

Mazier coring

The remaining boreholes would be advanced through the riverbed sediments and soils using the Mazier core sampling technique. Mazier coring would use a specialised steel coring barrel attached to the end of the drill rods. It would produce a 101 mm-diameter borehole and collect a continuous 74 mm-diameter core sample of the sediment/soil, which would be brought to the surface by removing the drilling rods from the borehole to access the core barrel. The sample would be removed from the core barrel and retained in a plastic liner for inspection and testing.

HQ3 coring

All boreholes would be advanced into rock using the HQ3 triple-tube wireline coring technique. HQ3 coring would produce a 96 mm-diameter borehole and collect a continuous 61 mm-diameter core sample of rock, which would be contained within a steel core barrel that would be lifted through the inside of the drill rods to the surface using a winch and cable wireline.

In-situ testing

Three types of in-situ testing would be undertaken during the proposal, including:

Packer Testing

Packer or water pressure testing would be performed during the drilling of each borehole, and involves isolating a section of the borehole, pumping water into the section at pre-determined pressures, and recording the flow required to maintain those pressures.

Overcore in-situ stress testing

Overcore in-situ stress testing would be performed by the drillers, at a nominated test depth during the drilling. A smaller (48 mm) diameter pilot hole would be drilled to inspect the rock, the core would also be collected for lab testing to determine its properties. A strain cell with sensors would also be placed into the pilot hole and glued in place, left to set overnight. The larger borehole would then be drilled around the strain cell and the core would be removed to measure the rock's natural stresses.

Televiewer imaging

Televiewer imaging would be undertaken in six boreholes. Televiewer imaging would be performed by a geophysicist after the completion of drilling and involves lowering cameras and other specialised sensors down the borehole using a winch. These sensors capture information which would be processed and used alongside the rock core to assess various properties of the rock and groundwater.

Reinstatement

After the completion of drilling and testing at each borehole, all testing equipment and drill rods (except for the outermost casing) would be removed from the borehole and the borehole would then be filled with cement or cement-bentonite grout up to the level of the top of bedrock.

Grout would be mixed in batches of up to 1,000 litres in a mixing drum or intermediate bulk container on the barge deck. Care would be taken when calculating the volume of grout to be mixed to ensure that the grout does not fill up inside the casing above the riverbed. This would avoid releasing grout into the water when the casing is removed. Each batch would be pumped to the bottom of the borehole through a tremie pipe to avoid premature 'bridging' of the borehole (thereby avoiding the bottom of the borehole being left unfilled), and to displace the drilling fluid up the borehole and casing (since cement grout is denser than drilling fluid). This would be repeated until the theoretical volume of grout required has been pumped into the borehole.

The tremie pipe would then be removed, allowing the grout to cure and 'tagged' with a weighted measuring tape to confirm the grout level. If the grout level is below the top of bedrock additional batches would then be mixed and pumped into the borehole to bring the grout up to the required level. This process of allowing the grout to cure, measuring its level, and topping up with additional batches, would be repeated until the borehole has been successfully grouted to the top of rock.

Once the grouting has been successfully completed, the steel casing would be raised to the barge's deck, the barge deck lowered into the water, the barge legs raised, and the barge moved to the next borehole position.

Waste disposal

All waste generated by the proposal, including pressure testing waters, would be temporarily stored on the barges, transfer to shore for collection via a vacuum truck, and transported to an appropriately licenced facility for disposal.

Demobilisation

Once the drilling of boreholes are completed at Hawksbury River, barges would be transported to Parsley Bay for demobilisation. A crane would be used to safely remove barge components from the water onto the boat ramp, removing the barge legs and transporting barge components on heavy vehicles via George Street. Section of George Street, near the boat ramp will temporarily close for the safety of road users and pedestrians. Demobilisation would take approximately four days to complete, during this time, the Parsley Bay boat ramp would be closed to public use. This would occur Monday to Thursday only.

To minimise the impacts of the closure of Parsley Bay Boat ramp, demobilisation may also occur at Long Island Boat Ramp/ Wharf currently, which is managed by Sydney Trains.

Plant and equipment

The proposal would require use of a small number of plant and equipment including:

- two jack-up barges (Sea Lift 3 and Sea Lift 11)
- two Hanjin D&B 8D geotechnical drill rigs
- transfer vessel (Sea Transfer)

- small open boat (Sea Punt)
- four rigid trucks
- Crane
- vacuum truck.

2.1.4 Proposal objectives

The overall objective of the proposal is to understand the geological characteristics within the Newcastle to Sydney HSR alignment study area, to inform the development of the HSR business case and further high speed rail network development. More specifically, the objectives of the proposal include:

- to obtain data on the geology of the alignment study area
- to obtain data on groundwater characteristics in the alignment study area, such as flow and quality
- to obtain data on the potential migration of water systems, temperature and pressure fluctuations beneath the Hawkesbury River and Brisbane Water
- to improve estimates of potential geological and groundwater impacts from establishing a tunnel
- to minimise environmental impacts.

2.1.5 Ancillary facilities

Table 2.2: Ancillary facilities

Ancillary facilities		
Will the proposal require the use or installation of a compound site?	Yes ☐	No ☒
Will the proposal require the use or installation of a stockpile site?	Yes ☐	No ☒
Are any other ancillary facilities required (e.g. temporary plants, parking areas, access tracks)?	Yes ☒	No ☐
During mobilisation The proposal would require barges (disassembled into individual components) to be transported via semi-trailers and trucks, which would need to be temporarily parked at Parsley Bay Boat Ramp in Brooklyn for the Hawkesbury River, and from the goods dock at Koolewong Foreshore Reserve for Brisbane Water. A crane would also be placed near each boat ramp. Vehicles would occupy this area for a short period of time until the barge components have been lifted into place, and the barges assembled. For access to Parsley Bay Boat Ramp, incoming heavy vehicles would be parked at the southern end of the car park on George Street, Brooklyn. Some equipment and machinery may be temporarily stored on nearby street (along the kerbside areas of George Street) to improve operational efficiency and minimise the movement of large vehicles.		

Ancillary facilities

This temporary parking and drive-through arrangement would impact road and boat ramp users, due to the temporary closure of George Street and Parsley Bay Boat ramp, and associated car and boat trailer parking areas. The indicative impact areas are shown on Figure 2.2. Impacts to the use of the parking area and boat ramp are further discussed in section 3.8 and 3.9.

Figure 2.2: Proposed parking area for Parsley Bay boat ramp

Similarly, mobilisation of barges from the goods dock at Koolewong Foreshore Reserve would require parking of vehicles and positioning of a crane at Koolewong Foreshore Reserve carpark. The vehicles carrying the barges would be parked to the south east end of the car park and would result in temporary loss of approximately 23 car parking spaces. Access to the car park would be from Brisbane Water Drive. An indicative area for vehicle parking and vehicle movement is shown in Figure 2.3.

Figure 2.3: Proposed parking area for goods dock at Koolewong Foreshore Reserve

No new access tracks or access points would be required for the proposal with all ancillary facilities accessible via existing streets and entrances. Access to the Koolewong Waterfront boat ramp 1 and 2 would also be maintained.

During demobilisation

Once the proposal is complete at Hawkesbury River, demobilisation of the barges would occur at Parsley Bay boat ramp, Brooklyn. Works during demobilisation would include using a crane to safely remove the barges from the water onto the boat ramp, removing the barge legs and transporting the barges. Vehicles carrying the barges would exit Brooklyn Carpark via George Street. Section of George Street, near the boat ramp, would also be temporarily closed to manage safety of road users and pedestrians.

The duration of activities would be around four days and would also require closure of the ramp to the public as well as the section of George Street during this time.

Ancillary facilities

Alternatively, to reduce community impacts at Parsley Bay, demobilisation may also occur at Long Island boat ramp/ wharf, currently managed by Sydney Trains. The boat ramp would also be closed to the boat users for a period of four days. However, use of the boat ramp at Long Island would be subject to Sydney Trains stakeholder consultation and approval.

No other temporary plant would be required for the proposal.

2.1.6 Proposed date of commencement

The proposal is expected to commence in October 2024.

2.1.7 Construction hours

Out of hours work (OOHW) is required for the proposal to minimise disruptions to marine traffic within the waterway and manage worker safety. Construction hours would include:

- Monday-Friday: 7:00am to 6.00pm
- Saturday: 7.00am to 6.00pm
- Every alternate Sunday: 7:00am to 6:00pm
- Public Holidays: no work

2.1.8 Estimated length of construction period

The proposal is expected to take up to three months to complete, however could potentially extend beyond the anticipated construction period due to:

- periods of inclement weather
- the requirement for additional investigations or testing
- equipment availability
- management of community impacts as the timeframe would extend over public holiday which would restrict use of the boat ramp

2.2 Needs and options

2.2.1 Options considered

The options considered for the proposal included:

- Option 1: Do nothing – this involves leaving the Hawkesbury River and Brisbane Water as is and not collecting geotechnical data
- Option 2: Carry out the marine geotechnical investigations – this involves conducting geotechnical investigations by drilling of six marine boreholes within the HSR alignment study area; five in the Hawkesbury River and one in Brisbane Water.

Table 2.3 provides an assessment of how each option performed against the proposal objectives outlined in Section 2.1.3.

Table 2.3: Assessment of options

Objectives	Option 1: Do nothing	Option 2: Carry out the marine geotechnical investigations
Obtain data on the geology of the alignment study area.	This option would not obtain any data. **This option would not meet the proposal objective**	The geotechnical investigations would provide an improved understanding of the geology of the alignment study area. **This option would meet the proposal objective.**
Obtain data on groundwater characteristics in the alignment study area, such as flow and quality.	This option would not obtain any data. **This option would not meet the proposal objective.**	The geotechnical investigations would obtain data on the groundwater conditions of the alignment study area. **This option would meet the proposal objective.**
Obtain data on the potential migration of water systems, temperature and pressure fluctuations beneath the Hawkesbury River and Brisbane Water.	This option would not obtain any data. **This option would not meet the proposal objective.**	The geotechnical investigations would obtain data on the migration of water systems, temperature and pressure fluctuations beneath the Hawkesbury River and Brisbane Water. **This option would meet the proposal objective.**

Objectives	Option 1: Do nothing	Option 2: Carry out the marine geotechnical investigations
Improve estimates of potential geological and groundwater impacts from establishing a tunnel.	This option would not improve estimates of the potential geological and groundwater impacts from establishing tunnel. **This option would not meet the proposal objective.**	The geotechnical investigations would improve estimates of the potential geological and groundwater impacts from establishing tunnel by gathering of data on the geological environment in the alignment study area. **This option would meet the proposal objective.**
Minimise environmental impacts.	This option would have no environmental impacts. **This option would meet the proposal objective.**	The geotechnical investigations would have some short-term and temporary environmental impacts. The proposed boreholes have been identified to avoid and minimise environmental impacts where practicable. **This option would meet the proposal objective.**

The preferred option

The preferred option is to carry out the proposal to gather data on the existing geological and groundwater conditions beneath the Hawkesbury River and Brisbane Water.

The data collected would inform the design and constructability considerations of the Newcastle to Sydney HSR. Borehole locations were selected based on the HSR alignment study area, the potential depth of rock and the presence of constraints, such as underground services, seagrass and the location of sensitive receivers adjacent to each waterway. The boreholes were sited to avoid and minimise environmental impacts while meeting the objectives of the proposal.

Under the ‘do nothing’ option, the geotechnical investigations would not be undertaken and there would be no valid geotechnical data to support the assessment of the HSR alignment study area and its suitability for development for the purpose of the HSR. If geotechnical data is not gathered, the business case would be based on limited desktop data which could lead to overly conservative assessments and inaccuracies in the findings.

2.2.2 Justification for the proposal

The future Newcastle to Sydney HSR corridor would:

- provide fast and reliable services on a dedicated alignment, improving productivity and access to services such as health and education
- provide comfort, convenience and safety for customers, integrated with other transport networks
- support better housing availability and affordability

- catalyse local precincts with housing, commercial and community facilities
- contribute to achieving net zero emissions for Australia
- provide opportunities for local skills, employment and manufacturing.

The proposal would help inform the Newcastle to Sydney High Speed Rail Business Case by gathering critical geotechnical data to help develop and assess the future HSR alignment.

The proposal has been developed to avoid and minimise environmental and social impacts where practicable. While the proposal may involve some impacts to the environment, including water quality impacts, sediment disturbance, visual and noise disturbance, the potential environmental impacts of the proposal have been identified as minor and short term.

2.3 Statutory and planning framework

2.3.1 State Environmental Planning Policy (Transport and Infrastructure) 2021

The State Environmental Planning Policy (Transport and Infrastructure) 2021 (SEPP (Transport and Infrastructure)) aims to facilitate the effective delivery of infrastructure across the state.

Section 2.92 of the SEPP (Transport and Infrastructure) permits development for the purpose of a railway or rail infrastructure facilities to be carried out by or on behalf of a public authority without consent on any land. This includes construction works for railway or rail infrastructure facilities, which as interpreted in Section 2.3 of the SEPP (Transport and Infrastructure), includes geotechnical investigations and other testing.

On 26 July 2024, Schedule 1of EP&A Regulation was amended to include The Authority as a public authority in New South Wales for the purposes of rail and related transport facilities related to the high speed rail planning. As the proposal is for the purpose of railway or rail infrastructure facilities and The Authority is the proponent, development consent is not required. Notwithstanding, Section 5.5 of the EP&A Act requires The Authority, as a determining authority, to examine and take into account, to the fullest extent possible, all matters affecting or likely to affect the environment by reason of the activity.

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

2.3.2 State Environmental Planning Policy (Resilience and Hazards) 2021

State Environmental Planning Policy (Resilience and Hazards) 2021 (Resilience and Hazards SEPP) gives effect to the objectives of the *Coastal Management Act* 2016 from a land use planning perspective, by specifying how developments are to be assessed if they fall within the coastal zone.

The proposal is within the ‘coastal environment area’ regulated by the Resilience and Hazards SEPP. However, the proposal is not within a ‘coastal vulnerability area’. This REF assesses the potential

impacts of the proposal on the biophysical, hydrological (surface and groundwater) and ecological environment in section 3.

2.3.3 State Environmental Planning Policy (Biodiversity and Conservation) 2021

Chapter 6 (Water Catchments) of the State Environmental Planning Policy (Biodiversity and Conservation) 2021 (SEPP (Biodiversity and Conservation)) relates to the use of land within four regulated catchments as defined in the SEPP:

- the Sydney Drinking Water Catchment
- the Sydney Harbour Catchment
- the Georges River Catchment
- the Hawkesbury-Nepean Catchment.

The proposal is in the Hawkesbury-Nepean Catchment. This REF assesses the potential impact of the proposal on water quality and quantity, aquatic ecology, flooding, and recreation and public access as outlined in Sections 6.6. to 6.9 of the SEPP. An assessment of these factors is provided in Appendix B. The assessment concluded the proposal would have minimal impact on the Hawkesbury-Nepean Catchment.

2.3.4 Fisheries Management Act 1994

The *Fisheries Management Act 1994* (FM Act) aims to conserve, develop and share the fishery resources of the state for the benefit of present and future generations. Section 199 of the FM Act provides that:

1. A public authority (other than a local government authority) must, before it carries out or authorises the carrying out of dredging or reclamation work:
   a) give the Minister written notice of the proposed work, and
   b) consider any matters concerning the proposed work that are raised by the Minister within 21 days after the giving of the notice (or such other period as is agreed between the Minister and the public authority).

   The Authority completed the notice of the proposal under section 199. A consultation letter was sent to Fisheries NSW on 26 August 2024. A response with acknowledgment was received from Fisheries on 3 September 2024 (Appendix C), requesting the following:

   - A copy of the Draft Minor Works REF and Aquatic Ecological Assessment to further understand the proposed works and impacts on key fish habitat.

     A Marine Ecology Impact Assessment was prepared by The Authority and provided to Fisheries NSW for review on 25 September 2024 (available in Appendix G).

     Acknowledgment of the consultation letter was received from Fisheries on 11 October 2024, and additional mitigation measures were recommended. The management of the proposal would be consistent with the standard and additional recommended mitigation measures provided in sections 3.2, 3.7, 3.9 and 3.11, including the disposal of waste in accordance with waste classification.

     The Hawkesbury River is mapped as Key fish habitat (NSW DPI, 2024). Under section 219 of the FM Act, works that could result in the temporary or permanent blockage of fish passage may

require additional permits. Although the proposal involves activities such as dredging (due to the removal of sediment from the river/seabed), a permit is not required under section 199 from Fisheries due to HSRA being listed as a public authority. Additionally, the proposal would not temporarily or permanently obstruct fish passage, does not involve the use of explosives or other dangerous substances, and would not harm marine vegetation as defined by the FM Act. Further detail on the impact of the proposal on aquatic ecology is described in section 3.7.

A search of the NSW Fisheries database portal identified aquaculture leases located near the proposal in the Hawkesbury River (NSW DPI, 2024). Potential impacts to the aquaculture leases and required consultation have been considered and described in section 2.4 and section 3.9.

2.3.5 Other relevant legislation and environmental planning instruments

Table 2-4 provides a summary of other key NSW legislation that may be applicable to the proposal.

Table 2.4: Relevant legislation

Act	Objective	Relevance to the proposal
Marine Safety Act 1998 (NSW)	The *Marine Safety Act 1998* provides for the safe operation of vessels in ports and other waterways and promotes the responsible operation of vessels. Transport for NSW (TfNSW) regulates impacts to navigation on NSW navigable waters under the Marine Safety Regulation 2016.	The proposal involves works in the Hawkesbury River, which is a navigable waterway; therefore, TfNSW approval is required in accordance with the Act.
Crown Land Management Act 2016 (NSW) (CLM Act)	The *CLM Act* provides the legislative framework for the administration of land that is vested in the Crown in NSW. Ministerial approval is required to grant a lease, licence, permit, easement or right of way over a Crown Land.	The proposal is located within a Crown Waterway and also on Crown Land located along the Hawkesbury River. A short-term licence is required to undertake the proposal from the Department of Planning, Housing and Infrastructure (DPHI) – Crown Lands under Section 2.20 of the CLM Act.

Act	Objective	Relevance to the proposal
Environment Protection and Biodiversity Conservation Act 1999 (Cth) (EPBC Act)	The EPBC Act is the primary Commonwealth environmental legislation and is administered by Australian Government. It provides the legal framework to protect and manage nationally and internationally important values, including flora, fauna, ecological communities and heritage places defined under the Act as Matters of National Environmental Significance (MNES). The Authority, as a Commonwealth Authority has particular obligations under the EPBC Act beyond MNES and Commonwealth land. Under Section 28 of the EPBC Act, a commonwealth Agency requires approval under the Act to undertake any action that is deemed likely to have a significant impact on the environment.	A search using the Protected Matters Search Tool was undertaken on 21 July 2024 to determine the protected matters recorded under the EPBC Act. This information, together with site inspections and surveys, was used to assess whether the proposal would have, or is likely to have, a significant impact on MNES (refer to Appendix A). Based on this assessment, referral under the EPBC Act is not required.
Heritage Act 1977 (NSW) (Heritage Act)	The purpose of Heritage Act is to conserve environmental heritage, which includes places, buildings, work, relics, movable objects, and precincts of State or local heritage significance. Natural, cultural and built heritage is protected under this Act, and it is an offence to harm a protected item.	The proposal would not harm any items of heritage significance The potential for Heritage impacts of the proposal are assessed in Section 3.6.
Roads Act 1993 (NSW)	The purpose of the *Roads Act 1993* is to regulate the management, construction, and maintenance of roads ensuring that the roads infrastructure is safe, efficient and meet the needs of the road users. It provides the legal framework for authorities to construct new roads, maintain existing ones, control access and acquire land for road purposes.	The proposal involves using Brisbane Water Drive, which is a State road managed by TfNSW, during barge mobilisation at Koolewong. Brisbane Water Drive would provide access to Koolewong Foreshore Reserve. While the road would remain open to users, traffic management measures such as signage and reduced speed limits would be necessary. A Road Occupancy Licence (ROL) is required in accordance with the Act and was granted on 27 September 2024.

2.4 Community engagement and agency consultation

2.4.1 SEPP (Transport and Infrastructure) consultation

Part 2.2 of the SEPP (Transport and Infrastructure) contains provisions for public authorities to consult with local councils and other public authorities prior to the commencement of certain types of development. This is detailed in Table 2.5

Table 2.5: Consultation required with Council

Is consultation with Council required under sections 2.10 - 2.12 and 2.14 of the SEPP (Transport and Infrastructure)?		
Are the works likely to have a substantial impact on the stormwater management services which are provided by council?	Yes ☐	No ☒
Are the works likely to generate traffic to an extent that would strain the capacity of the existing road system in a local government area?	Yes ☐	No ☒
Would the works involve connection to a council owned sewerage system? If so, would this connection have a substantial impact on the capacity of the system?	Yes ☐	No ☒
Would the works involve connection to a council owned water supply system? If so, would this require the use of a substantial volume of water?	Yes ☐	No ☒
Would 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, would this cause more than a minor or inconsequential disruption to pedestrian or vehicular flow? The proposal would require the temporary closure of Parsley Bay boat ramp, the south end of the Brooklyn carpark at George Street and south end of the carpark at Koolewong Foreshore Reserve at various stages. The temporary closure would be required during mobilisation (for up to two days), during modification to barges (half to a full day) and during de-mobilisation (up to four days). The proposal would result in traffic impacts during the mobilisation of the barges, mostly impacting a section of George Street, Brooklyn, near the boat ramp while reduced speed limits would be implemented at Brisbane Waters drive during the mobilisation, modification and demobilisation periods While there are impacts to road, carpark and boat ramp users, the impacts would be short-term and limited to the mobilisation, modifications and demobilisation periods. These impacts would be managed by the mitigation measures listed in section 3.8, which includes closures being timed to occur Monday to Thursday to minimise impact to boat ramp users.	Yes ☒	No ☐
Would 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?	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?	Yes ☐	No ☒

Is consultation with Council required under sections 2.10 - 2.12 and 2.14 of the SEPP (Transport and Infrastructure)?		
Is the proposal within the coastal vulnerability area and inconsistent with a certified coastal management program applying to that land?	Yes ☐	No ☒
Are the works located on flood liable land? If so, would the works change flooding patterns to more than a minor extent?	Yes ☐	No ☒

Table 2.6: Consultation with other public authorities

Is consultation with a public authority (other than Council) required under sections 2.13, 2.15 and 2.16 of the SEPP (Transport and Infrastructure)?		
Are the works located on flood liable land? (to any extent)	Yes ☐	No ☒
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?	Yes ☐	No ☒
Are the works on land in Zone C1 National Parks and Nature Reserves or in a land use zone equivalent to that zone?	Yes ☐	No ☒
Do the works include a fixed or floating structure in or over navigable waters? The proposal involves the establishment of temporary barges on the Hawkesbury River and Brisbane Water for the purpose of geotechnical investigations. TfNSW has been consulted regarding the proposal as documented in Appendix C. An application has been submitted to TfNSW for potential impacts to navigation from the proposal.	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?	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)	Yes ☐	No ☒
Are the works on buffer land around the defence communications facility near Morundah?	Yes ☐	No ☒
Are the works on land in a mine subsidence district within the meaning of the *Mine Subsidence Compensation Act 1961*?	Yes ☐	No ☒
Are the works on, or reasonably likely to have an impact on, a part of the Willandra Lakes Region Work Heritage Property?	Yes ☐	No ☒
Are the works within a Western City operational area specified in Schedule 2 of the *Western Parkland City Authority Act 2018* with a capital value of $30 million or more?	Yes ☐	No ☒

Table 2.7: Notification of council and occupiers of adjoining land

Do Council and occupiers of adjoining land need to be notified under section 2.111 of the SEPP (Transport and Infrastructure)?		
Does the proposal include a car park intended for the use by commuters using regular bus services?	Yes ☐	No ☒
Does the proposal include a bus depot?	Yes ☐	No ☒
Does the proposal include a permanent road maintenance depot or associated infrastructure, such as garages, sheds, tool houses, storage yards, training facilities and workers amenities?	Yes ☐	No ☒

2.4.2 Other agency and community engagement

Agency consultation

Consultation with agencies was carried out during development of the proposal as summarised in Table 2.8 Appendix C –. Table 2.8 provides further detail of the agency consultation completed at the time of REF completion.

Table 2.8: Agency consultation

Agency	Engagement carried out to date	Future engagement
NSW Crown Lands	NSW Crown lands were engaged on the Proposal. As the Hawkesbury River and Brisbane Water are NSW Crown waterways, a 1A Short Term licence is required. A 1a short term licence offer was received on 11 September 2024.	Prior to the commencement of the proposal, the executed licence from Crown Lands is required.
TfNSW Maritime	TfNSW Maritime is responsible for the assessment of impacts to navigation from works in NSW waterways. The following documentation was provided to TfNSW Maritime on 9 September 2024: • An impacts to Navigation Commercial Development or Works Application • The proposal methodology and supporting documentation • A Marine Traffic Management Plan (see Appendix I).	Ongoing engagement with TfNSW Maritime is being carried out to support the proposal. An impacts to Navigation Commercial Development or Works Application is required prior to the commencement of the proposal.
Department of Primary Industries (DPI) – Fisheries	NSW DPI – The Authority completed the formal consultation / notice of proposal under section 199 of the FM Act. A consultation letter was sent to	The minor works REF would be supplied to DPI Fisheries, prior to the commencement of works.

Agency	Engagement carried out to date	Future engagement
	Fisheries NSW on 26 August 2024 (refer to Appendix C). A response with acknowledgment was received from Fisheries on 3 September 2024 (Appendix C), requesting a copy of the Minor works REF and aquatic assessment to further understand the impacts to key fish habitat. The Authority has also supplied the Marine Ecological Assessment Technical Memorandum (refer to Appendix G) and the Draft Minor Works REF to Fisheries NSW.	
Councils: • Hornsby Shire Council • Central Coast Council	Notification was provided via email to both Council's including program scope, work hours, locations and timing. Central Coast Council provided approval on 4 October 2024 to utilise Council owned land at Koolewong Waterfront Reserve to mobilise the barge. Hornsby Shire Council provided approval on 11 October 2024 to utilise Parsley Bay boat ramp.	Ongoing engagement with Councils is being carried out to support the proposal.
Ku-Ring-Gai Police Area Command (PAC)	None to date.	Ku-Ring-Gai PAC use the Brooklyn Boat Ramp for their launch operations. Notification would occur via email prior to work commencing.
Sydney Trains	None to date.	An alternate location for the demobilisation of the barges once the proposal is complete would be the Long Island boat ramp/ wharf which is managed by Sydney Trains. For demobilisation activities to be undertaken at this location, approval and consultation with Sydney Trains would be required. Ongoing engagement with Sydney Trains is being carried out to support the proposal.
Marine Area Command - Broken Bay Water Police	None to date.	Notification would occur via email prior to work commencing.

Upcoming community and local business engagement

Community and local business notification would be carried out prior to the commencement of the proposal. Table 2.9 outlines the proposed community engagement.

Table 2.9: Proposed engagement with the community

Stakeholder type	Stakeholder	Engagement
Local businesses	• Local oyster farms via nominated representative • Hawkesbury River Marina • The Riverboat Postman • The Hawkesbury water taxi • Floating Oyster Wine Bar • Brooklyn Central – Hawkesbury River Boat Hire • Brooklyn Ferry Services • Sandbrook Inlet Marina • Corleone Marina – Long Island Marina • Fenwicks Marina and Hawkesbury River Boat Ramp	Notification would occur via email or phone call at least seven days prior to start of work.
Community groups	• Dangar Island League • Brooklyn Progress association • Hawkesbury River District Fishermans Co-operative • Brooklyn Mooring Cooperative • Gosford sailing club • Maritime Rescue Hawkesbury • Marine rescue central coast • Brooklyn rural fire service • Dangar Island rural fire service	Notification would occur via email or phone call at least seven days prior to start of work.

Stakeholder type	Stakeholder	Engagement
	• Dangar Island Mooring Cooperative	
Local property owners	Property owners located at: • Dangar Island • Little Wobby • Brooklyn	A printed community notification would be distributed to properties with post boxes at least seven days prior to work commencing. Copies of the notification will be available at the Dangar Island wharf shed. Signage would be placed on local community notice boards and high traffic areas.
General community	Stakeholders that visit or travel past the borehole locations.	Proposal signage would be visible on the barge, at local areas visited by the general community. Signage will also be provided for road users heading to the area along northbound and southbound lanes from the Pacific Motorway. Information will include alternative options for road and boat users and contact details to access to latest proposal information or speak to the community engagement team about the proposal including: • proposal 24 hour toll free phone number: 1800 1800 958 562 • proposal email address: info@hsra.gov.au

3. Environmental assessment

This chapter provides a detailed description of the potential environmental impacts associated with the construction and operation of the proposal. All aspects of the environment potentially impacted upon by the proposal are considered. This includes consideration of the factors specified in s171 of the EP&A Regulation.

The matters of national environmental significance under the Commonwealth EPBC Act are also considered in Appendix A. Site-specific mitigation measures are provided to ameliorate the identified potential impacts.

3.1 Soil

Table 3.10: Soil

Description of existing environmental and potential impacts		
Are there any known occurrences of salinity or acid sulfate soils in the area? A search of the NSW Planning Portal - Acid Sulfate Soil Risk mapping indicates that the proposal has a high probability of acid sulfate soil occurrence within waterways and their immediate surrounds (NSW Government, 2024). The proposal would involve minor disturbance to riverbed in Hawkesbury River and Brisbane Waters. These disturbances would be localised, underwater and materials not exposed to air. All drilling activities would be contained within a casing to avoid the mobilisation of sediments potentially containing acid sulfate soils. All drillings waste would be captured and disposed (refer to section 3.11).	Yes ☒	No ☐
Does the proposal involve the disturbance of large areas (e.g., >2ha) for earthworks?	Yes ☐	No ☒
Does the proposal have constraints for erosion and sedimentation controls such as steep gradients or narrow corridors?	Yes ☐	No ☒
Are there any sensitive receiving environments that are located in or nearby the proposal or that would likely receive stormwater discharge from the proposal? Sensitive receiving environments include (but are not limited to) wetlands, state forests, national parks, nature reserves, rainforests, drinking water catchments). The proposal is located within the sensitive waterways of the Hawksbury River and Brisbane Waters however, the proposal would not alter nearby stormwater volumes, velocities or flow paths.	Yes ☐	No ☒
Is there any evidence within or nearby the proposal of potential contamination? Searches of the NSW EPA Contaminated Land Record of Notices and List of Notified Sites and the Protection of the Environment Operations (POEO) Public Register completed on (11 September 2024) have confirmed that the proposal would not interact with any known contaminated sites/areas or areas subject to Environment Protection Licences, applications or notices.	Yes ☐	No ☒
Is the likely proposal footprint in or nearby highly sloping landform?	Yes ☐	No ☒
Is the proposal likely to result in more than 2.5ha (area) of exposed soil?	Yes ☐	No ☒

Mitigation measures

Mitigation measures to be implemented include:

1. If contaminated areas are encountered during investigations, appropriate control measures will be implemented to manage the immediate risks of contamination. All other works that may impact on the contaminated area will cease until the nature and extent of the contamination has been confirmed and any necessary site-specific controls or further actions are identified.
2. An Unexpected Finds Procedure will be implemented to manage any hazardous materials such as potential contaminants and asbestos in soil or olfactory and/ or visual signs of potential contamination if encountered.

3.2 Waterways and water quality

Table 3.11: Waterways and water quality

Description of existing environmental and potential impacts		
Is the proposal located within, adjacent to or near a waterway? The proposal would occur in the following waterways: • Hawkesbury River • Brisbane Water **Hawkesbury River:** The Hawkesbury River serves as a recreational and agricultural resource, with major water users being Water NSW, local councils, agriculture, tourism, fishing and oyster industries. The proposed boreholes in the Hawksbury River are located in estuarine areas, near Spectacle Island Nature Reserve, Long Island Nature Reserve, Muogamarra Nature Reserve and Ku-ring-Gai Chase National Park. The existing water quality surrounding the borehole locations is influenced by both natural and human activities including residential areas, recreational boating and tourism (WaterNSW, 2024). **Brisbane Water:** The borehole location in Brisbane Water is within an area mapped as crown waterway. The existing water quality within this area of Brisbane Water is closely monitored due to its proximity to environmentally sensitive areas such as the Brisbane Water National Park and the Bouddi National Park, both of which are managed by the National Parks and Wildlife Service (NPWS) (NSW Environment and Heritage, 2024). Accidental escape of sediments, fuel spills and other chemical spills from the geotechnical drill rigs associated with the proposal would have the potential to impact water quality in the Hawkesbury River and Brisbane Water. However, the risk of this occurring is considered low with the implementation of the proposal methodology and listed mitigation measures.	Yes ☒	No ☐
Is the location known to flood or be prone to water logging? While the proposal is located within the waterway, due to the proximity of the ocean and tidal environment, impacts associated with flooding are expected to be minor and are accounted for in the proposal methodology.	Yes ☐	No ☒

Description of existing environmental and potential impacts		
Is the proposal located within a regulated catchments covered by Chapter 6 of SEPP (Biodiversity and Conservation)? While the upper catchments of the Hawkesbury River and Brisbane Water are all within the Central Coast drinking water catchments, the proposal is located downstream of these areas, and would not impact the quality of drinking water within these catchments.	Yes ☐	No ☒
Would the proposal be undertaken on a bridge or ferry? While the proposal would not be undertaken on a bridge or a ferry, it would require geotechnical rigs mounted on the deck of jack-up barges. Temporary disruptions to public waterway use may occur during survey days. Consultation with TfNSW Maritime and Crown Lands is available in section 2.4 of this REF.	Yes ☐	No ☒
Is the proposal likely to require the extraction of water from a local water course (not mains)?	Yes ☐	No ☒

Mitigation measures

Mitigation measures to be implemented include:

1. There is to be no release of dirty water into waterways.
2. Visual monitoring of local water quality (i.e. turbidity, hydrocarbon spills/slicks) is to be undertaken on a regular basis to identify any potential spills.
3. Vessels 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.
4. A marine emergency spill kit is to be kept on site at all times and maintained throughout the duration of the proposal. The spill kit must be appropriately sized for the volume of substances used.
5. Spill kits for construction survey vessels must be specific for working within the marine environment.
6. All workers will be advised of the location of the spill kit and trained in its use.
7. Vessels must be properly maintained and regularly inspected for fluid leaks, especially for any casings and hydraulic arms.
8. In the event of an incident or maritime spill, the Principal Contractor Work Health and Safety Management Plan prepared is to be followed and the Project Manager notified as soon as practicable.
9. Emergency contacts will be kept in an easily accessible location in vehicles or vessels. All workers will be advised of these contact details and procedures.
10. All equipment onboard with the potential to leak will be bunded to manage spills on the deck. All bunding will be at 1.5 times the capacity of the equipment.
11. Erosion and sediment mitigation devices will be erected (if practical) in a manner consistent with current Best Management Practice (*Managing Urban Stormwater: Soils and Construction 4th Edition Landcom, 2004*) to prevent entry of sediment into the waterway prior to any earthworks being undertaken. These will be maintained in good working order for the duration of the works and subsequently until the site has been stabilized and the risk of erosion and sediment movement from the site is minimal.

12. Any material removed from the waterway, which is to be temporarily deposited or stockpiled on land, will be located well away from the waterway and will be contained by appropriate erosion and sediment control devices.

13. Machinery other than those required, will not enter or work from the waterway unless in accordance with the proposed works.

    – Prior to use at the site and/or entry into the waterway, machinery is to be appropriately cleaned degreased and serviced.

14. Works are to be undertaken during low flows in the waterway.

15. Consultation will be undertaken with local fisheries cooperatives regarding the proposed works. Where possible, works will be timed to avoid impacting licensed commercial fishing activities Table 3.12: Noise and vibration

3.3 Noise and vibration

Table 3.13: 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)? The borehole locations are within visible and audible range of onshore residential receivers. **Brisbane Water:** Residential properties along Masons Parade, Crawford Street, Albani Street, and Eulalia Avenue at Point Frederick are approximately 550 m east from the proposal. Residential properties along Kurrawa Avenue, Brisbane Water Drive, Broadwater Street, and Alukea Avenue at Point Clare are approximately 540 m west of the proposal and would experience some noise disturbance. Similarly, commercial properties such as Gosford Sailing Club, Marine Rescue Central Coast, Drifters Wharf, Gosford Olympic Swimming Pool and Lisa Shipton Photography are also located along the shoreline of Point Fedrick and Point Clare, around 550 m. Sensitive receivers such as Point Clare Public School, St. Mary and St. Luke Coptic Orthodox Church, St. Mary's Anglican Parish of Gosford, and St. Mary's Anglican Church are also located at Point Frederick and Point Clare but are approximately 800 m north from the proposal at Brisbane Water. The nearest hospital, Lake Munmorah NSW, is located two kilometers northeast of the proposal. **Hawkesbury River:** Residential properties along Grantham Crescent on Dangar Island are approximately 510 m east from the proposal and residents along Little Wobby are around 500 m west from the proposal would also experience some level of noise impact from the proposal. There are no sensitive receivers (such as schools, hospitals and places of worship) located within one kilometer of the proposal. Commercial properties that may experience some level of noise disturbance include the Dangar Island Bowling Club (approximately 560 m east of the proposal), Deepwater at Hawkesbury (approximately 660 m south of the proposal) and Turner's River House (approximately 900 m south west of the proposal).	Yes ☒	No ☐
Is the proposal going to be undertaken only during standard working hours? It is anticipated that OOHW is required for the proposal to minimise traffic disruption along the waterway and manage worker safety and include: • Monday-Friday: 7.00am to 6.00pm • Saturday: 7.00am to 6.00pm • Every alternate Sunday: 7.00am to 6.00pm • Public Holidays: no work	Yes ☐	No ☒
Is any explosive blasting required for the proposal?	Yes ☐	No ☒

Description of existing environmental and potential impacts

Would construction noise or vibration from the proposal affect sensitive receivers? Yes ☒ No ☐

The proposal would involve the use of noise generating vehicles, plant and equipment for the duration of the works. The main noise generating work would be the operation of the drill rig, for the purpose of drilling the boreholes. The ancillary works for the proposal, which include mobilisation and demobilisation of the barges from proposed boat ramps and transfer of waste using vacuum trucks, would occur at the commencement and end of the project, be infrequent and short term. The noise impacts from the ancillary works would be short term and minor. As the drilling works would generate the highest noise levels, the noise impact from those works have conservatively been assessed.

Noise impacts to the receivers at the Hawkesbury River and Brisbane Water were assessed using the Transport for NSW *Construction Noise Estimator Tool* (Public Transport Infrastructure) (EMF-NV-TT-0068), available in Appendix H. The noise assessment was undertaken to determine potential construction noise levels, noise impacts at affected sensitive receivers and, where necessary, recommend appropriate mitigation measures to reduce and manage noise impacts from the proposal.

It is anticipated that OOHW is required for the proposal to minimise traffic disruption along the waterway and manage worker safety. For the assessment of noise impacts, the 'Microdrilling Rig (Soilmec SM-14)' was chosen as the loudest equipment (in the absence of Hanjin D&B 8D geotechnical drill rigs), with line of sight between the proposal and the sensitive receivers considered as the worst-case scenario.

Brisbane Water

Due to the proximity of railway infrastructure and roadways, marine traffic, and nearby medium density residential areas, the R3 (semi-urban) Noise Area Category (based on AS 1055.3- 1997) was used in the noise estimator scenario. The major source for background noise at the Brisbane Water borehole location is the existing marine activities (such as ferries, commercial, and recreational fishing) and nearby road and railway traffic. Table 3-4 summarises the representative noise environments and Figure 3.1 show the results from the Construction Noise Estimator Tool.

Table 3.14: Noise are category and background noise levels (R3 Brisbane Water)

Noise Area Category		R3
RBL/ LA90 Background level (dB(A))	Day	50
	Evening	45
	Night	40

Yes ☒ No ☐

Residential receivers onshore at Point Fedrick and Point Clare would have line of site to the proposal at Brisbane Water. The nearest residential receivers are located along Crawford Street, Point Fedrick, approximately 550 m east from the proposal. As the proposal would require the barge to remain stationary during the drilling works, the distance from the borehole locations (with a 20 m buffer) to the nearest residential receiver at 2-18 Crawford Street, Point Fredric was considered. Noise disturbance at these residential receiver locations, during OOHW (evening) would be below the highly intrusive Noise Management Level (NML) threshold. As such, no additional mitigation measures have been proposed.

Results from the noise estimator tool show that the RBL exceedance experienced by residents within 550 m of the proposal at Brisbane Water would fall within the NML limits with further results available in Appendix H.

The nearest non-residential receiver (commercial properties), along Kurrawa Avenue and Masons Parade such as Gosford Sailing Club and Drifters Wharf are around 600 m east of the proposal and do not fall within the highly affected zone. Majority of the commercial properties surrounding the proposal are over 600 m from the proposal and would be below the highly intrusive NML, as such no additional mitigation measures are proposed. Point Clare Public School, the nearest sensitive receiver, is approximately 800 m southwest from the proposal and does not fall within the highly affected zone. Hence, no additional mitigation measures are proposed.

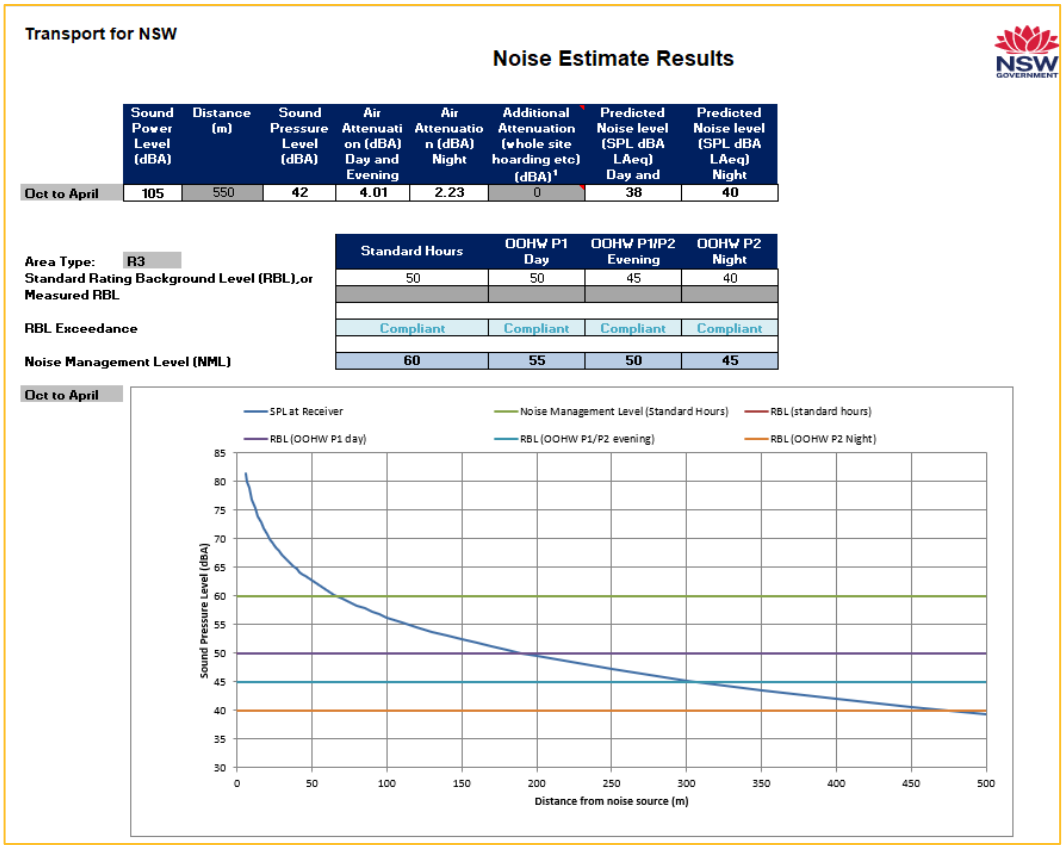


Figure 3.4: Results of the Noise Estimator Tool for the Brisbane Water borehole

The Koolewong Foreshore Reserve, located to the east of the Brisbane Water Drive would be used for mobilisation of the survey vessels and waste transfer. Given the existing noise disturbance from the nearby road and railway line, noise generated during the transfer and mobilisation would be minimal and negligible.

Hawkesbury River

As the borehole locations in the Hawkesbury River are near both NPWS reserves (Long Island Nature Reserve and Brisbane Water National Park) as well as residential properties, the R2 (Rural) Noise Area Category (based on AS 1055.3-1997) was used in the noise estimation scenario. The main background noise is generated from existing marine activities (such as commercial, and recreational fishing) and nearby road and railway traffic. Table 3-5 summarises the representative noise environments and Figure 3.2 shows the results from the Construction Noise Estimator Tool.

Table 3.15: Noise area category and background noise levels (R2 Hawkesbury River)

Noise Area Category		R2
RBL/ LA90 Background level (dB(A))	Day	45
	Evening	40
	Night	35

Residential receivers along the shoreline of Dangar Island would have a line of sight to the proposal and are located approximately 500 metres east from the proposal. The boreholes at the Hawkesbury River also requires two drill rigs to operate simultaneously, which has been considered as the worst case scenario.

Results from the noise estimator indicates that during OOHW (evening), an RBL exceedance of 2 dBA would be experienced by the nearest receiver but would remain under the highly intrusive NML threshold. As such, no additional mitigation measures are proposed. There are no nighttime OOHW required for the proposal. Majority of the commercial receivers are in Dangar Island, over 550 m away, under the highly intrusive threshold and would not require the implementation of additional mitigation measures.

Description of existing environmental and potential impacts

Transport for NSW

Noise Estimate Results

	Sound Power Level (dBA)	Distance (m)	Sound Pressure Level (dBA)	Air Attenuation (dBA) Day and Evening	Air Attenuation (dBA) Night	Additional Attenuation (whole site hoarding etc) (dBA)[1]	Predicted Noise level (SPL dBA LAeq) Day and	Predicted Noise level (SPL dBA LAeq) Night
Oct to April	108	500	46	3.65	2.03	0	42	44

	Standard Hours	OOHW P1 Day	OOHW P1/P2 Evening	OOHW P2 Night
Area Type: R2				
Standard Rating Background Level (RBL),or Measured RBL	45	45	40	35
RBL Exceedance	Compliant	Compliant	2	9
Noise Management Level (NML)	55	50	45	40

Oct to April

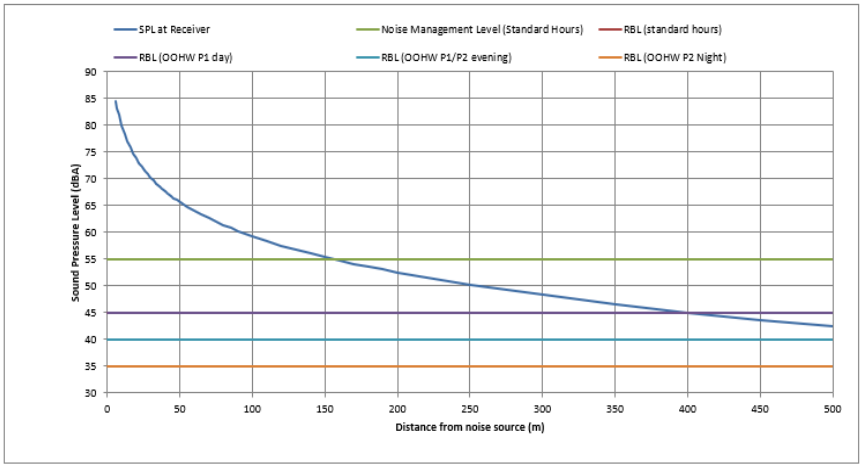


Figure 3.5: Results of the Noise Estimator Tool for the Hawkesbury River boreholes

It is anticipated that the proposal may cause some level of noise disturbance to nearby residents, commercial properties and road users, however the impacts are expected to be negligible. Parsley Bay boat ramp, located to the east of the Brooklyn car park would be used for mobilisation of the survey vessels and waste transfer. Given the existing noise disturbance from the carpark and George Street, noise generated during the transfer and mobilisation would be minimal and negligible.

The plant and equipment used during construction would likely cause some vibration in the immediate vicinity of the boreholes. However, due to the nature of the works occurring underwater and distance to the sensitive receivers and heritage items identified in section 3.6, vibration impacts are expected to be minimal.

Would operation of the proposal alter the noise environment for sensitive receivers? The proposal does not involve ongoing operational noise impacts.	Yes ☐	No ☒
Would the proposal result in vibration being experienced by any surrounding properties or infrastructure during operation?	Yes ☐	No ☒

Mitigation measures

Mitigation measures to be implemented include:

1. All works are to be carried out between Monday-Friday: 7:00am to 6.00pm, Saturday: 7.00am to 6.00pm, and every alternate Sunday: 7:00am to 6:00pm. No works are to be undertaken on Public Holidays. Any works outside these hours may be undertaken if approved by The Authority and following consultation with community prior to works commencing.
2. Any vehicles arriving at boat ramps or car parking areas for barge mobilisation must be parked and switched off until approved work hours commence.
3. The following measures will be implemented during the proposal:
    - regularly training workers and contractors (such as at the site induction and toolbox talks) on the importance of minimising noise emissions and how to use equipment in ways to minimise noise
    - avoiding unnecessary noise when carrying out manual operations and when operating plant or equipment
    - avoiding/limiting simultaneous operation of noisy plant or equipment with discernible range of a sensitive receiver where practical.
    - switching off any equipment not in use for extended periods of time
    - no idling of delivery trucks
    - keeping truck drivers informed of designated routes, parking locations and acceptable delivery hours for the site.
    - minimising talking loudly; no swearing or unnecessary shouting, or loud stereos/radios onsite; no dropping of materials from height where practicable, no throwing of metal items and slamming of doors
    - traffic controllers will be onsite to assist heavy vehicle drivers navigating the area and for the safety of all road users and pedestrians.

3.4 Air quality

Table 3.16: Air quality

Description of existing environmental and potential impacts		
Is the proposal likely to result in large areas (>2ha) of exposed soils?	Yes ☐	No ☒
Are there any dust-sensitive receivers located within the vicinity of the proposal during the construction period? The proposal is not expected to generate dust emissions during the movement of vehicles and is not expected to impact on the air quality of any nearby sensitive receivers.	Yes ☐	No ☒
Is there likely to be an emission to air during construction? Based on the duration of work, the number of emission sources and the scheduling of plant and equipment (i.e. not all machinery would be operating simultaneously), potential emissions affecting air quality are expected to be negligible and would not affect the overall air amenity surrounding the proposal.	Yes ☐	No ☒

Mitigation measures

Mitigation measures to be implemented are:

1. Vessels and plant must be maintained to manufacturer's standards and regular checks made to ensure there are no continuous exhaust emissions
2. Smoky emissions would be kept within the standards and regulations under the POEO Act that no vessel or plant will have continuously smoky emissions for more than 10 seconds.

3.5 Aboriginal cultural heritage

Table 3.17: Aboriginal cultural 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? Lower levels of disturbance are likely as the proposal would be undertaken underwater, on the riverbed.	Yes ☒	No ☐
Has an online Aboriginal Heritage Information Management System (AHIMS) search been completed? A basic AHIMS database search was conducted on 3 September 2024, and available in Appendix E.	Yes ☒	No ☐
Is there potential for the proposal to impact on any items of Aboriginal cultural heritage? The basic AHIMs search identified three Aboriginal Heritage sites within 500 m of the proposal in the Brisbane Water and around ten sites within 500 m of the proposal in the Hawkesbury River. The borehole locations do not interact with the identified heritage sites as they are located onshore on Dangar Island. Due to the distance between the proposed works and the Aboriginal site identified by the AHIMS search and the minor nature of the works, the proposal is not expected to have an impact on the item of Aboriginal cultural heritage. Preliminary heritage advice, including additional mitigation measures on unidentified underwater Aboriginal heritage items, were obtained from Artefact Heritage for the proposal and is available in Appendix F –. **Hawkesbury River:** The potential of the Terrigal Formation to form suitable sandstone outcrops for shelter formations, engraved art, and grinding grooves in the submerged sections of the Hawkesbury River is unknown. Of the five proposed borehole locations at Hawkesbury River, the steeper gradients on the eastern margin of the proposal at BH2013w was identified as potentially the most likely location for suitable sandstone outcrops to occur. All proposed borehole locations in the Hawkesbury River appear to be situated in or on the margins of the main channels and not in protected or sheltered areas that are more likely to protect buried lithic artefact and shell midden sites. Hence, impacts to items of Aboriginal Cultural heritage would be unlikely. **Brisbane Water:** BH2019w at Brisbane Waters is situated towards the centre of the channel between Point Frederick and Noonan Point. Boating charts suggest the channel is broad and gently sloping, with a maximum depth of around 13 – 14 metres. The margins of Brisbane Water in the vicinity of BH2019w consist of Quaternary alluvium, reflecting the relatively gently sloping nature of the area. Therefore, based on the underlying geology and gently gradients at BH2019w, it is unlikely that rock outcrops suitable for shelter formations will be encountered at Brisbane Water, hence impacts to items of Aboriginal Cultural heritage would be unlikely.	Yes ☐	No ☒
Would the proposal involve the removal of mature native trees?	Yes ☐	No ☒
Are the works consistent with the requirements of the Due Diligence Code of Practice for the Protection of Aboriginal Objects in NSW?	Yes ☒	No ☐

Mitigation measures

Mitigation measures to be implemented include:

1. Unexpected archaeological remains or other heritage artefacts encountered during the works will be managed in accordance with an Unexpected Finds Procedure. All works will cease in the vicinity of the find and the GM Environment, Sustainability and Safety would be advised immediately. The Authority's Environment and Sustainability Manager will be contacted for further assessment and notification of Heritage NSW about the discovery of relics in accordance with Section 146 of the *Heritage Act 1974*. The Unexpected Finds Procedure will include actions such as:
    - implementing stop work procedures and exclusion buffers
    - utilising the advice of a qualified archaeologist
    - consultation with Heritage NSW
    - in the event suspected human remains are identified, NSW Police will be immediately notified
    - protocols for continuing work in the areas after assessment.
2. Investigations will not encroach identified areas of Aboriginal Heritage Sensitivity
3. Borehole locations should be moved if sonar sweeps of each area prior indicate the presence of sandstone outcrops, particularly for BH2013w.

3.6 Non-Aboriginal heritage

Table 3.18: Non-Aboriginal heritage

Description of existing environmental and potential impacts		
Have online heritage database searches been completed? • State Heritage Inventory, which includes information about Interim Heritage Orders and heritage places listed on the NSW State Heritage Register, Section 170 Heritage and Conservation registers and Local Environmental Plan(s) Environmental heritage registers. • Australian Heritage Database, which includes information about heritage places listed on the World Heritage List, National Heritage List, Commonwealth Heritage List and Register of the National Estate. • Maritime Heritage Database, which includes information on heritage sites such as Shipwreck and Maritime Heritage Sites • Australasian Underwater Cultural Heritage Database, Department of Climate Change Energy the Environment and Water (DCCEEW), which includes shipwreck and other underwater cultural heritage sites.	Yes ☒	No ☐

Description of existing environmental and potential impacts

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 ☒ No ☐

Hawkesbury River

The borehole locations within the Hawkesbury River falls within area mapped as Sydney Cultural Crescent Rock Art (Place ID 106369), which is listed as a National Heritage item. The Hawkesbury Railway Station group (Brooklyn Railway Platform and Station), listed as a State Heritage and Local heritage item (Listing No.01040) is also located adjacent to the borehole locations. Due to the nature of works and proposed methodology, the proposal would have a negligible impact on the heritage significance of the nominated heritage item.

A search of the State Heritage Register identified Brooklyn (Long Island) Archaeological Site (SHI# 5062614), Hawkesbury River Rail Bridge and Long Island Group (SHI# 4800130) within 100 m of the borehole location at Hawkesbury River.

The locally listed heritage items located within 200 metres of the proposal are on land and include:

- Site of George Peat's Inn (Listing No. A26)
- Peat Island (Listing No. I420)
- Grave of Frances Peat (Listing No. I158)
- Peats Ferry docking point (Listing No. A27)
- Peats Ferry Road bridge (Listing No. A22)
- Kangaroo Point (Listing No. 99) and
- McKell Park, lower, upper, cabbage palms and World War II gun and emplacements (Listing No. A14) (Central Coast Local Environmental Plan 2022).

However, the proposal would be carried out from barges and limited to the waterways, as such impacts to the identified heritage items onshore are unlikely.

Description of existing environmental and potential impacts		
A search of the Maritime Heritage Database and the Australasian Underwater Cultural Heritage Database (DCCEEW, 2024) identified *Minmi* (Site ID 846, Shipwreck ID 1261), a 185 ton wooden lighter, that sank in 1889 at Moorings in Hawkesbury River. The site is protected under *the NSW Heritage Act 1977*. It is unlikely that the proposal would have any direct impacts to the underwater heritage site in Hawkesbury River as it is located around 140 metres from the site and due to the method of works, indirect impacts are unlikely. **Brisbane Water** The borehole location in Brisbane Water also falls within the area identified as Sydney Cultural Crescent Rock Art (Place ID 1063690 which is a place of National Heritage significance. Due to the nature of works and proposed methodology, the proposal would have a negligible impact on the heritage significance of the nominated heritage item. Local Heritage items such as Site of original Gosford Wharf (Listing No. A8), Railway bridge and pylons (Listing No. 50) and Goodawang Wharf and Langley House footings (Listing No. A29) are within 200 m of the nearest borehole location. These identified local heritage items are onshore, and the proposal is unlikely to impact these heritage items.	Yes ☒	No ☐
Is the proposal likely to impact trees that form part of a heritage listing or have other heritage value?	Yes ☐	No ☒
Is the proposal likely to occur in or near features that indicate potential archaeological remains?	Yes ☐	No ☒

Mitigation measures

Mitigation measures to be implemented include:

1. If unexpected archaeological remains are uncovered during the works, all works must cease in the vicinity of the material/find and the steps in the Unexpected Finds Procedure must be followed. The Authority's GM, Environment and Safety must be contacted immediately.
2. Any items of potential heritage conservation significance or human remains discovered during the works will be managed in accordance with an Unexpected Finds Procedure. The unexpected finds procedure will include actions such as:
    - stop work procedures and exclusion buffers
    - utilising the advice of a technical specialist
    - consultation with Heritage NSW
    - protocols for continuing work in the area after assessment.

If any items defined as relics under the *Heritage Act 1977* are uncovered during the works, all works must cease in the vicinity of the find and the GM Environment and Safety will be contacted immediately.

Date: 17/09/2024 Path: C:\Users\almalvej1580\ARCADIS\30229421 - High Speed Rail - GIS\A_Current\B_Maps\PRO_Templates\MapTemplate_Landscape_A3_NSW.aprx\Hawkesbury

Figure 3.6 Historic heritage Hawkesbury River

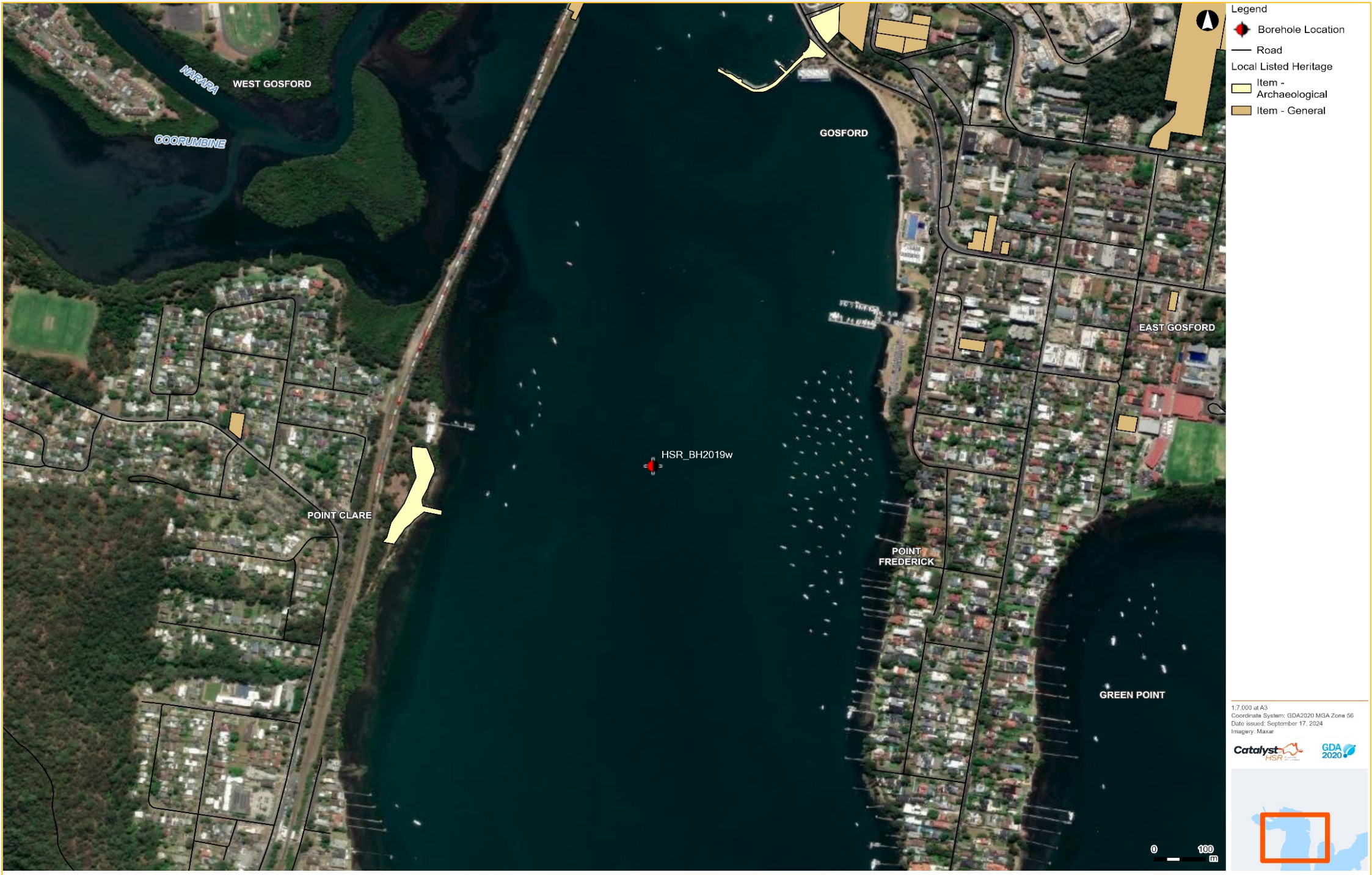


Figure 3.7: Historic heritage Brisbane Water

3.7 Biodiversity

Table 3.19: Biodiversity

Description of existing environmental and potential impacts	
Have relevant database searches been carried out? A review of relevant and publicly available databases, mapping and background information to identify vegetation communities, threatened and migratory species, endangered populations and threatened ecological communities (TECs) (or their habitats) within 10 kilometres of the proposal including: • Department of Climate Change, Energy, the Environment and Water Protected matters Search Tool (DCCEEW PMST, 2024) • Bureau of Meteorology Groundwater Dependent Ecosystems Atlas (GDE BOM,2024) • BioNet Atlas of NSW Wildlife for threatened species records (Office of Environment and Heritage (OEH), 2024) • SEED The Central Resource for Sharing and Enabling Environmental Data in NSW (SEED, 2024) • NSW Planning Portal (NSW DPHI, 2024). • Estuarine Habitat Dashboard (Department of Primary Industries, 2024) • DPI Fisheries NSW Spatial Data Portal, 2024	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 Commonwealth and State listed matters must be considered.	Yes ☒ No ☐

The EPBC Protected Matters Search Tool (PMST) and BioNet Atlas of NSW Wildlife was completed on the 21 July 2024 to identify endangered communities, threatened and/or protected species within the vicinity of the proposed works and is available in Appendix E. The PMST identified potential marine Matters of National Environmental Significance (MNES), protected under the EPBC Act. A desktop Marine Ecology Impact Assessment (Technical Memorandum) was prepared by Earth & Sea Pty Ltd to assess the impacts from the proposal on aquatic ecology and is available in Appendix G.

National Parks, State Forests and Conservation Areas

The investigation sites at Brisbane Water and Hawkesbury River are near areas protected under the NP&W Act (Brisbane Water Historic Site, Brisbane Water National Park, Long Island Reserve, Popran or Spectacle Island, Muogamarra Nature Reserve, Ku-ring-gai Chase National Park). The proposal would be carried out from barges and limited to the waterways only, as such, impacts to the identified NPWS estate onshore are unlikely.

Threatened ecological communities (TECs)

The EPBC Protected Matters Search Tool returned nine TECs within 10 km of the investigation sites in Brisbane Water and Hawkesbury River. Of the listed TECs, *Posidonia australis* seagrass meadows of the Manning-Hawkesbury ecoregion (listed as endangered under the EPBC Act) is the only listed marine community in proximity to the proposal.

The *Posidonia australis* seagrass is approximately 290 m from the proposal (BH2019w) location in Brisbane Water. The Marine Ecology Impact Assessment concluded that although the proposal is in proximity to the identified seagrass, the proposed works would occur outside of the mapped areas and is not anticipated to result in increased suspended sediment or relative deposition on the identified seagrass meadows (see Figure 3.5).

The proposal (BH2013w) in the Hawkesbury River is immediately to the west of a mapped patch of *Zostera* seagrass. The DPI Fisheries NSW Spatial Data Portal and Estuarine Habitat Dashboard also identified an isolated patch of *Zostera* seagrass at Tank Cove, 690 meters northwest of the proposal (BH2013w). The Estuarine Habitat Dashboard also identified a mapped estuarine reef approximately one kilometre from the proposal (BH2012w) to the northwest of Dangar Island (see Figure 3.6). The assessment concluded that neither are likely to be impacted by the proposed works due to their proximity and the minor nature of the works. Additional mitigation measures have been recommended to minimise any potential impacts to the mapped seagrass.

Based on desktop database search, of the broadscale vegetation mapping, four Plant Community Types (PCTs) linked to the TECs listed under the BC Act and/or EPBC Act have the potential to occur near the investigation site at Hawkesbury River and Brisbane Water (see Figure 3.7 and Figure 3.8). Impacts on the PCTs are expected to be negligible as the works would take place on the waterways and no vegetation clearing is proposed.

Threatened flora and fauna

Threatened flora and fauna previously recorded near proposal site (within approximately 200m) have been considered in the table below while records in the broader area (BioNet Atlas) are available in Appendix E.

Scientific and common name	Status *	Type of listing	Distance from works (approximate)	Potential impacts
Stictonetta naevosa **Freckled Duck**	V	BC Act	100 m	No impact on habitat
Lophoictinia isura **Square-tailed Kite**	V	BC Act	140 m	No impact on habitat
Falco subniger **Black Falcon**	V	BC Act	70 m	No impact on habitat
Calyptorhynchus lathami **Glossy Black-Cockatoo**	V	BC Act	110 m	No impact on habitat
Lathumus discolor **Swift Parrot**	E, CE	BC Act, EPBC Act	100 m	No impact on habitat
Artamus cyanopterus cyanopterus **Dusky Woodswallow**	V	BC Act	100 m	No impact on habitat
Saccolaimus flaviventris **Yellow-bellied Sheathtail-bat**	V	BC Act	90 m	No impact on habitat

**V= vulnerable, E = endangered, CE = critically endangered, VEC = vulnerable ecological community EEC = endangered ecological community, CEEC = critically endangered ecological community M = Migratory*

Due to the exclusively marine work scope, terrestrial threatened flora, fauna and TECs that are solely reliant on terrestrial habitats would have negligible impact from the proposal and have not been assessed further.

Threatened aquatic species and populations

A search of the EPBC Act Protected Matters Search Tool on 21 July 2024 within 10km of the investigation site identified two marine TECs (*Posidonia australis* seagrass meadows of the Manning Hawkesbury ecoregion and Subtropical and Temperate Coastal Saltmarsh), five fish (*Seriolella brama* Blue Warehou, *Macquaria australasica* Macquarie Perch, *Prototroctes maraena* Australian Grayling, *Epinephelus daemelii* Black Rockcod, *Hippocampus whitei* White's Seahorse), one marine mammal (*Balaenoptera musculus* Blue Whale) and five marine reptiles (*Caretta caretta* Loggerhead Turtle, *Natator depressus* Flatback Turtle, *Dermochelys coriacea* Leatherback Turtle, *Eretmochelys imbricata* Hawksbill Turtle and *Chelonia mydas* Green Turtle) and one species of Cauliflower soft coral (*Dendronephthya australis*).

The desktop Marine Ecology Impact Assessment identified *Dendronephthya australis* as an important habitat for the endangered White's Seahorse (*Hippocampus whitei)* which is found in 1-15 metre depth range. However, the assessment concluded that the White's Seahorse habitat is unlikely to be present within the proposal area and is unlikely to be impacted by the proposed works.

Migratory species listed under the EPBC Act include six marine mammal, six migratory fish and five migratory reptiles. The *Posidonia australis seagrass* meadows is also a nationally listed ecology community.

The proposal would require minimal level of riverbed disturbance, as such alteration of the threatened species habitat is unlikely to occur.

Key Fish Habitat

The Brisbane Water borehole location is within area mapped as Key Fish Habitat Central Rivers and the Hawkesbury River investigation site is within area mapped as

Description of existing environmental and potential impacts		
Key Fish Habitat Hawkesbury Nepean area. In the upper reaches of the catchments, NSW SEED Dataset portal recorded species of freshwater fish comprising: • Eastern Freshwater Cod (*Macquaria castomaris)* • Eel Tailed Catfish (*Arius graeffei*) • Fitzroy Falls Spiny Crayfish (*Euastacus spinifer*) • Flathead Galaxias (*Galaxias truttaceus*) • Macquarie Perch (*Macquaria australasica*) • Murray Crayfish (*Euastacus armatus*) • Olive Perchlet (*Ambassis macleaya*) • Southern Purple Spotted Gudgeon (*Mogurnda adspersa*) • River Blackfish (*Gadopsis marmoratus*) • Silver Perch (*Bidyanus bidyanus*) • Southern Pygmy Perch (*Nannoperca australis*) • Trout Cod (*Scleropages leichhardti*) • Australian Grayling (*Thymallus australis*) • Darling River Hardyhead (*Craterocephalus fluviatilis*) The identified fish species are primarily freshwater and not likely to be encountered during the proposed works. There are no mapped Marine Protected Areas (MPA) in proximity to the proposal. Although the whole Hawkesbury River area is mapped as key fish habitat, with a number of mapped oyster reefs within the vicinity of boreholes at both Hawkesbury River and Brisbane Water.		
Does the proposal involve pruning, trimming or removal of any tree/s?	Yes ☐	No ☒
Is the proposal likely to impact nationally listed threatened species, ecological communities or migratory species?	Yes ☐	No ☒
Would the proposal require the removal of any other vegetation?	Yes ☐	No ☒
Would the proposal require the removal of any tree hollows?	Yes ☐	No ☒
Are there any known areas of outstanding biodiversity value or areas mapped as ‘littoral rainforest’ or ‘coastal wetland’ under chapter 2 of SEPP (Resilience and Hazards) in or within the vicinity of the proposed work? The Brisbane Water investigation site falls adjacent to area mapped as coastal wetlands, under the State Environmental Planning Policy (SEPP) (Resilience and Hazards) 2021. To the east of the Hawkesbury River investigation site, south of Spectacle Island Reserve is also mapped as Coastal Wetlands and Coastal Wetlands Proximity Area under the SEPP (Resilience and Hazards) 2021.	Yes ☒	No ☐
Would the proposal provide any additional barriers to the movement of wildlife?	Yes ☐	No ☒

Description of existing environmental and potential impacts		
Would the proposal disturb any natural waterways or aquatic habitat? The desktop Marine Ecology Impact Assessment identified *Dendronephthya australis* mapped in Hawkesbury River as an important habitat for the endangered White's Seahorse (*Hippocampus whitei)* which have the potential to occur in 1-15 metre depth range. However, the assessment concluded that the White's Seahorse habitat is unlikely to be present within the proposal area and is unlikely to be impacted by the proposed works.	Yes ☐	No ☒
Would the proposal impact (directly or indirectly) any potential microbat roosting or breeding habitat such as on bridges and culverts?	Yes ☐	No ☒

Mitigation measures

Mitigation measures to be implemented include:

1. There will be no disturbance or damage to threatened species or critical habitat No vessels are to anchor in seagrass at any time.
2. Barges will not be positioned above or moved over seagrass beds (mapped or identified during earlier geophysical investigations) in the Hawksbury River. These areas will be identified and appropriately delineated as "No Go" areas.
3. During the establishment of barges, to avoid potential impacts to Cauliflower Soft Corals (*Dendronephthya australis*) and White's Seahorse (*Hyppocampus whitei*) anchor points must not be dragged across the seabed and fixed via spuds immediately at the four anchor points.
4. The deployment of ropes, anchors, blocks, chains or similar devices will be strictly prohibited within seagrass. Ropes will be permitted only if they are made buoyant with floats.
5. Camera survey at each spud will be completed at each location to avoid potential impacts. If threatened species are identified, boreholes will be relocated to avoid impacts.
6. Vessel motoring and establishment works during low tide will be avoided as much as possible at Brisbane Water due to shallow depth and potential impact to substrate. Motoring and anchoring spuds will be timed to coincide with high tide slack water where possible.
7. Exposure of sediment to air will be limited to avoid oxidation of potential ASS and retain residual sediment for samples in correct receptacles.
8. Boreholes will be cased off and fully contained within to inhibit sediment release.
9. As a backup in the event of the failure of equipment, silt curtains will be on standby in the event of failure of machinery.
10. All staff are to continually lookout for marine fauna during establishment and drilling activities. In the event of marine fauna spotted within the vicinity of works, a specialised marine fauna spotter will be engaged to guide works and ensure no impact to cetaceans, turtles, fish, sharks and rays, particularly to observe the presence of:
    a. Indo-Pacific Bottlenose
    b. Marine Turtle
    c. Grey Nurse Shark
11. Standard penetration testing will be paused in the event of marine fauna sightings, particular cetaceans.
12. There will be no complete blockage of fish passage during the proposed works. Environmental protection measures will be to be implemented (if practical) so that fish passage is maintained in the waterway. These measures will be removed from the site once the site has been stabilised and the risk of sediment movement is minimal.

13. Adequate water depth will be maintained underneath all barges and propellers to ensure that seagrass is not impacted at any time. At least 600 mm clearance will be maintained between the hull and the river bed, and also between the propeller and the river bed. Where adequate clearances beneath barges cannot be maintained at low tide, works will be restricted to high tide conditions.
14. All equipment and materials will need to be cleaned and free from *Caulerpa taxifolia*. Any *Caulerpa taxifolia* removed will be sealed in a plastic bag and placed in general waste *Caulerpa taxifolia* will not be returned to the water.
15. DPIRD Fisheries (1800 043 536) and the Environment Protection Authority (EPA) (131 555) are to be notified immediately if any fish kills occur in the vicinity of the works. In this situation, all works other than emergency response procedures are to cease until the issue is rectified and approval is given by DPIRD Fisheries and/or the EPA for the works to proceed.

Figure 3.5 Brisbane Water Seagrass Mapping

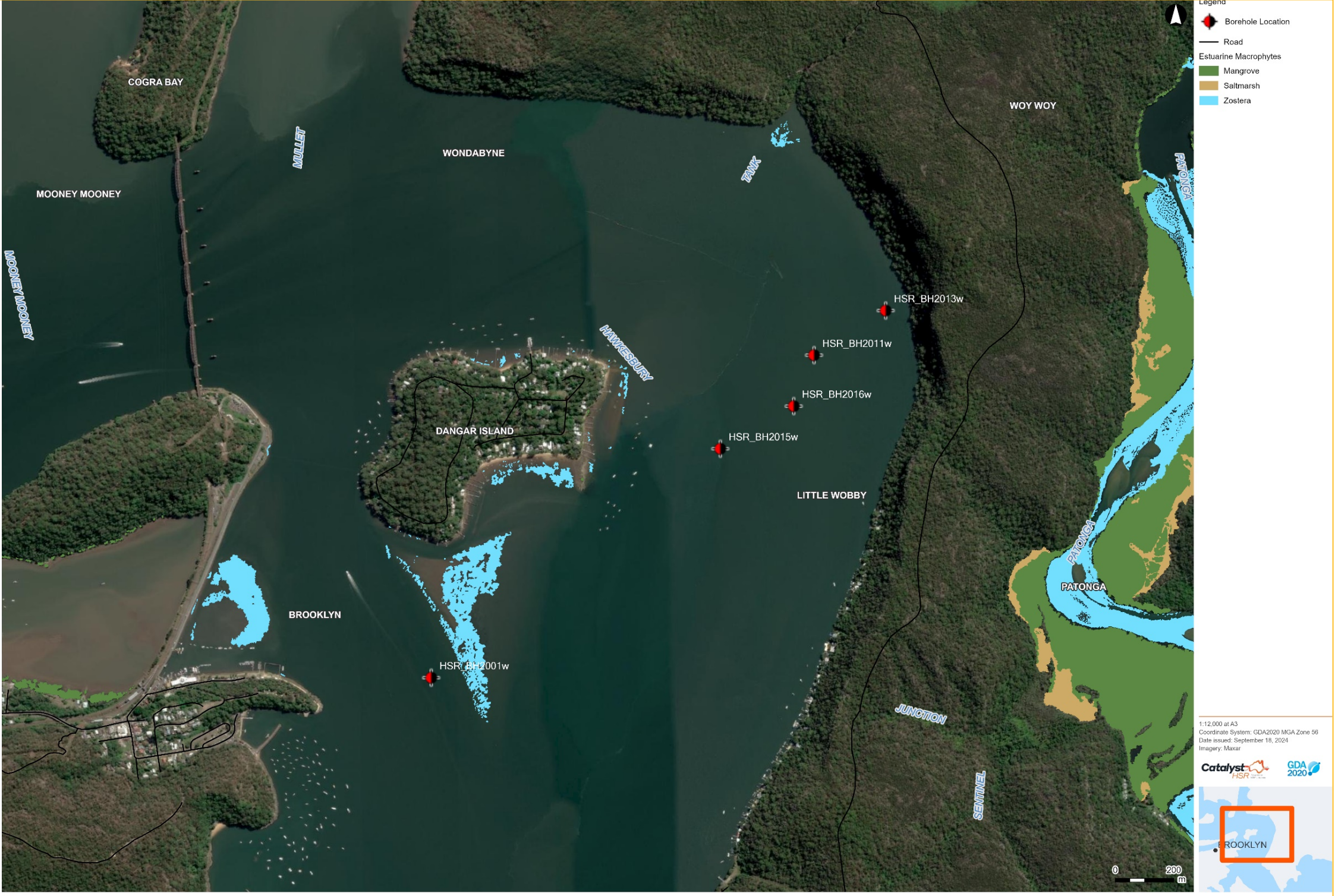


Figure 3.6 Hawkesbury River Seagrass Mapping

Figure 3.7: PCT - Brisbane Water

Figure 3.8: PCT Hawkesbury River

3.8 Traffic and transport

Table 3.20: 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 ☒ No ☐

The proposal would involve mobilisation of barges from Parsley Bay boat ramp in Brooklyn and Koolewong Foreshore Reserve at Koolewong. These ramps, which are open to the public, primarily serve recreational boaters.

The proposal would result in traffic impacts near these locations during the mobilisation of the barges, including:

- delays due to temporary lane and partial road closure
- increased travel times due to reduced road work speed limits
- increased travel distance and time due to detours
- reduced vehicle access to car park and commercial properties
- loss of street and carparking spaces

Parsley Bay boat ramp: Parsley Bay boat ramp is a public area utilised for various recreational boating activities, including fishing and leisure boating. Traffic surrounding the ramp varies, with peak usage during weekends, holidays, and warmer months, leading to potential congestion in the car park and access routes. The surrounding roads include Karoola Street, William Street, and George Street. (refer to Figure 3-9).

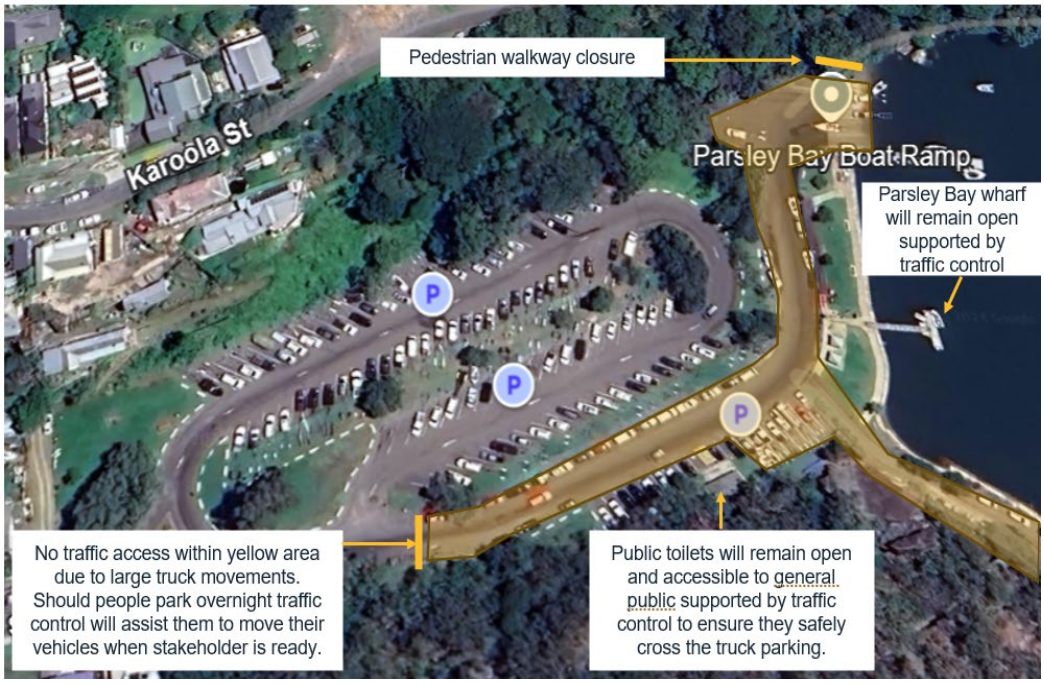


Figure 3.9: Parsley Bay boat ramp traffic impacts

Description of existing environmental and potential impacts

The proposed truck access route would be via the M1 Pacific Highway to Mooney Mooney Brooklyn (BB3) and then to Parsley Bay boat ramp via George Street. During the mobilisation period, a temporary closure of the south end of the car park at George Street is proposed. This would also result in the loss of approximately 40 public parking spaces. Temporary restriction to vehicle access to the commercial property (The Floating Oyster Wine Bar) would also occur during the mobilisation.

Pedestrian access to the Great North Walk is located at 9 William St, Brooklyn, around 150 metres south west from the proposed temporary street closure at George Street. Pedestrian access to the track would be maintained throughout the duration of the proposal.

Koolewong Waterfront Boat Ramp: The Koolewong Foreshore Reserve situated on Brisbane Water primarily caters to recreational boaters. Access to the ramp would be via Brisbane Water Drive. During the mobilisation of the barge at Koolewong, the goods dock and the southeast corner of the car park would be occupied and would result in the temporary loss of 23 car parking spaces, including three accessible parking, for approximately two days (refer to Figure 3-10). While the boat ramp itself would not be impacted, only the loading dock and the parking would be impacted temporarily. There would be minor disruption south bound traffic on Brisbane Water Drive due to reduction in speed, which may result in potential delay to road users.

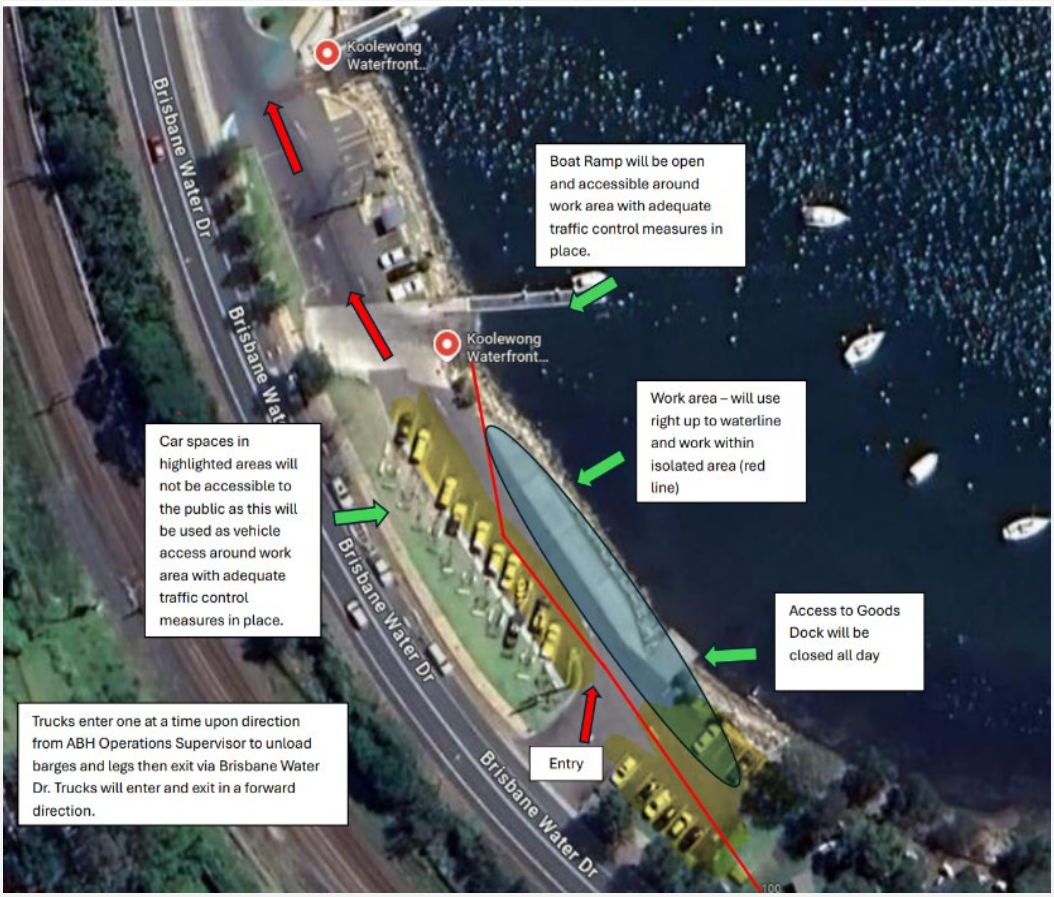


Figure 3.10: Koolewong Foreshore Reserve traffic impacts

Description of existing environmental and potential impacts		
Central Coast Council and Hornsby Shire Council have been notified and consulted for the boat ramp, street and car park closures. Residential properties along George Street would be given a seven-day notification period (door knock) to advise of the proposed closure. Additional mitigation measures such as signage and traffic control will be implemented during this time. While there are impacts to road, carpark and boat ramp users, the impacts would be short-term as it would be limited to the mobilisation period and would be managed by the additional mitigation measures listed. Once the proposal is complete at Hawkesbury River, demobilisation of the barges would occur at Parsley Bay boat ramp, Brooklyn. Similar to the mobilisation stage, vehicles carrying the barges would exit Brooklyn carpark through George Street. A part of the street near the boat ramp would remain temporarily closed for approximately four days, to manage safety for workers, road users and pedestrians. A temporary closure of the south end of the car park at George Street would also be required for demobilisation which would result in the loss of approximately 40 public parking spaces temporarily. Alternatively, demobilisation may also occur at Long Island boat ramp/ wharf currently managed by Sydney Trains to reduce community impacts at Parsley Bay. The boat ramp would also be closed to the users for a period of four days. However, use of the boat ramp at Long Island would be subject to Sydney Trains stakeholder consultation and approval. There is also potential for minor disruptions to marine traffic which include both commercial and recreational activities such as Hawkesbury River ferries operating between Brooklyn, Dangar Island and other locations, commercial vessels, recreational boating, houseboats, tourist cruises. Impacts to existing marine traffic would be managed through the ABH Marine Traffic Management Plan (refer to Appendix I) to ensure vessel traffic within Hawkesbury River and Brisbane Water is not adversely impacted by the proposal activities.		
Is the proposal likely to result in detours or disruptions to traffic flow (vehicular, cycle and pedestrian) or access 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? A review of the Hawkesbury River, Pittwater, and Brisbane Water Regional Boating Plan (TfNSW, 2015) indicates that the Hawkesbury River is a popular waterway due to its diverse usage and proximity to Sydney and the Central Coast. The plan identifies conflicts arising including boat ramp congestion, noise and conflicts associated with the generation of excessive wake. Key activities on the lower reaches of the river include power boating, recreational fishing, water skiing and wakeboarding, house boating, sailing, kayaking, canoeing, and swimming. The timing of the duration of the proposal would be managed to avoid interference with regular ferry and marine traffic. Additionally, works would only occur for a short duration at any one time, minimising any potential disruption to waterway operations.	Yes ☐	No ☒

Mitigation measures

Mitigation measures to be implemented include:

2. A Traffic Management Plan (TMP) will be prepared and implemented for the Project. The TMP will be prepared in accordance with the Transport for NSW *Traffic Control at Work Sites Manual* (RTA, 2010) and *QA Specification G10 Control of Traffic* (Transport for NSW, 2008). The TMP will include:
    - measures to maintain access to local roads and properties
    - Site specific traffic control measures (including signage) to manage and regulate traffic movement
    - measures to maintain pedestrian and cyclist access, including access to the Great North Walk
    - requirements and methods to consult and inform the local community of impacts on the local road network
    - access to mobilisation areas (boat ramps) and measures to prevent vehicles queuing on public roads
    - a response plan for any construction traffic incident
3. Key stakeholders (such as The Floating Oyster Wine Bar) will be notified prior to the activity to identify traffic and/or transport impacts.

Closure of Public boat ramps Parsley Bay and Koolewong Foreshore Reserve will be limited to Monday to Thursday, as well as outside of school and public holidays.

3.9 Socio-economic

Table 3.21: Socio-economic

Description of existing environmental and potential impacts		
Is the proposal likely to impact on local business? Temporary closure of the boat ramp and a portion of carpark at George Street, Brooklyn would be required during mobilisation (for approximately 2 days) and demobilisation (for approximately 4 days) of the barges at Parsley Bay boat ramp. Parking for Floating Oyster Wine Bar, a local business at Parsley Bay, George Street would be impacted during the temporary closure. Notification as a part of the consultation process would be undertaken to notify the business of the potential impacts. Impacts to the business would therefore be minimal and temporary in nature due to the duration of the closure and alternative access and parking being maintained for customers Aquaculture operations such as oyster farms are located approximately 700 metres north of the proposal (BH2013w) and one kilometre north past Mullet Creek at the Hawkesbury River, which may experience some degree of water quality impacts from the proposal, during riverbed disturbance. There is potential for sediment mobilisation to occur from these activities and may affect water clarity and quality, both which are critical for the health and productivity of aquaculture operations. However, the impacts to the aquaculture operations is expected to be minimal, localised and temporary as well as managed by the mitigation measures described in section 3.1. Additionally, businesses that are potentially impacted would be consulted and notified prior to the commencement of the proposal.	Yes	No
Is the proposal likely to require any property acquisition?	Yes ☐	No ☒
Is the proposal likely to alter any access for properties (either temporarily or permanently)? Access to local business such as the Floating Oyster Wine Bar will be maintained throughout duration of the proposal and impacted businesses would be notified prior to the commencement of the proposal.	Yes ☒	No ☐

Description of existing environmental and potential impacts		
Is the proposal likely to alter any on-street parking arrangements (either temporarily or permanently)? The proposal would involve mobilising the barges from Parsley Bay boat ramp, Mooney Mooney and Koolewong Foreshore Reserve at Koolewong. Due to safety requirements and the size of the barges, the boat ramps would need to be temporarily closed for approximately one to two days at Parsley Bay. During the mobilisation period at Parsley Bay boat ramp, a temporary closure of the south end of the car park at George Street is proposed. This would also result in the loss of approximately 40 street carparking spaces. Temporary restriction to vehicle access to the commercial property (The Floating Oyster Wine Bar) would also occur during this time. Similarly, the proposal would also require the southern end of the car park at Koolewong to be closed off to the public temporarily, which would result in approximately 23 car park spaces being unavailable for approximately two days. Once the barges are mobilised, the carpark would be made available for public use. Impacts to parking would be temporary during the mobilisation and have been addressed in the Traffic Management Plan. Central Coast Council and Hornsby Shire Council were notified and consulted. The closures would be scheduled for weekdays only to allow public use during the weekend. Additional mitigation measures such as signage and traffic control as listed in Section 3.8 would be implemented during this time.	Yes ☒	No ☐
Is the proposal likely to change pedestrian movements or pedestrian access (either temporarily or permanently)? Pedestrian access would be maintained throughout the duration of the proposal. Traffic controllers would be in place for the safety of workers, road users and pedestrian movements.	Yes ☐	No ☒
Is the proposal likely to impact on any items or places of social value to the community (either temporarily or permanently)? The proposal would be undertaken in the vicinity of areas of world heritage significance and scenic value, where the waterways are used by the public for recreation, travel, agriculture and tourism. Due to the non-intrusive nature and short-term duration of works at any one location, the impacts are expected to be negligible. The waterways are already in existing use and experiences marine traffic, as such the proposal would not significantly impact the areas scenic or heritage significance.	Yes ☒	No ☐
Is the proposal likely to reduce or change visibility of any businesses, farms, tourist attractions or the like (either temporarily or permanently)?	Yes ☐	No ☒
Is the proposal likely to impact trees planted by a community group, Landcare group or by council or a tree that is a memorial or part of a memorial group e.g., has a plaque?	Yes ☐	No ☒
Is the proposal likely to impact trees that form part of a streetscape, an avenue or roadside planting?	Yes ☐	No ☒

Mitigation Measures

Mitigation measures to be implemented include:

1. Oyster growers with leases within 2 kilometres of the worksite will be informed of the proposed works, and works will be timed to avoid impacting oyster aquaculture activities such as, but not limited to, spat collection periods.
2. Consultation will be undertaken with local fisheries cooperatives regarding the proposed works. Where possible, works will be timed to avoid impacting licensed commercial fishing activities.
3. Pedestrian access will be maintained throughout the duration of the proposal. Traffic controllers will also be in place for the safety of workers, road users and pedestrian movements.

3.10 Landscape character and visual amenity

Table 3.22: Landscape character and visual amenity

Description of existing environmental and potential impacts		
Is the proposed work over or near an important physical or cultural element or landscape? (For example, heritage items and areas, distinctive or historic built form, National Parks, conservation areas, scenic highways etc.) The proposal would be undertaken within the scenic areas of the Lower Hawkesbury River and Brisbane Water. The borehole locations would be in areas with heritage significance and scenic value, where waterways are used by the public for recreation, travel, agriculture and tourism. However, due to the short-term duration of works, the impacts are expected to be negligible. The waterways at the investigation site are currently in use and experience marine traffic. Therefore, the proposal would not significantly impact the area's scenic or heritage significance.	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) The proposal may have minor impacts on the views of a valued landscape area as the barges would operate in open waterway. However, due to the short-term duration (up to 3 weeks) of the works, the impacts on the character or views of these valued landscapes are expected to be negligible.	Yes ☒	No ☐
Would the proposal require the removal of mature trees or stands of vegetation, either native or introduced?	Yes ☐	No ☒
Would the proposal result in large areas of shotcrete visible from the road or adjacent properties?	Yes ☐	No ☒
Would the proposal involve new noise walls or visible changes to existing noise walls?	Yes ☐	No ☒
Would the proposal involve the removal or reuse of large areas of road or rail corridor, landscape, either verges or medians?	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?	Yes ☐	No ☒
If involving lighting, would the proposal create unwanted light spillage on residential properties at night (in construction or operation)? Lighting equipment may be required for the proposal during OOHW (evening). However, the lighting equipment would be directed away from residential dwellings.	Yes ☐	No ☒
Would any new structures or features to be constructed, result in over shadowing to adjoining properties or areas?	Yes ☐	No ☒

Mitigation measures

Mitigation measures to be implemented are:

1. Barges and mobilisation areas (boat ramps) are to be maintained, kept free of rubbish and cleaned up at the end of each working day.
2. Site lighting (including lighting on barges) would be positioned to minimise light spill impacts on adjacent properties and be directed away from shoreline dwellings.

3.11 Waste

Table 3.23: 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)? The proposal is not expected to create greater than 200 tonnes of waste material. The waste material generated would be soil and sediment from the drilling and sampling. No waste material stockpiling would be required as part of this proposal. All waste would be disposed of at appropriately licensed waste facilities. Waste material would be tested in accordance with the NSW EPA Waste Classification Guidelines prior to being disposed.	Yes ☐	No ☒
Is the proposal likely to require a licence from EPA?	Yes ☐	No ☒
Is the proposal likely to require the removal of asbestos?	Yes ☐	No ☒

Mitigation measures

Mitigation measures to be implemented include:

1. Resource management hierarchy principles are to be followed (in accordance with the *Waste Avoidance and 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.

2. Waste material is to be reused in accordance with any waste exemptions or disposed of legally in accordance with its waste classification.

3.12 Climate change and greenhouse gas emissions

Table 3.24: Climate change and greenhouse gas emissions

Description of existing environmental and potential impacts		
Is the proposal located in an area likely to be permanently or tidally inundated in the future or subject to increased duration and intensity of flooding?	Yes ☐	No ☒
Have opportunities for reduced energy consumption during construction and operation been considered. Due to the minor and temporary nature of the works, energy consumption for the proposal is minimal. Mitigation measures for avoiding idling equipment are proposed to reduce the energy consumption and reduce carbon footprint. No ongoing energy consumption is required for the proposal.	Yes ☒	No ☐

Mitigation measures

Mitigation measures to be implemented include:

1. Plant and equipment must be switched off when not in use.

3.13 Cumulative impact

Table 3.25: Cumulative impact

Description of existing environmental and potential impacts		
Are there other projects and developments in the study area which could add to potential impacts in both construction and operation? A search of the following websites was undertaken on 16 September 2024 to determine if any major projects or large developments were proceeding or planned to proceed within close proximity of the proposal: • Major project portal (DPHI, 2024) • Current projects (TfNSW, 2024) • Major projects (Hornsby Shire Council, 2024) • Major projects (Central Coast Council, 2024) Based on this search, there are no known major projects or large development works proceeding or planned to proceed within 1 kilometre of the proposal. No significant cumulative impacts as a result of the proposal are expected.	Yes ☐	No ☒

Mitigation measures

Mitigation measures to be implemented include:

- Plant and equipment must be switched off when not in use

4. Summary of mitigation and environmental management measures

4.1 Mitigation and environmental management measures

This section provides a summary of the site-specific environmental mitigation measures and management measures identified in described in chapter 3 of this minor works REF. These mitigation measures will be implemented to reduce potential environmental impacts throughout the proposal.

Table 4.26: Summary of site-specific mitigation measures for the proposal

Factor	ID	Mitigation measures
General	1	A Health, Security and Environment (HSSE) plan and Marine Works Management Plan (MWMP) will be developed for the proposal, supporting the overall Principal Contractor Work Health and Safety Management Plan.
Soil	2	If contaminated areas are encountered during investigations, appropriate control measures will be implemented to manage the immediate risks of contamination. All other works that may impact on the contaminated area will cease until the nature and extent of the contamination has been confirmed and any necessary site-specific controls or further actions are identified.
	3	An Unexpected Finds Procedure will be implemented to manage any hazardous materials such as potential contaminants and asbestos in soil or olfactory and/ or visual signs of potential contamination if encountered.
Waterways and water quality	4	There is to be no release of dirty water into waterways.
	5	Visual monitoring of local water quality (i.e. turbidity, hydrocarbon spills/slicks) is to be undertaken on a regular basis to identify any potential spills
	6	Vessels 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
	7	A marine emergency spill kit is to be kept on site at all times and maintained throughout the duration of the proposal. The spill kit must be appropriately sized for the volume of substances used.
	8	Spill kits for construction survey vessels must be specific for working within the marine environment.
	9	All workers will be advised of the location of the spill kit and trained in its use.
	10	Vessels must be properly maintained and regularly inspected for fluid leaks especially for any casings and hydraulic arms.
	11	Emergency contacts will be kept in an easily accessible location in vehicles or vessels. All workers will be advised of these contact details and procedures.

Factor	ID	Mitigation measures
	13	All equipment onboard with the potential to leak will be bunded to manage spills on the deck. All bunding will be at 1.5 times the capacity of the equipment.
	14	Erosion and sediment mitigation devices will be erected (if practical) in a manner consistent with current Best Management Practice (*Managing Urban Stormwater: Soils and Construction 4th Edition Landcom, 2004*) to prevent entry of sediment into the waterway prior to any earthworks being undertaken. These will be maintained in good working order for the duration of the works and subsequently until the site has been stabilized and the risk of erosion and sediment movement from the site is minimal.
	15	Any material removed from the waterway, which is to be temporarily deposited or stockpiled on land, will be located well away from the waterway and will be contained by appropriate erosion and sediment control devices.
	16	Machinery other than those required, will not enter or work from the waterway unless in accordance with the proposed works.
	17	Prior to use at the site and/or entry into the waterway, machinery is to be appropriately cleaned degreased and serviced.
	18	Works are to be undertaken during low flows in the waterway.
	19	Consultation will be undertaken with local fisheries cooperatives regarding the proposed works. Where possible, works will be timed to avoid impacting licensed commercial fishing activities
Noise and vibration	20	All works are to be carried out between Monday-Friday: 7:00am to 6.00pm, Saturday: 7.00am to 6.00pm, and every alternate Sunday: 7:00am to 6:00pm. No works are to be undertaken on Public Holidays. Any works outside these hours may be undertaken if approved by The Authority and following consultation with community prior to works commencing.
	21	Any vehicles arriving at boat ramps or car parking areas for barge mobilisation must be parked and switched off until approved work hours commence.

Factor	ID	Mitigation measures
	22	The following measures will be implemented during the proposal: • regularly training workers and contractors (such as at the site induction and toolbox talks) on the importance of minimising noise emissions and how to use equipment in ways to minimise noise • avoiding unnecessary noise when carrying out manual operations and when operating plant or equipment • avoiding/limiting simultaneous operation of noisy plant or equipment with discernible range of a sensitive receiver where practical. • switching off any equipment not in use for extended periods of time • no idling of delivery trucks • keeping truck drivers informed of designated routes, parking locations and acceptable delivery hours for the site. • minimising talking loudly; no swearing or unnecessary shouting, or loud stereos/radios onsite; no dropping of materials from height where practicable, no throwing of metal items and slamming of doors
	23	Minimising talking loudly; no swearing or unnecessary shouting, or loud stereos/radios onsite; no dropping of materials from height where practicable, no throwing of metal items and slamming of doors
	24	Traffic controllers will be onsite to assist heavy vehicle drivers navigating the area and for the safety of all road users and pedestrians.
Air quality	25	Vessels and plant must be maintained to manufacturer's standards and regular checks made to ensure there are no continuous exhaust emissions
	26	Smoky emissions would be kept within the standards and regulations under the POEO Act that no vessel or plant will have continuously smoky emissions for more than 10 seconds
Aboriginal Heritage	27	Unexpected archaeological remains or other heritage artefacts encountered during the works will be managed in accordance with an Unexpected Finds Procedure. All works will cease in the vicinity of the find and the GM Environment, Sustainability and Safety would be advised immediately. The Authority's Environment and Sustainability Manager will be contacted for further assessment and notification of Heritage NSW about the discovery of relics in accordance with Section 146 of the *Heritage Act 1974*. The Unexpected Finds Procedure will include actions such as: • implementing stop work procedures and exclusion buffers • utilising the advice of a qualified archaeologist • consultation with Heritage NSW • in the event that suspected human remains are identified, NSW Police will be immediately notified • protocols for continuing work in the areas after assessment.

Factor	ID	Mitigation measures
	28	Investigations will not encroach identified areas of Aboriginal Heritage Sensitivity
	29	Borehole locations should be moved if sonar sweeps of each area prior indicate the presence of sandstone outcrops, particularly for BH2013w.
Non-Aboriginal heritage	30	If unexpected archaeological remains are uncovered during the works, all works must cease in the vicinity of the material/find and the steps in the Unexpected Finds Procedure must be followed. The Authority's GM, Environment and Safety must be contacted immediately.
	31	Any items of potential heritage conservation significance or human remains discovered during the works will be managed in accordance with an Unexpected Finds Procedure. The unexpected finds procedure will include actions such as: • stop work procedures and exclusion buffers • utilising the advice of a technical specialist • consultation with Heritage NSW • protocols for continuing work in the area after assessment.
	32	If any items defined as relics under the *Heritage Act 1977* are uncovered during the works, all works must cease in the vicinity of the find and the GM Environment and Safety will be contacted immediately.
Biodiversity	33	There will be no disturbance or damage to threatened species or critical habitat. No vessels are to anchor in seagrass at any time.
	34	Barges will not be positioned above or moved over seagrass beds (mapped or identified during earlier geophysical investigations) in the Hawksbury River. These areas will be identified and appropriately delineated as "no go" areas.
	35	During the establishment of barges, to avoid potential impacts to Cauliflower Soft Corals (*Dendronephthya australis*) and White's Seahorse (*Hyppocampus whitei*) anchor points must not be dragged across the seabed and fixed via spuds immediately at the four anchor points.
	36	The deployment of ropes, anchors, blocks, chains or similar devices will be strictly prohibited within seagrass. Ropes will be permitted only if they are made buoyant with floats.
	37	Camera survey at each spud will be completed at each location to avoid potential impacts. If threatened species are identified, boreholes will be relocated to avoid impacts.
	38	Vessel motoring and establishment works during low tide will be avoided as much as possible at Brisbane Water due to shallow depth and potential impact to substrate. Motoring and anchoring spuds will be timed to coincide with high tide slack water where possible.

Factor	ID	Mitigation measures
	39	Exposure of sediment to air will be limited to avoid oxidation of potential ASS and retain residual sediment for samples in correct receptacles.
	40	Boreholes will be cased off and fully contained within to inhibit sediment release.
	41	As a backup in the event of the failure of equipment, silt curtains will be on standby in the event of failure of machinery.
	42	All staff are to continually lookout for marine fauna during establishment and drilling activities. In the event of marine fauna spotted within the vicinity of works, a specialised marine fauna spotter will be engaged to guide works and ensure no impact to cetaceans, turtles, fish, sharks and rays, particularly to observe the presence of: • Indo-Pacific Bottlenose • Marine Turtle • Grey Nurse Shark
	43	Standard penetration testing will be paused in the event of marine fauna sightings, particular cetaceans. There is to be no disturbance or damage to threatened species or critical habitat.
	42	There will be no complete blockage of fish passage during the proposed works. Environmental protection measures will be to be implemented (if practical) so that fish passage is maintained in the waterway. These measures will be removed from the site once the site has been stabilised and the risk of sediment movement is minimal.
	43	Adequate water depth will be maintained underneath all barges and propellers to ensure that seagrass is not impacted at any time. At least 600 mm clearance will be maintained between the hull and the river bed, and also between the propeller and the river bed. Where adequate clearances beneath barges cannot be maintained at low tide, works will be restricted to high tide conditions.
	44	All equipment and materials will need to be cleaned and free from *Caulerpa taxifolia*. Any *Caulerpa taxifolia* removed will be sealed in a plastic bag and placed in general waste *Caulerpa taxifolia* will not be returned to the water.
	45	DPIRD Fisheries (1800 043 536) and the Environment Protection Authority (EPA) (131 555) are to be notified immediately if any fish kills occur in the vicinity of the works. In this situation, all works other than emergency response procedures are to cease until the issue is rectified and approval is given by DPIRD Fisheries and/or the EPA for the works to proceed.
Traffic and transport	46	A Traffic Management Plan (TMP) will be prepared and implemented for the Project. The TMP will be prepared in accordance with the Transport for NSW *Traffic Control at Work Sites Manual* (RTA, 2010) and *QA Specification G10 Control of Traffic* (Transport for NSW, 2008). The TMP will include:

Factor	ID	Mitigation measures
		• measures to maintain access to local roads and properties • Site specific traffic control measures (including signage) to manage and regulate traffic movement • measures to maintain pedestrian and cyclist access, including access to the Great North Walk • requirements and methods to consult and inform the local community of impacts on the local road network • access to compound and laydown sites and measures to prevent construction vehicles queuing on public roads • a response plan for any construction traffic incident
	47	Key stakeholders (such as The Floating Oyster Wine Bar) will be notified prior to the activity to identify traffic and/or transport impacts
	48	Closure of Public boat ramps Parsley Bay and Koolewong Foreshore Reserve will be limited to Monday to Thursday, as well as outside of school and public holidays.
Socio economic	49	Oyster growers with leases within 2 kilometres of the worksite will be informed of the proposed works, and works will be timed to avoid impacting oyster aquaculture activities such as, but not limited to, spat collection periods.
	50	Consultation will be undertaken with local fisheries cooperatives regarding the proposed works. Where possible, works will be timed to avoid impacting licensed commercial fishing activities
	51	Pedestrian access will be maintained throughout the duration of the proposal. Traffic controllers will also be in place for the safety of workers, road users and pedestrian movements.
Landscape character and visual amenity	52	Barges and mobilisation areas (Boat Ramps) are to be maintained, kept free of rubbish and cleaned up at the end of each working day.
	53	Site lighting (including lighting on barges) would be positioned to minimise light spill impacts on adjacent properties and be directed away from shoreline dwellings.
Waste	54	Resource management hierarchy principles are to be followed (in accordance with the *Waste Avoidance and 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.
	55	Waste material is to be reused in accordance with any waste exemptions or disposed of legally in accordance with its waste classification.

Factor	ID	Mitigation measures
Climate change	56	Plant and equipment must be switched off when not in use

4.2 Licensing and approvals

Table 4.27: Summary of licensing and approvals required

Instrument	Requirement	Timing
Marine Safety Act 1998 (s11)	An impact to Navigation Commercial Development or Works Application is required prior to the commencement of the proposal.	Prior to start of the activity.
Crown Land Management Act 2016 (Divisions 3.4, 5.5 and 5.6)	Lease or licence to occupy areas of Crown land.	Prior to start of the activity.
Roads Act 1993	A Road Occupancy License (ROL) is required as approval to use Brisbane Water Drive for vehicle access into Koolewong Foreshore Reserve carpark.	Prior to start of the activity.

5. Certification, review and determination

5.1 Certification

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

Prepared by:

Signature 

Name: Pujyata Karmacharya
Position: Environmental Consultant
Company name: Catalyst
Date: 16 October 2024

Minor works REF reviewed by:

Signature 

Name: Alex McDonald
Position: Environment and Sustainability Manager
Company name: Catalyst
Date: 16 October 2024

5.2 Environment and sustainability staff review

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

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

The proposal described in this minor works REF would have some environmental impacts which can be ameliorated satisfactorily. Having regard to the mitigation measures 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 would not affect areas of outstanding value. The activity described in the minor works REF would 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 of the activity on matters of national environmental significance and any impacts on the environment of Commonwealth land and concluded that there would be no significant impacts. Therefore, there is no need for a referral to be made to the Australian Government Department of Climate Change, Energy, the Environment and Water for a decision by the Commonwealth Minister for the Environment on whether assessment and approval is required under the Environment Protection and Biodiversity Conservation Act 1999.

The minor works REF is considered to meet all relevant requirements.

5.3 Environment and Sustainability staff recommendation

It is recommended that the proposal to drill of six marine geotechnical boreholes in the Hawksbury River and Brisbane Waters as described in this minor works REF proceed subject to the implementation of all mitigation measures 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 in accordance with the EP&A Act, EP&A Regulation and the Guidelines approved under clause 170 of the EP&A Regulation. The minor works REF has 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 would be no significant impacts on matters of national environmental significance or any impacts on the environment of Commonwealth land.

If the proposal has not commenced within two years of the determination date the SMES must be consulted to identify any new or updated assessment or approval requirements.

Recommended by:
Signature Greg Byrnes
Name: Greg Byrnes
Position: General Manager Safety, Environment and Sustainability, HSRA
Date: 16 October 2024

5.4 Decision statement

In accordance with the above recommendation, I certify that I have reviewed and endorsed the contents of this minor works REF, and to the best of my knowledge, it is in accordance with the EP&A Act, the EP&A Regulation and the Guidelines approved under Section 170 of the EP&A Regulation, and the information is neither false nor misleading.

I determine that The Authority may:

b. proceed with the activity
~~c. [not proceed with the activity as the environmental impacts are not acceptable] or~~
~~d. [not proceed with the activity as a project REF is required.]~~

Signature
Name: Tim Parker
Position: Chief Executive Officer, High Speed Rail Authority
Date: 17/10/2024

5.5 EP&A Regulation publication requirement

Table 5.28: EP&A Regulation publication requirement

Requirement		
Does this minor works REF need to be published under section 171(4) of the EP&A Regulation?	Yes ☒	No ☐

5.6 Definitions

Table 5.29: Definitions

Term	Definition
AHIMS	Aboriginal Heritage Information Management System
BC Act	*Biodiversity Conservation Act 2016 (NSW)*
DPHI	*NSW Department of Planning, Housing and Infrastructure*
EP&A Act	*Environmental Planning and Assessment Act 1979 (NSW)*
EP&A Regulation	Environmental Planning and Assessment Regulation 2021
EPBC Act	*Environment Protection and Biodiversity Conservation Act 1999 (Commonwealth)*
FM Act	*Fisheries Management Act 1994* (NSW)
HSR	High Speed Rail
HSRA	High Speed Rail Authority
LEP	Local Environmental Plan
OOHW	Out of hours work
REF	Review of Environmental Factors
SEED	Sharing and Enabling Environmental Data (online NSW data resource)
SEPP	State Environmental Planning Policy
SPT	Standard penetration tests
TEC	Threatened ecological communities
TfNSW	Transport for NSW
U75	Push tube sample with 75mm diameter

Appendix A – Consideration of State and Commonwealth environmental factors

Environmental Planning and Assessment Regulation 2021 section 171(2) factors

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

Table A1: Consideration of section 171 of the EP&A Regulation factors

Factor	Description of impact	Duration and extent
Environmental impact on the community.	The proposal may cause minor short-term environmental impacts on the community, such as potential disruption to traffic and noise impacts on residents, however, the potential impacts would be minimised with the implementation of the mitigation measures as detailed in this REF.	Short-term, negative (minor), temporary.
The transformation of the locality.	The proposal would not transform the locality, as works would generally be contained within the waterway and not result in any permanent impacts.	Short-term, negative (minor), temporary.
Any environmental impact on the ecosystems of the locality.	The proposal would involve works within the Hawkesbury River and Brisbane Water including disturbance of the river beds in six small areas due to the boreholes. Mitigation measures have been identified to minimise impacts from the proposal on the aquatic ecosystem. The potential impacts to ecosystems from the works would be minimal and temporary.	Short-term, negative (minor), temporary.
Any reduction of the aesthetic, recreational, scientific or other environmental quality or value of a locality.	The proposal would not result in any long-term aesthetic, recreational, scientific or other environmental quality or value of a locality. The proposal would involve the presence of barges in Hawkesbury River and Brisbane Water for about three months which would have localised	Short-term, negative (minor), temporary.

Factor	Description of impact	Duration and extent
	impacts on visual amenity and vessel navigation. After completion of the works, the boreholes would be reinstated. Mitigation measures have been identified to minimise and avoid impacts from the proposal.	
Any effect on any locality, place or building having aesthetic, anthropological, archaeological, architectural, cultural, historical, scientific or social significance or other special value for present or future generations.	The proposal is unlikely to have an effect on a locality, place or building of significance or other special value for present or future generations as the proposal would be temporary and the potential impacts would be minor and short-term. The disturbed borehole location would be reinstated after completion of the works.	Nil
Any impact on the habitat of protected fauna (within the meaning of the *Biodiversity and Conservation Act 2016*).	The proposal is not likely to have any significant impacts on the protected fauna. The proposal would involve disturbance of small areas of the river bed. However this would not inhibit the movement of marine fauna species and the disturbance of the river bed would be minimal and temporary. mitigation measures have been identified to minimise the impact on marine habitat and species.	Short-term, negative (minor), temporary.
Any endangering of a species of animal, plant or other form of life, whether living on land, in water or in the air.	The proposal is unlikely to endanger any species of animal, plant, or other form of life, whether living on land, in water or in the air due to the small scale and temporary nature of the proposal and the implementation of the mitigation measures identified in this REF.	Nil
Any long-term effects on the environment	There are no anticipated negative long-term effects on the environment from the proposal due to the small scale and temporary nature of the works and the implementation of the mitigation measures identified in this REF.	Nil
Any degradation of the quality of the environment.	The proposal would not degrade the quality of the environment. The potential impacts from the proposal would be minimised with the	Short-term, negative (minor), temporary.

Factor	Description of impact	Duration and extent
	implementation of the mitigation measures identified in this REF.	
Any risk to the safety of the environment.	The proposal would have minimal risk to the safety of the environment due to the small scale and temporary nature of the works and the implementation of the mitigation measures identified in this REF.	Short-term, negative (minor), temporary.
Any reduction in the range of beneficial uses of the environment.	The proposal would cause a minor reduction in the use of Hawkesbury River and Brisbane Water, as the presence of the works would restrict navigation of vessels in a small area during the works. There would be no long-term reduction in the range of beneficial uses of the environment as a result of the proposed works.	Short-term, negative (minor), temporary.
Any pollution of the environment.	The proposal would result in minor emissions from plant and equipment, and would disturb waterway sediments. However the impacts would be minimised by the selected proposal methodology, and with the implementation of the mitigation measures identified in this REF.	Short-term, negative (minor), temporary.
Any environmental problems associated with the disposal of waste	The waste generated by the proposal would be contained and transferred for disposal to an appropriately licensed waste facilities in accordance with the mitigation measures in this REF. No environmental problems are anticipated for the disposal of waste	Nil
Any increased demands on resources (natural or otherwise) that are, or are likely to become, in short supply.	The proposal would not significantly increase demands on resources, which are or are likely to become, in short supply. Relatively small amounts of materials would be required for the proposal. The mitigation measures in this REF would be implemented to minimise any impacts.	Nil
The cumulative environmental effect with other existing or likely future activities.	The proposal is unlikely to have cumulative environmental effects with other existing or likely future projects, however, the effects would be	Nil

Factor	Description of impact	Duration and extent
	minimal due to the limited scale and temporary nature of the proposal, and the potential impacts on the environment would be minimised with the implementation of the mitigation measures in this REF.	
Any impact on coastal processes and coastal hazards, including those under projected climate change conditions.	The proposal is located in a coastal environment area. However potential impacts on coastal processes and coastal hazards are not anticipated due to the small scale and temporary nature of the works and the implementation of the mitigation measures identified in this REF.	Nil
Applicable local strategic planning statements, regional strategic plans or district strategic plans made under the Act, Division 3.1	Not applicable to the proposal.	Nil.
Other relevant environmental factors	Not applicable to the proposal.	Nil.

Matters of National Environmental Significance

Table A2: Matters of national environmental significance

Environmental factor	Impact
Any impact on a World Heritage property?	Nil There are no World Heritage properties within 1km of the proposal.
Any impact on a National Heritage place?	Nil There is one National Heritage place, Ku-ring-gai Chase National Park, Lion, Long and Spectacle Island Nature Reserves, is located 0.7km from the proposal. Due to the distance and nature of the proposed works, no direct or indirect impacts are anticipated on this National Heritage place.
Any impact on a wetland of international importance (often called 'Ramsar' wetlands)?	Nil There are no wetlands of international importance within 1km of the proposal.
Any impact on nationally threatened species, ecological communities or migratory species?	Negligible It is unlikely that the development of the proposal would

Environmental factor	Impact
	significantly affect nationally threatened species, ecological communities or migratory species (see Section 3.7).
Any impact on a Commonwealth marine area?	Nil There are no Commonwealth marine areas within 1km of the proposal.
Does the proposal involve a nuclear action (including uranium mining)?	Nil The proposal does not involve a nuclear action.
Additionally, any impact (direct or indirect) on the environment of Commonwealth land?	Nil The proposal does not involve a nuclear action.

Appendix B – Environmental Planning and Assessment Regulation 2021 section 171(A) factors – activities in catchments

SEPP (Biodiversity and Conservation) – Chapter 6 (Water Catchments)

Chapter 6 of SEPP (Biodiversity and Conservation) relates to the use of land within regulated catchments. In these catchments, The Authority is required to consider the environmental impact of activities to which Division 5.1 of the EP&A Act applies before carrying out the activity.

The four regulated catchments are:

b. Sydney Drinking Water Catchment
c. Sydney Harbour Catchment
d. Georges River Catchment
e. Hawkesbury-Nepean Catchment.

In undertaking an activity in a regulated catchment The Authority must satisfy sections 6.6(2), 6.7(2), 6.8(2) and 6.9(2) and consider environmental impacts listed in sections 6.6(1), 6.7(1), 6.8(1) and 6.9(1) of State Environmental Planning Policy (Biodiversity and Conservation) 2021. This includes specific consideration of water quality and quantity, aquatic ecology, flooding, and recreation and public access.

The proposal is located in Hawkesbury-Nepean Catchment, the below tables consider the impacts of the proposal on each of the identified factors.

Water quality and quantity

Table C1: Water quality and quantity considerations SEPP (Biodiversity and Conservation)

Section	Factor	Impact/comment
The project must be satisfied of the below before undertaking the activity:		
6.6(2)(a)	The effect on the quality of water entering a natural waterbody will be as close as possible to neutral or beneficial.	The proposal will involve localised and temporary disturbance of the riverbed from stabilising the geotechnical drill rigs and drilling boreholes. Once completed no ongoing water quality issues would result from the proposal. The proposal would have a neutral effect on water quality in the long term.
6.6(2)(b)	The impact on water flow in a natural waterbody will be minimised.	The proposal would not involve blocking or redirecting waterflow. The geotechnical drill rigs would involve minimal disturbance to the water flow within the Hawkesbury River
The project must consider the below before undertaking the activity:		
6.6(1)(a)	Consider whether the development will have a neutral or beneficial effect on the quality of water entering a waterway.	The proposal would not involve any water entering the Hawkesbury River subject to the application of mitigation measures outlined in section 4.1 of this REF and therefore the effect would be neutral.
6.6(1)(b)	Consider whether the development will have an adverse impact on water flow in a natural waterbody.	The proposal would not involve blocking or redirecting waterflow. The geotechnical drill rigs would involve minimal disturbance to the water flow within the Hawkesbury River.
6.6(1)(c)	Consider whether the development will increase the amount of stormwater run-off from a site.	The proposal would not involve the establishment of impervious areas. It would not increase the amount of stormwater run-off.
6.6(1)(d)	Consider whether the development will incorporate on-site stormwater retention, infiltration or reuse.	The proposal would not incorporate on-site stormwater retention, infiltration or reuse.
6.6(1)(e)	Consider the impact of the development on the level and quality of the water table.	The proposal would involve intersection of the water table. However, minimal water would be extracted and there would be minimal opportunity for contaminated water to enter the water table. Subject to the application of mitigation measures outlined in section 4.1 of this REF, no long-term changes to the water table would result from the project.

Section	Factor	Impact/comment
6.6(1)(f)	Consider the cumulative environmental impact of the development on the regulated catchment.	The proposal involves temporary and localised works and would have minimal cumulative environmental impact on the Hawkesbury-Nepean Catchment.
6.6(1)(g)	Consider whether the development makes adequate provision to protect the quality and quantity of ground water.	the proposal would not impact the quantity or quality of groundwater. .

Aquatic ecology

Table C2: Aquatic ecology considerations SEPP (Biodiversity and Conservation)

Section	Factor	Impact/comment
The project must be satisfied of the below before undertaking the activity:		
6.7(2)(a)	The direct, indirect or cumulative adverse impact on terrestrial, aquatic or migratory animals or vegetation will be kept to the minimum necessary for the carrying out of the development.	The proposal has been sited to minimise impacts on the environment, where practicable. The mitigation measures outlined in section 4.1 of this REF address potential impacts on animals and vegetation.
6.7(2)(b)	The development will not have a direct, indirect or cumulative adverse impact on aquatic reserves	The proposal is not located within or near an aquatic reserve.
6.7(2)(c)	If a controlled activity approval under the Water Management Act 2000 or a permit under the Fisheries Management Act 1994 is required in relation to the clearing of riparian vegetation—the approval or permit has been obtained.	The proposal does not require a controlled activity approval under the *Water Management Act 2000* and a permit under the *Fisheries Management Act 1994* is not required in relation to the clearing of riparian vegetation.
6.7(2)(d)	The erosion of land abutting a natural waterbody or the sedimentation of a natural waterbody will be minimised.	No ground disturbance is required outside the riverbed. Therefore no erosion is anticipated.
6.7(2)(e)	The adverse impact on wetlands that are not in the coastal wetlands and littoral rainforests area will be minimised.	No direct or indirect impacts on wetlands are anticipated as part of the proposal.
The project must consider the below before undertaking the activity:		
6.7(1)(a)	Consider whether the development will have a direct, indirect or cumulative adverse impact on terrestrial, aquatic or migratory animals or vegetation.	The proposal has been sited to minimise impacts on the environment, where practicable including to avoid seagrass. The mitigation measures outlined in Section 4.1 of this REF address potential impacts on animals and vegetation.

Section	Factor	Impact/comment
6.7(1)(b)	Consider whether the development involves the clearing of riparian vegetation and, if so, whether the development will require— (i) a controlled activity approval under the Water Management Act 2000, or (ii) a permit under the Fisheries Management Act 1994.	The proposal does not involve clearing of riparian vegetation.
6.7(1)(c)	Consider whether the development will minimise or avoid— (i) the erosion of land abutting a natural waterbody; or (ii) the sedimentation of a natural waterbody.	No ground disturbance is required outside the riverbed. Therefore no erosion or sedimentation is anticipated.
6.7(1)(d)	Consider whether the development will have an adverse impact on wetlands that are not in the coastal wetlands and littoral rainforests area.	No direct or indirect impacts on wetlands are anticipated as part of the proposal.
6.7(1)(e)	Consider whether the development includes adequate mitigation measures and rehabilitation measures to protect aquatic ecology.	The mitigation measures outlined in Section 4.1 of this REF address potential impacts on aquatic ecology.
6.7(1)(f)	Consider if the development site adjoins a natural waterbody—whether additional measures are required to ensure a neutral or beneficial effect on the water quality of the waterbody. Example— Additional measures may include the incorporation of a vegetated buffer between the waterbody and the site.	The proposal is within a waterbody.

Flooding

Table C3: Flooding considerations SEPP (Biodiversity and Conservation)

Section	Factor	Impact/comment
The project must be satisfied of the below before undertaking the activity:		
6.8(2)(a)	On flood liable land in a regulated catchment, the development will not— If there is a flood, result in a release of pollutants that may have an adverse impact on the water quality of a natural waterbody; or	The proposal is within a waterbody. However, it is temporary and mobile and subject to the mitigation measures outlined in Section 4.1 of this REF, would not result in a release of pollutants that may have an adverse impact on the water quality of a natural waterbody.

Section	Factor	Impact/comment
6.8(2)(b)	On flood liable land in a regulated catchment, the development will not have an adverse impact on the natural recession of floodwaters into wetlands and other riverine ecosystems.	The proposal is temporary and mobile. It would not have an adverse impact on the natural recession of floodwaters into wetlands and other riverine ecosystems
The project must consider the below:		
6.8(1)	Consider the likely impact of the development on periodic flooding that benefits wetlands and other riverine ecosystems.	The proposal would not affect water flow within the waterbody including during flooding events.

Recreation and public space

Table C4: Flooding considerations SEPP (Biodiversity and Conservation)

Section	Factor	Impact/comment
The project must be satisfied of the below before undertaking the activity:		
6.9(2)(a)	The development will maintain or improve public access to and from natural waterbodies for recreational purposes, including fishing, swimming and boating, without adverse impact on natural waterbodies, watercourses, wetlands or riparian vegetation.	The proposal would temporarily restrict access to a small section of the Hawksbury River and Brisbane Water during works. However, the proposal will maintain overall access to the natural waterbodies for recreational purposes.
6.9(2)(b)	New or existing points of public access between natural waterbodies and the site of the development will be stable and safe.	The proposal would not create new access points or impact existing access points to the Hawksbury River and Brisbane Water.
6.9(2)(c)	If land forming part of the foreshore of a natural waterbody will be made available for public access as a result of the development but is not in public ownership—public access to and use of the land will be maintained.	The proposal would not make any land forming part of the foreshore of a natural waterbody available for public access.
The project must consider the below before undertaking the activity:		
6.9(1)(a)	Consider the likely impact of the development on recreational land uses in the regulated catchment.	The proposal would temporarily restrict access to a small section of the Hawksbury River and Brisbane water during works. However, the proposal would maintain overall access to the natural waterbodies for recreational purposes.

Section	Factor	Impact/comment
6.9(1)(b)	Consider whether the development will maintain or improve public access to and around foreshores without adverse impact on natural waterbodies, watercourses, wetlands or riparian vegetation.	The proposal would not create new access points or impact existing access to and around foreshores.

Appendix C – Consultation and engagement

File reference: 24/09308

Licence: RN 672117

L I C E N C E

Crown Land Management Act 2016 – Section 2.20

The Minister administering the Crown Land Management Act 2016, (hereinafter referred to as the Minister) grants to **WSP AUSTRALIA PTY LTD 680 George St SYDNEY NSW 2000** (licensee hereinafter referred to as You) a Licence pursuant to the provisions of Section 2.20 of the Crown Land Management Act 2016 in respect of the land described hereunder in Parts 1 and 2.

DESCRIPTION OF LANDS

PART 1

Local Govt. Area	CENTRAL COAST,HORNSBY			
County	NORTHUMBERLAND,CUMBERLAND			
Parish	PATONGA,COWAN			
Locality	LITTLE WOBBY,POINT CLARE,BROOKLYN			
Status:		**Lot**	**Section**	**DP**
Crown land located near		7016		DP: 1058527
Crown land located near		7301		DP: 1158002
Crown land located near		59		DP: 755251

PART 2

Plan/diagram: Schedule 3	Area: 1200m2

TEXT DESCRIPTION: Crown Waterway being Hawkesbury River (Reserve 56146 From Sale or Lease Generally, notified 11 May 1923, Reserve 1011268 for Future Public Requirements, notified 3 February 2006, Regional Crown Reserve 1012468 for Access, Public Requirements, Tourism Purposes and Environmental and Heritage Conservation, notified 15 September 2006 and Regional Crown Reserve 1013008 for Access, Public Requirements, Tourism Purposes and Environmental and Heritage Conservation, notified 19 January 2007) adjacent to Lot 59 DP 755251 and Lot 7016 DP 1058527 as show by red plots on Schedule 3 Diagram 1.

Crown Waterway being The Broadwater (Reserve 56146 From Sale or Lease Generally, notified 11 May 1923, Reserve 1011268 for Future Public Requirements, notified 3 February 2006 and Regional Crown Reserve 1012468 for Access, Public Requirements, Tourism Purposes and Environmental and Heritage Conservation, notified 15 September 2006) adjacent to Lot 7301 DP 1158002 as show by red plots on Schedule 3 Diagram 2.

EXECUTION

Dated this 30 day of September 2024

THE MINISTER

Electronic signature of me, Natalie Pearce, affixed by me, on 30/09/2024

as delegate of the Minister administering the Crown Land Management Act 2016

Natalie Pearce Supervisor Licences and Complex Dealings

name and position

THE LICENSEE

In consideration of the grant of this Licence I / We agree to be bound by the terms, conditions and provisions of the Licence.

File reference: 24/09308

Licence: RN 672117

Certified on behalf of the corporation named below by the authorised person(s) whose signature(s) appear(s) below pursuant to the authority specified.

Corporation: WSP AUSTRALIA PTY LTD

Authority: Section 127 of the Corporation Act 2001

Signature of authorised person: Aaron Little
Aaron Little (Sep 26, 2024 16:36 GMT+10)

Name of authorised person: Aaron Little

Office held: Statutory Director

Signature of authorised person:
Simon Clarke (Sep 26, 2024 16:59 GMT+10)

Name of authorised person: Simon Clarke

Office held: Statutory Director

The parties acknowledge and agree that the Licence is subject to Schedule 1, Schedule 2, and any additional Schedules or documents referred to in Schedule 1 and the following conditions;

1. This Licence is subject to the provisions of the Crown Land Management Act 2016.
2. You must pay Department of Planning, Housing and Infrastructure - Crown Lands the licence fees specified in Item 6 of Schedule 1 on or prior to the date that this licence commences.
3. The Licence remains in force for the period specified in Item 5 of Schedule 1. The Minister may in his absolute discretion revoke this Licence at any time by serving on You a notice in writing revoking this Licence. You will not be entitled to any compensation costs or damages in respect of the revocation of this Licence.
4. You must not interfere with any other person authorised by the Minister to use the licensed area referred to in Item 4 of Schedule 1 ('licensed area') or any part thereof.
5. You must not use the land specified in the licensed area except for the purpose(s) authorised by this licence as set out in Item 4 of Schedule 1.
6. You shall comply with all the special conditions set out in Schedule 2.
7. Any notice provided for in this licence shall be deemed to be validly served on You if;
    a. it is personally served on You or where You are a corporation or association, on an officer of the corporation or association; or
    b. it is sent by prepaid ordinary mail addressed to You at the address shown in Item 1 of Schedule 1.
8. You acknowledge and agree that the Minister does not make or give any warranty, promise or covenant to You for quiet enjoyment of the licence area and does not grant You any interest in the land.
9. You shall keep the said licensed area and buildings on the licensed area clean and tidy and all papers and other rubbish shall be collected and removed. You shall control noxious weeds. You shall immediately repair and make good, damage occasioned by Your use of the licensed area.
10. You shall indemnify and keep indemnified the Minister against all actions, suits, claims, debts, obligations and other liabilities that may arise from the activities of You during the currency of the Licence. You release the Minister from all actions, suits, claims, debts, obligations and other liabilities by You or anyone claiming through You that may arise from the activities of the licensee under the Licence or in relation to the licensed area.
11. You shall effect and maintain for the term of this licence a public risk insurance policy (whereby the Minister must be noted on the policy as an interested party) for the amount specified in Item 7 of Schedule 1 for any one claim relating to liability for death or bodily injury or damage to property arising out of Your use and occupation of the licensed area and the matters referred to in clause 10. You shall provide evidence of such insurance whenever requested by any employee of the Department of Planning, Housing and Infrastructure - Crown Lands.
12. You shall maintain all other insurances as may be required by the Workers' Compensation Act 1987 or any other Act or Acts of Parliament in regard to the conduct of activities of You on the licensed area.
13. You acknowledge and agree that no relationship of landlord and tenant is or is intended to be created between the parties hereto by virtue of this Licence or in any way whatsoever.
14. You must comply with the Work Health and Safety Act 2011 (NSW), the Work Health and Safety Regulation 2017 (NSW) and all other requirements of any other legislation or statutory authority in this regard whilst on the licensed area.
15. The Minister reserves the right to remove from or refuse entry to the licensed area any person regardless of any arrangements or contract with You.
16. All improvements, erections and fixtures ("Improvements") now or hereafter to be erected on the licensed area are acknowledged by You to be absolute property of the Minister, but You shall maintain and repair such Improvements during the period of this licence to the same condition that the Improvements were in on the date that this Licence commenced.
17. You shall not sublet, assign or otherwise deal with this Licence or the licensed area.

18. Despite anything else in this Licence, this Licence shall terminate in the event that the Minister or a court determines that the licensed area is claimable Crown land under Aboriginal Land Rights Act 1983. You will not be entitled to any compensation, costs or damages in respect of the termination of this Licence by operation of this clause.

19. Despite anything else in this Licence, You agree to and approve of the transfer or termination of this Licence without any further notice if an Aboriginal Land Agreement (**ALA**) within the meaning of section 36AA(1) of the *Aboriginal Land Rights Act 1983*, affecting the land or part thereof, provides for the transfer or termination of this Licence. Except as may be expressly provided for in this Licence, You acknowledge and agree that You will not be entitled to any compensation, costs or damages in respect of the transfer or termination of this Licence by operation of this clause. You agree that the date of transfer or termination under this clause is the date provided for in the ALA, or if it is not so provided, the date the ALA is entered into. This clause constitutes an approval by You of the transfer or termination for the purposes of section 36AA(11) of the *Aboriginal Land Rights Act 1983*. The Minister may give notice to You of the transfer or termination of this Licence under this clause but is not required to do so to effect the transfer or termination.

20. You must comply on time with all laws and requirements of authorities in connection with this Licence, the licensed area, the purposes approved by this Licence and the use or occupation of the licensed area.

21. You must not contaminate, pollute or increase toxicity in the licensed area, any building in the licensed area or their environment or do anything in or around the licensed area which may be dangerous or offensive.

22. You must ensure that Your employees, agents, contractors and invitees comply with the licensee's obligations under this Licence.

23. You must not carry out any works in or on the licensed area without the Minister's written approval (which may be conditioned).

24. On the last day of the term of this Licence You must vacate the licensed area, remove all items You have brought onto the licensed area, repair any damage You have done to the licensed area and must leave the licensed area in a clean and tidy condition.

Schedule 1

Item	Column 1 (description of variable particulars)	Column 2 (particulars)
1	Licensee's Address for service of notices	680 George St SYDNEY NSW 2000
2	Minister's Address for service of notices	Department of Planning, Housing and Infrastructure - Crown Lands PO Box 2185 DANGAR NSW 2309
3	Address for payment of Licence Fee	Department of Planning, Housing and Infrastructure - Crown Lands PO Box 2155 Dangar NSW 2309
4	Purpose for which the licensed area may be used	You shall have the use of the area described in Part 1 and Part 2 and as shown by red on the diagrams attached as Schedule 3 (hereinafter called "the licensed area" for the purpose of Site Investigations
5	Licence Period	The licence period shall be from 23rd September 2024 to 13th December 2024. The Minister reserves the right to terminate the Licence without prior notice if there is a breach by You of any of the licence conditions.
6	Licence Fee	$661.10
7	Insurance - Public Risk	Twenty Million Dollars ($20,000,000.00)
8	Additional special terms and conditions	Annexed as Schedule 2

*** * * * * * * * End of Schedule 1 * * * * * * * ***

Schedule 2

ADDITIONAL TERMS AND CONDITIONS

1. Work Health and Safety

The Holder is responsible for safety induction of all persons onto the site. The Holder is responsible at all times for ensuring safe systems of work and that the site poses no work, health or safety risks to workers or the public. All persons engaged in the activity relative to this approval must be qualified, trained or appropriately experienced or supervised in the running of the event including the safe operation of associated equipment, tools or machinery. Relevant advice should be obtained from NSW WorkCover.

2. Approvals

The Holder must ensure that all licences, permits and approvals are obtained and maintained as required throughout the life of the event. No condition of this Licence removes the obligation for the Holder to obtain, renew or comply with such licences, permits or approvals. The Holder must ensure that a copy of this Licence and all relevant approvals are available during the Licence term. The requirements of all relevant approvals including consent issued by local government must be met by the Holder.

3. Site

The licence holder shall ensure that the sites will be left clean and tidy on completion of works.

4. Relics

(a) The Holder must not harm or desecrate any Aboriginal object or Aboriginal place within the Land, unless authorised to do so by Aboriginal Heritage Impact Permit under Section 90 of the National Parks and Wildlife Act 1974 (NSW) and subject to observance and compliance with any conditions imposed on the grant of such permit

(b) If the Holder becomes aware of any Aboriginal object or Aboriginal place on the Land, the Holder must:
i. notify Heritage NSW within 24 hours of becoming aware of the Aboriginal object or Aboriginal place;
ii. immediately cease any operations or works on the Land that are likely to harm or desecrate the Aboriginal object or place, unless and until Heritage NSW has given written approval to proceed; and
iii. observe and comply with all requirements of Heritage NSW in relation to the carrying out of the operations or works.

(c) Words used in this clause which are defined in the National Parks and Wildlife Act 1974 (NSW) have the same meaning as in that Act.

5. Artefacts

You agree that:
(a) for the purposes of this clause, `artefacts' means and includes all coins, articles of value, articles of antiquity, and other remains or things of historical interest discovered on or under the surface of the Premises;
(b) all artefacts are deemed the property of the Minister;
(c) You must immediately notify the Minister of the discovery of any artefacts;
(d) You must take every precaution not to remove or damage the artefacts;
(e) You must, if required by the Minister, deliver up or dispose of any artefacts at Your expense.

6. Native Title*

Native title under the *Native Title Act 1993 (Cth) ("NTA")* may exist with respect to the Land.
To the extent that the Holder is permitted to do something under this Licence, then the Holder's right to do the activity prevails over any native title rights and interests and the existence of those native title rights do not prevent the Holder from doing the activity.
In such a case, if the act is wholly inconsistent with the continued existence, enjoyment or exercise of the native title rights and interests, that native title continues to exist in its entirety but the rights and interests have no effect in relation to the act.
For some activities under the Licence, you must first obtain the Minister's Consent. In those cases, the Minister may only be able to consent to those acts if that consent can be given in accordance with the *NTA*.
*These notes do not form part of this Licence's terms and conditions.

7. Reinstatement of site to existing to condition

Site to be reinstated to original condition upon expiry of licence.

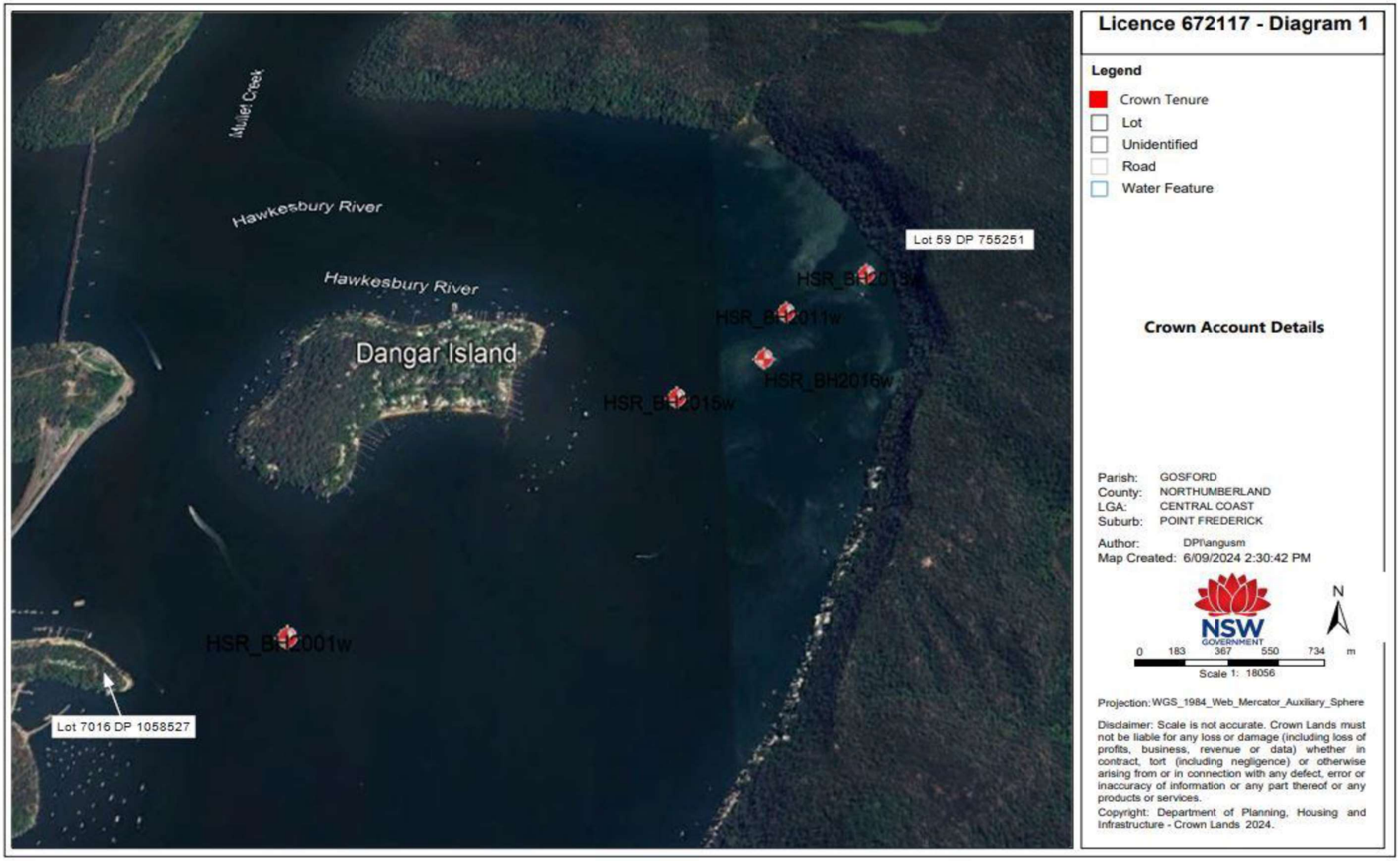
8. Wildlife Considerations

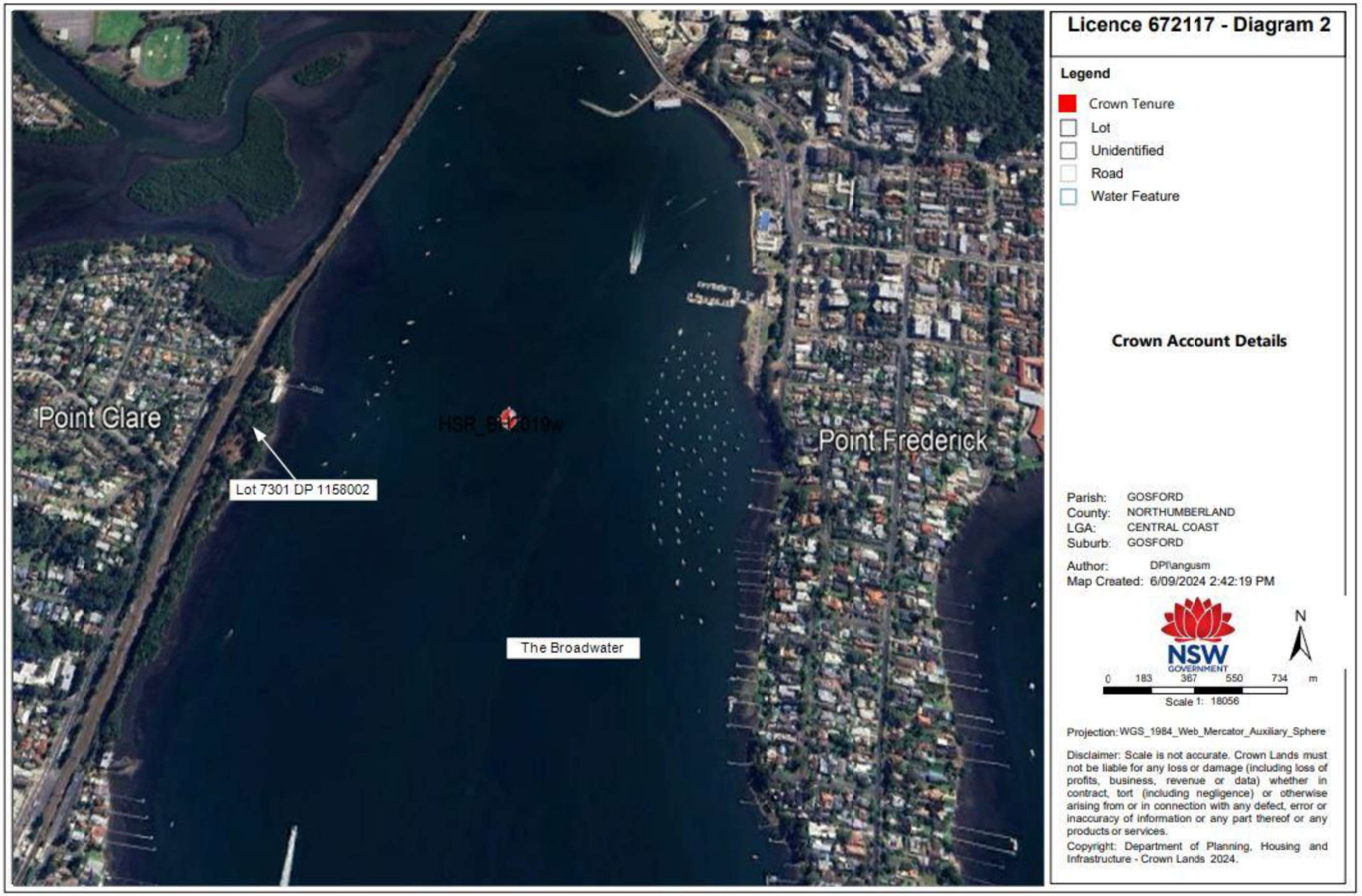
The Licence holder shall ensure no disturbance to plant and animal species.

9. Rights of the Public to Access

The licence holder shall not interfere with the rights of the public to the use of the Crown waterway.

Schedule 3


Licence 672117 - Diagram 1
Legend
Crown Tenure
Lot
Unidentified
Road
Water Feature
Crown Account Details
Parish: GOSFORD
County: NORTHUMBERLAND
LGA: CENTRAL COAST
Suburb: POINT FREDERICK
Author: DPI\angusm
Map Created: 6/09/2024 2:30:42 PM
NSW GOVERNMENT
N
0 183 367 550 734 m
Scale 1: 18056
Projection: WGS_1984_Web_Mercator_Auxiliary_Sphere
Disclaimer: Scale is not accurate. Crown Lands must not be liable for any loss or damage (including loss of profits, business, revenue or data) whether in contract, tort (including negligence) or otherwise arising from or in connection with any defect, error or inaccuracy of information or any part thereof or any products or services.
Copyright: Department of Planning, Housing and Infrastructure - Crown Lands 2024.
Muller Creek
Hawkesbury River
Hawkesbury River
Dangar Island
Lot 59 DP 755251
HSR_BH2011w
HSR_BH2016w
HSR_BH2015w
HSR_BH2001w
Lot 7016 DP 1058527



*** * * * * * * * End of Schedule 3 * * * * * * * ***

Transport for NSW

NSW GOVERNMENT

Myles Harris-Ayling
WSP Australia Pty Ltd
Level 27, 680 George St
Sydney NSW 2000
Email: myles.harris-ayling@wsp.com

Re: Impact to Navigation Assessment Application 18 September 2024

Dear Myles Harris-Ayling,

Proponent (Client): **WSP Australia Pty Ltd**
Location: **Brisbane Water and Brooklyn**
Proposal: **Geotechnical site investigations for proposed high speed rail tunnels**

I refer to the Impact to Navigation Assessment Application, lodged on 4 September 2024, concerning the above Proposal.

NSW Maritime, a division within Transport for NSW (**TfNSW**), confirms that the Proposal, as set out in the attached stamped plan/s, has been assessed as having minimal impact on the safety of navigation under the *Marine Safety Act 1998*, ***provided the following conditions are met***:

- *Traffic management plan required for the primary channel between Brooklyn and Dangar Island and downstream side of rail bridge - relating to the cmsr/mcmsr survey work.*
- *Marine Notice and Gazette Notice required as part of the communication to general boating public, ferry operators and commuter traffic.*

Should any aspect of the Proposal change after receiving this advice, the amended plans must be resubmitted to TfNSW for a new assessment.

For further assistance, please do not hesitate to contact this office.

Sincerely,

Marcus Cahill
A/Manager Waterways Operations
Mohawkes@Transport.nsw.gov.au

Disclaimer:
This assessment only covers how the Proposal might impact navigation. It does not mean the Proponent has permission to start any part of the Proposal.
Before commencing the Proposal, the Proponent must make sure that they have all the necessary approvals and comply with all relevant laws. For example, these may include the *Environmental Planning and Assessment Act 1979*, the *Crown Land*

Management Act 2016, the *Fisheries Management Act 1997*, the *Marine Estate Management Act 2014*, and the *Native Title Act 1993 (Cth)*. The Proponent should make enquiries to identify if any other laws apply.

The proposed geophysics survey area in Broad Water is in the vicinity of Point Clare, Gosford and Point Frederick, as shown by the pale green area in the image below.

Senior Boating Safety Officer
Hawkesbury River Broken Bay
Maritime Division

16/9/24

Hawkesbury River
Five boreholes are proposed in the Hawkesbury River, between Brooklyn (Flat Rock Point), Dangar Island, Little Wobby Beach and Tank Creek, as shown by the red and white circles in the image below.

The proposed geophysics survey area in the Hawkesbury River is in the vicinity of Flat Rock Point, Dangar Island, Little Wobby Beach, Alison Point, Cogra Point, and the Hawkesbury River Railway Bridge, as shown by the grey area in the image below.

Senior Boating Safety Officer
Hawkesbury River Broken Bay
Maritime Division
16/9/24

Contact: Danielle Martin

Karthika Krishna Pillai
Fisheries Manager – Coastal Systems Unit
66 Harrington St
The Rocks, Sydney, NSW, 2000

26 August 2024

Consultation under s199 Fisheries Management Act for proposed geotechnical investigations within Hawkesbury River and Brisbane Water

Dear Karthika

The Australian Government is planning for a future high speed rail network, which will connect Australian regions, cities and communities. Work is currently underway to develop the proposed first stage – a new connection between Newcastle and Sydney using high speed trains that travel at least 250km/h.

Essential geotechnical investigations will be undertaken to assist with the corridor option and design to inform the Sydney to Newcastle High Speed Rail Business Case. These investigation activities are required to determine ground conditions including strength of the underlying rock. The work involves the drilling of five boreholes in the Hawkesbury River at Berowra and one borehole in Brisbane Water at Gosford from mid-September. The proposed locations are shown in the attached maps.

Two barges, will be used, each with one rig to prevent movement during the drilling operations. The barges will be spudded into the riverbed using steel shafts, approximately 20m^2 in size and will likely require an area twice this size in which to operate at each location. Drilling at each borehole could take up to three weeks.

A review of environmental factors (REF) is being prepared to assess the potential impacts of the proposal under Division 5.1 of the *Environmental Planning and Assessment Act 1979*. Mitigation measures to reduce any potential environmental impacts will be developed as part of the REF. The locations have been chosen with consideration of mapped seagrass and estuary reef. An aquatic ecological assessment is currently being undertaken to inform the REF. Consultation will be undertaken with nearby stakeholders known to use the waterway.

It would be appreciated if Fisheries could provide comments by 5pm 16 September 2024.

Happy to provide further information. You can contact Danielle Martin, Environment and Sustainability Manager at danielle.martin@transport.nsw.gov.au.

Greg Byrnes 26/8/2024

Greg Byrnes

General Manager, Safety, Environment and Sustainability

High Speed Rail Authority

Attachment

Borehole locations

Department of Primary Industries
and Regional Development

C24/714
11 October 2024

Danielle Martin
Environment Manager
Transport for NSW

Re: s.199 FM Act notification – Geotech investigations – Hawkesbury River & Brisbane Water

Dear Danielle,

Thank you for your referral dated 26 August 2024 regarding the above stated matter. This notification complies with s.199(1)(a) of the *Fisheries Management Act* (FM Act) concerning the proposed dredging and reclamation activities.

DPIRD Fisheries is responsible for ensuring that fish stocks are conserved and that there is no net loss of key fish habitats upon which they depend. To achieve this, DPIRD Fisheries ensures that developments comply with the requirements of the FM Act (namely the aquatic habitat protection and threatened species conservation provisions in Parts 7 and 7A of the Act, respectively), and the associated *Policy and Guidelines for Fish Habitat Conservation and Management (2013)*. DPIRD Fisheries is also responsible for ensuring the sustainable management of commercial, recreational and Aboriginal cultural fishing, aquaculture, marine parks and aquatic reserves in NSW.

DPIRD Fisheries has reviewed these works in light of those provisions and has no objections to the proposed works provided that they occur as described in the Minor works REF (Dated: 11 October 2024, Rev: Final) and Technical Memorandum Marine Ecology Impact Assessment Proposed High Speed Rail Geotechnical Investigations (Mathew Davis, Dated: 25 September 2024, Rev: Final) for these works.

DPIRD Fisheries recommends that the following general environmental mitigation measures be implemented during construction:

1. Erosion and sediment mitigation devices are to be erected (if practical) in a manner consistent with current Best Management Practice (i.e. Managing Urban Stormwater: Soils and Construction 4th Edition Landcom, 2004) to prevent entry of sediment into the waterway prior to any earthworks being undertaken. These are to be maintained in good working order for the duration

of the works and subsequently until the site has been stabilised and the risk of erosion and sediment movement from the site is minimal;

2. There is to be no complete blockage of fish passage during the works. Environmental protection measures are to be erected (if practical) so that fish passage is maintained in the waterway. These measures are to be removed from the site once the site has been stabilised and the risk of sediment movement is minimal;
3. Any material removed from the waterway that is to be temporarily deposited or stockpiled on land is to be located well away from the waterway and to be contained by appropriate erosion and sediment control devices;
4. Machinery is not to enter or work from the waterway unless in accordance with the proposed works;
5. Prior to use at the site and/or entry into the waterway, machinery is to be appropriately cleaned degreased and serviced. Spill kits are to be available on site at all times during the works;
6. Works are to be undertaken during low flows in the waterway;
7. On completion of the works the site is to be rehabilitated and stabilised including but not limited to:
    a. Surplus construction materials and temporary structures (other than silt fences and other erosion and sediment control devices) installed during the course of the works are to be removed.
8. Adequate water depth must be maintained underneath all barges and propellers to ensure that seagrass is not impacted at any time. At least 600 mm clearance must be maintained between the hull and the river bed, and also between the propeller and the river bed. Where adequate clearances beneath barges cannot be maintained at low tide, works should be restricted to high tide conditions.
9. No vessels are to anchor in seagrass at any time.
10. When working near marine vegetation (seagrass, mangroves and saltmarsh), these areas need to be identified and appropriately delineated as “No Go” areas.
11. The deployment of ropes, anchors, blocks, chains or similar devices is strictly prohibited within seagrass. Ropes are permitted only if they are made buoyant with floats so that they don’t drag through seagrass.
12. Oyster growers with leases within 2 km of the worksite are to be informed of the proposed works and works are to be timed to avoid impacting on oyster aquaculture activities such as, but not limited to, spat collection periods.

13. Consultation is to be undertaken with local fisheries cooperatives regarding the proposed works. Where possible works are to be timed to avoid impacting on licensed commercial fishing activities.
14. Should any dewatering be required, then:
    a. pumps used in waterways are to be screened with mesh of no greater than 6mm in diameter,
    b. daily checks of the sediment levels in the dewatering sediment dams are to be conducted to ensure adequate storage capacity,
    c. dewatering operations must ensure retention of spoil for a long enough period to allow mobilised sediments to settle out,
    d. a visual inspection of the waterway is to be conducted at all times during dewatering operations to ensure that no visible plumes are generated within the waterway from dewatering operations; and
15. The worksite has potential for acid sulfate soils. Excavated and disturbed soil is to be managed in accordance with the Managing Acid Sulfate Soil (EPA, 1995), Acid Sulfate Soil Manual (Acid Sulfate Soil Management Advisory Committee 1998) and consistent with best management practice outlined in Restoring The Balance: Guidelines for Managing Floodgates and Drainage Systems on Coastal Floodplains available at: www.dpi.nsw.gov.au/__data/assets/pdf_file/0007/167875/restoring-balance-guidelines.pdf
16. All equipment and materials must be cleaned and free from Caulerpa taxifolia. Any Caulerpa taxifolia removed must be sealed in a plastic bag and placed in general waste Caulerpa taxifolia must not be returned to the water.
17. DPIRD Fisheries (1800 043 536) and the Environment Protection Authority (EPA) (131 555) are to be notified immediately if any fish kills occur in the vicinity of the works. In this situation, all works other than emergency response procedures are to cease until the issue is rectified and approval is given by DPIRD Fisheries and/or the EPA for the works to proceed.

For any further information, please contact me at karthika.krishnapillai@dpi.nsw.gov.au.

Sincerely

Karthika

Karthika Krishna Pillai
Fisheries Manager, Coastal Systems

DPIRD Fisheries

Impacts to Navigation
Commercial Development or Works Application

Instructions for completing this form

DO use this form to consult with TfNSW for any potential impact to navigation on NSW Waterways located on, over land NOT owned by TfNSW Maritime (e.g. Crown Lands).

DO NOT use this form if the proposal is located on land owned and managed by TfNSW (e.g. Sydney, Newcastle & Port Kembla harbours and Botany Bay**)** please refer to the Maritime Property and Planning e-lodgement portal at Lodgement of planning and property applications | Transport for NSW.

Notes

Applications must be submitted a minimum of six (6) weeks prior to any on-water works commencing for a full assessment and/or navigation advice to be provided.

Larger and more complex proposals may require significantly more time than six weeks to assess. Applicants should contact TfNSW Maritime as early as possible to discuss their application where this may apply.

Any public authority must consult with Maritime for any development comprising of a fixed or floating structure in or over navigable waters under the State Environmental Planning Policy (Transport and Infrastructure) 2021 (T&I SEPP).

Wherever possible, TfNSW Maritime requests that work that has the potential to impact on navigation be undertaken outside of the recognised boating season, which is taken to be from October to Easter each year.

Please ensure that the application form is complete and that you supply all of the following items with your application:

- Full details of the proposal type, location, dates (install/construction) times, number of vessels and equipment involved
- A detailed map of the proposed development area of water impacted.
- Scale drawings of the proposal/development, including surrounding or adjacent structures
- Associated Development Application or licensing form/s
- Written authorisation from other relevant agencies or consent authorities (e.g. Marine Parks), if available at time of application
- Indicate if any submerged cables are present in the proposed area and/or if the area is a declared no anchoring zone
- Proof of the applicant's identity if not applying on behalf of an organisation
- A detailed scope of works including construction methodology and plant and equipment to be utilised
- Approximate duration of the works
- Anticipated impacts to navigation or waterside infrastructure, such as wharves or boat ramps.

Additional items for major proposals and construction:

- A detailed Marine Traffic Management Plan

- Evidence of community and stakeholder consultation appropriate to the type, scale and location of the proposal type.

NOTE: TfNSW may, for the purposes of community engagement or information gathering, publish or release relevant details of any Impact to Navigation – Development or Works Application. The applicant will be accountable for any advertising fees associated with a Marine Notice and/or signage and signage installation.

In addition to seeking TfNSW navigation advice, the applicant must also obtain all relevant approvals from local council and/or other agencies.

General information

TfNSW Maritime is responsible for the safety of navigation under the Marine Safety Act 1998 and is accountable for the management of impacts to navigation in, on or over NSW navigable waters under the Marine Safety Regulation 2016.

The NSW Maritime branch of Transport for NSW (Maritime) is the lead state government agency responsible for delivering safety, environmental and access outcomes related to vessel operations throughout NSW. To achieve these objectives, Maritime may enact various waterway restrictions, including speed restricted zones, on NSW waters through section 11 of the *Marine Safety Act 1998*. In addition to the legislative framework,

Maritime use four key guiding principles in managing NSW waterways: Safety, Access, Environment and Amenity. In addition to the Objectives of the range of legislation that Maritime administers, key service deliverables include keeping safety at the heart of our decision making and respecting our community and the environment.

TfNSW Maritime is the lead state government agency responsible for delivering safety, environmental and access outcomes related to vessel operations throughout NSW under the Marine Safety Act 1998.

As part of its responsibilities, Maritime provides navigation advice for any proposed development or works that may potentially impact navigation. Navigation advice can inform land use, natural resource management planning, development planning and assessment processes. The impact to navigation assessment also provides a valuable tool to improve awareness and understanding of the importance of vessel navigation and how any impacts can be mitigated, managed, or offset.

It is important for the applicant to note that when a navigation assessment is undertaken, only current issues and the information provided is considered. Any change to the proposal in the future must be re-assessed, based on the legislation, issues and information available at that time.

This assessment only covers how the Proposal might impact navigation. It does not mean the Proponent has permission to start any part of the Proposal.
Before commencing the Proposal, the Proponent must make sure that they have all the necessary approvals and comply with all relevant laws. For example, these may include the *Environmental Planning and Assessment Act 1979*, the *Crown Land Management Act 2016*, the *Fisheries Management Act 1997*, the *Marine Estate Management Act 2014*, and the *Native Title Act 1993 (Cth)*. The Proponent should make enquiries to identify if any other laws apply.

For enquiries and sending this application online use these emails:

General area/Region	Maritime Authorised Officers	Email Contact
North of Lake Macquarie (inclusive)	Maritime North	NavigationAdviceNorth@transport.nsw.gov.au
Hawkesbury River/Broken Bay (areas include Brooklyn, Patonga, Mona Vale, Narrabeen, Pittwater, Avoca and Berowra)	Maritime Greater Sydney	coordinatorhrbb@transport.nsw.gov.au
Port Hacking (areas include Brighton-le-Sands, Sans Souci, La Perouse, Kyeemagh)	Maritime Greater Sydney	mobbph@transport.nsw.gov.au
South of Stanwell Park (inclusive)	Maritime South	navsouth@transport.nsw.gov.au

For posting this application, use these addresses:

Work area	Address
North of Lake Macquarie (inclusive)	Impact to Navigation Assessment Application Att: Maritime Coordinator, PO Box 653 Newcastle NSW 2300
Hawkesbury River/Broken Bay (areas include Brooklyn, Patonga, Mona Vale, Narrabeen, Pittwater, Avoca and Berowra)	Impact to Navigation Assessment Application Att: Maritime CoordinatorLocked Bag 5100 Rozelle NSW 1450
Port Hacking and Georges River (including Brighton-le-Sands, Sans Souci, La Perouse, Kyeemagh)	Impact to Navigation Assessment Application Att: Maritime Coordinator, Locked Bag 5100 Rozelle NSW 1450
South of Stanwell Park (inclusive)	Impact to Navigation Assessment Application Att: Maritime Coordinator, 2/91 Foreshore Road Wollongong NSW 2527

Impacts to navigation
Commercial development or works application

Please complete each item below. Once finished, either print the form and post to the appropriate address, or save it, attach to an email and send to the appropriate email address.

Applicant's details

First Name: Myles

Surname: Harris-Ayling

Date of Birth: 19/01/1993

Organisation or company name (if applicable):,

WSP Australia Pty Limited

Street Address: Level 27, 680 George St

Suburb/Town/City: Sydney

Postcode: 2000

Postal address If different from above)

Postal Address: as above

Telephone number, (02) 9478 3958

Mobile Number: 0461 413 184

email address: myles.harris-ayling@wsp.com

Development or Proposal Description

Type: Geotechnical site investigations for proposed High Speed Rail tunnels

Some examples of types of activity include: Berthing area, Boat ramp, Dredging, Electrical overhead, Jetty, Pontoon, Riverbank structure work, Road or walkway bridge, Rock revetment, Slipway, Underground crossing, Underground pipeline, Water catchment substructure etc.

Area: Hawkesbury River/Brisbane Water

Location: In the vicinity of Dangar Island, and within Broad Water

Construction Dates: Start: 17/09/2024 Finish: 15/11/2024

Will you be working on weekends? Yes ☑ No ☐

Construction Times:, 7am to 6pm, Monday to Saturday and every second Sunday

Will you require Exclusive Use? Yes ☐ No ☑

Will you require changes to navigation and/or navigation aids? Yes ☐ No ☑

Does the work relate to any ongoing commercial activity? Yes ☐ No ☑

Do you intend to use any of the surrounding foreshore? Please explain:

No. Personnel, equipment and waste transfers to be made from commercial wharves and/or public boat ramps. Exclusion zone to be implement around jack-up barges, but we do not anticipate that any channel closures will be required.

If this information is not known at time of application, please contact Maritime as soon as practicable to provide these details.]

Contact details during construction

If this information is not known at the time of application, please contact Maritime as soon as practicable to provide these details.]

Name: Myles Harris-Ayling

Position: Marine Investigation Manager / Associate Geotechnical Engineer

Mobile number: 0461 413 184 Email address. myles.harris-ayling@wsp.com

Consultation and other relevant approvals

Appropriate community and stakeholder consultation may be conducted before of any development of works are supported. Where the applicant or their agent has not provided evidence of consultation acceptable to TfNSW, further consultation may be required to be submitted and/or conducted by TfNSW.

Where an application relates to a complex or major proposal or development requiring extensive consultation and consideration, the proponent should liaise with TfNSW well ahead of the proposed commencement date. TfNSW may not support some applications where insufficient time has been allowed for appropriate assessment and community engagement, or where insufficient information has been provided.

Applicant or nominated representative's Declaration

I declare that I am authorised at act as the nominated representative of the application for the purposes of the proposal/development and that the information supplied is true and complete.

Applicant's signature,

Date: 9/9/24

Either attach this form to an email and send to us at the appropriate e email address, or post your paper-based application to the appropriate postal address. For a list of email and postal addresses refer to the instructions section on this form.

ROAD OCCUPANCY LICENCE

LICENCE NO : 2350838

ROADS & MARITIME SERVICES (RMS)

Phone: Monday To Friday 8.30 AM - 4.30 PM

To activate and deactivate your approved work shift(s) on your Road Occupancy Licence, please visit: myrol.transport.nsw.gov.au. This licence is for the occupation of the road space only. If you are unable to access myrol.transport.nsw.gov.au, please call TMC on 1800 679 782. For further assistance, please refer to the proponent's user manual here: myrol.transport.nsw.gov.au/help.pdf

NON DEVELOPMENT - CRANE

Project: Not Applicable

This Activity : Wheeler Cranes will be working at the Boat Ramp in the car park.

Traffic control will stop traffic to let the truck exit site.

LOCATION

Subject Road: BRISBANE WATER DR

From: WATERVIEW CR, TASCOTT

To: COUCHE CR, KOOLEWONG

Council: CENTRAL COAST

LICENSEE

Organisation: Australian Utilities Management

Ref No:

Name: Yvonne Devlin

Phone: 0419292351

ONSITE CONTACT

Name: Yvonne Devlin

Phone: 0419292351

TRAFFIC MANAGEMENT

Flow Management: Non-Trafficable Area; Short Term / Intermittent Works; Stop / Slow Control

Closure Type: 1 lane of 1

Closure Lane(s): Lane 1 (kerb lane/s); Shoulder

Direction(s): Southbound

LICENCE DURATION

From: 14-Oct-2024

To: 18-Oct-2024

LICENCE CONDITIONS

1. YOU MUST USE SHIFT ACTIVATION WEB ADDRESS https://myrol.transport.nsw.gov.au TO ACTIVATE AND DEACTIVATE YOUR APPROVED ROAD OCCUPANCY LICENCE(S). (TO CHANGE TRAFFIC CONTROL SIGNALS TO FLASHING YELLOW OR TO ACTIVATE PERMANENT VARIABLE MESSAGE SIGNS DIAL 1800 679 782)
2. THIS LICENCE IS NOT AN APPROVAL OF THE PROPONENT'S TRAFFIC GUIDANCE SCHEMES (TGS). PLEASE NOTE WORKCOVER REQUIRES THAT TRAFFIC GUIDANCE SCHEMES (TGS) COMPLY WITH AS1742.3
3. ALL MATTERS RELATING TO NOISE GENERATION OR OTHER ENVIRONMENTAL FACTORS ON SITE ARE UNDER THE JURISDICTION OF THE LOCAL COUNCIL AND/OR THE ENVIRONMENTAL PROTECTION AUTHORITY.
4. SHOULD THE PROPOSED WORKS INVOLVE UNDERBORING OR EXCAVATION OF STATE ROAD ASSETS OR THE REMOVAL OF KERB AND GUTTER, DETAILS OF WORKS MUST BE APPROVED BY TFNSW. FOR GREATER SYDNEY REGION CONTACT: greatersydneyroads@transport.nsw.gov.au. FOR REGIONAL & OUTER METROPOLITAN. CONTACT: road.access@transport.nsw.gov.au.
5. NOTIFICATION TO AFFECTED BUSINESSES, RESIDENTS AND OTHER STAKEHOLDERS MUST BE UNDERTAKEN AT LEAST 5 BUSINESS DAYS PRIOR TO WORKS COMMENCING
6. PLEASE NOTE THAT THIS LICENCE DOES NOT CONSTITUTE AN APPROVAL TO CARRY OUT THE ACTIVITIES PROPOSED IN THE ROL APPLICATION. APPLICATION HAS BEEN ASSESSED BY TMC FOR IMPACTS ON TRAFFIC FLOW ON THE PRINCIPAL ROAD NETWORK ONLY. THE ROADS DIRECTLY AFFECTED BY ACTIVITIES ARE LOCAL ROADS ADMINISTERED BY THE LOCAL COUNCIL. APPROVAL MUST BE OBTAINED FROM THE RELEVANT COUNCIL PRIOR TO COMMENCING ANY OF THE PROPOSED ACTIVITIES.
7. SHOULDER CLOSURE: THIS LICENCE APPLIES TO THE CLOSURE OF A SHOULDER IN ACCORDANCE WITH THE TRAFFIC CONTROL AT WORK SITES MANUAL. IN THESE SITUATIONS, NO LANE CLOSURES AND TRAFFIC MUST NOT BE STOPPED AT ANY TIME.
8. TRAFFIC QUEUES MUST NOT EXCEED 50 METRES MEASURED ALONG A SINGLE LANE IN ANY DIRECTION OR 30 SECONDS. END OF QUEUE MANAGEMENT IS TO BE UNDERTAKEN AND APPROPRIATE SIGNAGE DEPLOYED AT ALL TIMES. IF TRAFFIC DELAYS EXCEED ANY OF THESE CONDITIONS, ALL TRAFFIC CONTROL DEVICES MUST BE REMOVED FROM THE CARRIAGEWAY UNTIL NORMAL TRAFFIC VOLUMES RESUME AND TMC 1800679782 IS TO BE NOTIFIED IMMEDIATELY.

APPROVED DATES & TIMES

From Shift					To Shift			
From	D	M	Time	-	To	D	M	Time
Mon	14	Oct	07:00	-	Mon	14	Oct	18:00
Tue	15	Oct	07:00	-	Tue	15	Oct	18:00
Wed	16	Oct	07:00	-	Wed	16	Oct	18:00
Thu	17	Oct	07:00	-	Thu	17	Oct	18:00
Fri	18	Oct	07:00	-	Fri	18	Oct	18:00

All pages of this Road Occupancy Licence and associated Speed Zone Authorisation(s) must be available on site at all times and must be produced for inspection when requested by representatives of NSW Police, Roads & Maritimes Services, Transport for NSW and other Government Agencies.

ROAD OCCUPANCY LICENCE

LICENCE NO : 2350838

ROADS & MARITIME SERVICES (RMS)

Phone: Monday To Friday 8.30 AM - 4.30 PM

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From: WATERVIEW CR, TASCOTT

To: COUCHE CR, KOOLEWONG

Council: CENTRAL COAST

LICENSEE

Organisation: Australian Utilities Management

Ref No:

Name: Yvonne Devlin

Phone: 0419292351

ONSITE CONTACT

Name: Yvonne Devlin

Phone: 0419292351

TRAFFIC MANAGEMENT

Flow Management: Non-Trafficable Area; Short Term / Intermittent Works; Stop / Slow Control

Closure Type: 1 lane of 1

Closure Lane(s): Lane 1 (kerb lane/s); Shoulder

Direction(s): Southbound

LICENCE DURATION

From: 14-Oct-2024

To: 18-Oct-2024

LICENCE CONDITIONS

9 LANE WIDTHS MUST BE SUFFICIENT TO PERMIT CLEAR ACCESS FOR HEAVY VEHICLES.

10 PEDESTRIAN ACCESS MUST BE MAINTAINED AROUND THE WORK AREA IN A SAFE MANNER, COMPLYING WITH COUNCIL REQUIREMENTS.

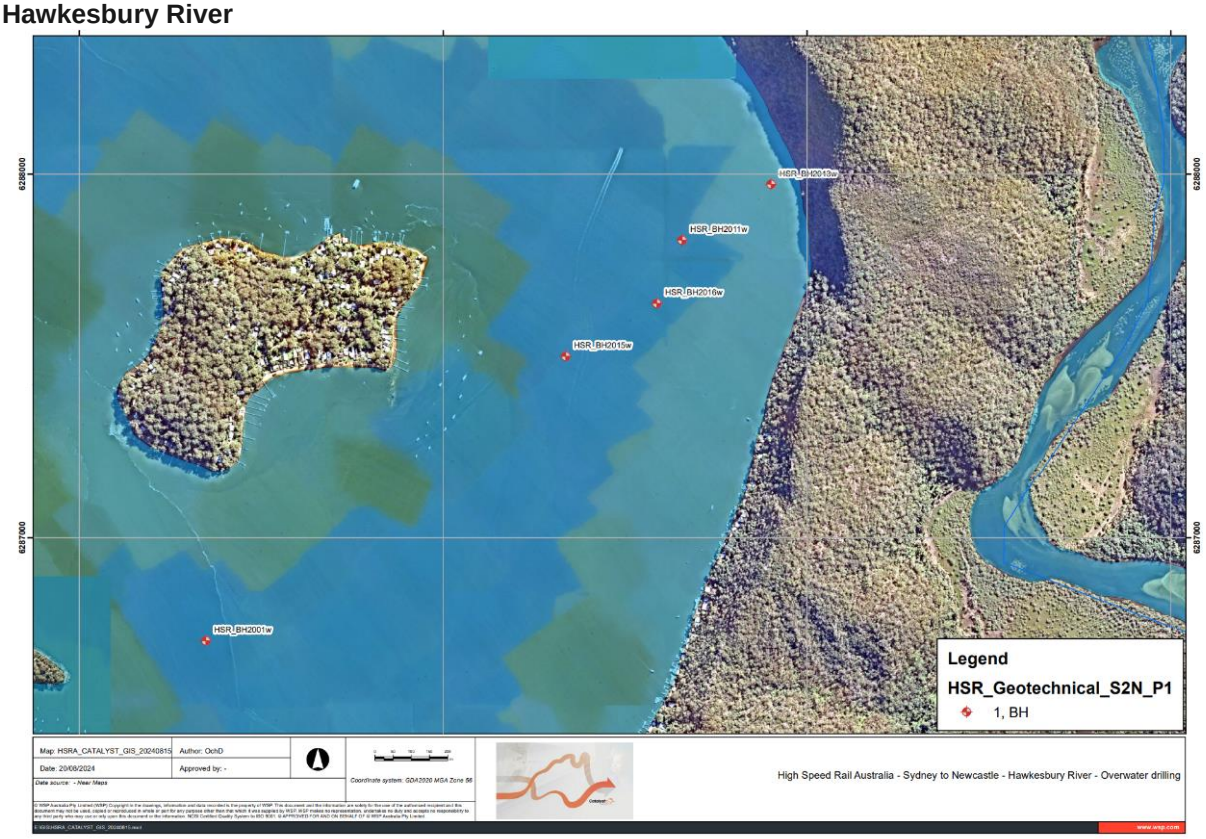
All pages of this Road Occupancy Licence and associated Speed Zone Authorisation(s) must be available on site at all times and must be produced for inspection when requested by representatives of NSW Police, Roads & Maritimes Services, Transport for NSW and other Government Agencies.

Appendix D – Investigation locations

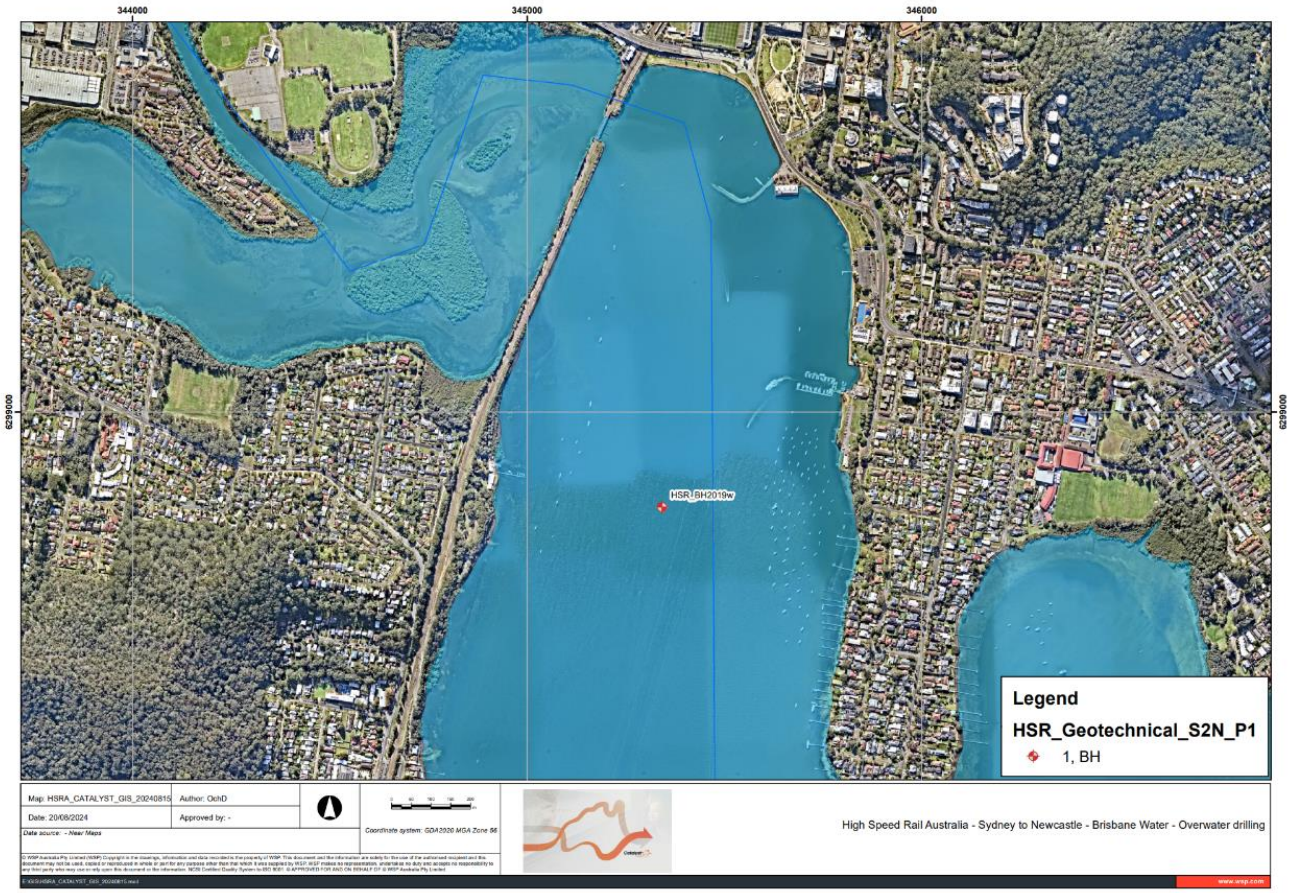
Borehole Locations

BH_No	Eastings (mMGA 56)	Northings (mMGA 56)	Latitude	Longitude	Location
HSR_BH2001w	336348	6286717	33° 32.799 S	151° 14.238' E	Hawkesbury River
HSR_BH2011w	337657	6287820	33° 32.215' S	151° 15.095' E	Hawkesbury River
HSR_BH2013w	337902	6287972	33° 32.134' S	151° 15.255' E	Hawkesbury River
HSR_BH2015w	337336	6287500	33° 32.385' S	151° 14.885' E	Hawkesbury River
HSR_BH2016w	337587	6287646	33° 32.308' S	151° 15.048' E	Hawkesbury River
HSR_BH2019w	345342	6298760	33° 26.365' S	151° 20.172' E	Brisbane Water

Hawkesbury River



Brisbane Water


344000
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Legend
HSR_Geotechnical_S2N_P1
1, BH
Map: HSRA_CATALYST_GIS_20240815
Author: OkhD
Date: 20/08/2024
Approved by: -
Date source: - Near Maps
Coordinate system: GDA2020 MGA Zone 56
High Speed Rail Australia - Sydney to Newcastle - Brisbane Water - Overwater drilling

Appendix E – Database searches

EPBC Act Protected Matters Report

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

Report created: 21-Jul-2024

Summary

Matters of National Environment Significance

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

World Heritage Properties:	None
National Heritage Places:	1
Wetlands of International Importance (Ramsar	None
Great Barrier Reef Marine Park:	None
Commonwealth Marine Area:	None
Listed Threatened Ecological Communities:	9
Listed Threatened Species:	121
Listed Migratory Species:	69

Other Matters Protected by the EPBC Act

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

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

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

Commonwealth Lands:	17
Commonwealth Heritage Places:	None
Listed Marine Species:	93
Whales and Other Cetaceans:	13
Critical Habitats:	None
Commonwealth Reserves Terrestrial:	None
Australian Marine Parks:	None
Habitat Critical to the Survival of Marine Turtles:	None

Extra Information

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

State and Territory Reserves:	15
Regional Forest Agreements:	1
Nationally Important Wetlands:	1
EPBC Act Referrals:	7
Key Ecological Features (Marine):	None
Biologically Important Areas:	4
Bioregional Assessments:	2
Geological and Bioregional Assessments:	None

Details

Matters of National Environmental Significance

National Heritage Places [Resource Information]

Name	State	Legal Status	Buffer Status
Natural			
Ku-ring-gai Chase National Park, Lion, Long and Spectacle Island Nature Reserves	NSW	Listed place	In feature area

Listed Threatened Ecological Communities [Resource Information]

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

Community Name	Threatened Category	Presence Text	Buffer Status
Coastal Swamp Oak (Casuarina glauca) Forest of New South Wales and South East Queensland ecological community	Endangered	Community likely to occur within area	In feature area
Coastal Swamp Sclerophyll Forest of New South Wales and South East Queensland	Endangered	Community likely to occur within area	In feature area
Coastal Upland Swamps in the Sydney Basin Bioregion	Endangered	Community likely to occur within area	In feature area
Eastern Suburbs Banksia Scrub of the Sydney Region	Critically Endangered	Community may occur within area	In buffer area only
Littoral Rainforest and Coastal Vine Thickets of Eastern Australia	Critically Endangered	Community likely to occur within area	In feature area
Posidonia australis seagrass meadows of the Manning-Hawkesbury ecoregion	Endangered	Community likely to occur within area	In buffer area only
River-flat eucalypt forest on coastal floodplains of southern New South Wales and eastern Victoria	Critically Endangered	Community likely to occur within area	In feature area
Shale Sandstone Transition Forest of the Sydney Basin Bioregion	Critically Endangered	Community may occur within area	In buffer area only
Subtropical and Temperate Coastal Saltmarsh	Vulnerable	Community likely to occur within area	In buffer area only

Listed Threatened Species [Resource Information]

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

Scientific Name	Threatened Category	Presence Text	Buffer Status
BIRD			
Anthochaera phrygia Regent Honeyeater [82338]	Critically Endangered	Species or species habitat known to occur within area	In feature area
Ardenna grisea Sooty Shearwater [82651]	Vulnerable	Breeding known to occur within area	In feature area
Botaurus poiciloptilus Australasian Bittern [1001]	Endangered	Species or species habitat known to occur within area	In feature area
Calidris acuminata Sharp-tailed Sandpiper [874]	Vulnerable	Species or species habitat known to occur within area	In feature area
Calidris canutus Red Knot, Knot [855]	Vulnerable	Species or species habitat known to occur within area	In feature area
Calidris ferruginea Curlew Sandpiper [856]	Critically Endangered	Species or species habitat known to occur within area	In feature area
Callocephalon fimbriatum Gang-gang Cockatoo [768]	Endangered	Species or species habitat known to occur within area	In feature area
Calyptorhynchus lathami lathami South-eastern Glossy Black-Cockatoo [67036]	Vulnerable	Species or species habitat known to occur within area	In feature area
Charadrius leschenaultii Greater Sand Plover, Large Sand Plover [877]	Vulnerable	Species or species habitat likely to occur within area	In buffer area only
Climacteris picumnus victoriae Brown Treecreeper (south-eastern) [67062]	Vulnerable	Species or species habitat likely to occur within area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
Dasyornis brachypterus Eastern Bristlebird [533]	Endangered	Species or species habitat known to occur within area	In feature area
Diomedea antipodensis Antipodean Albatross [64458]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area	In feature area
Diomedea antipodensis gibsoni Gibson's Albatross [82270]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area	In feature area
Diomedea epomophora Southern Royal Albatross [89221]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area	In feature area
Diomedea exulans Wandering Albatross [89223]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area	In feature area
Diomedea sanfordi Northern Royal Albatross [64456]	Endangered	Species or species habitat may occur within area	In feature area
Erythrotriorchis radiatus Red Goshawk [942]	Endangered	Species or species habitat may occur within area	In feature area
Falco hypoleucos Grey Falcon [929]	Vulnerable	Species or species habitat may occur within area	In feature 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	In feature area
Gallinago hardwickii Latham's Snipe, Japanese Snipe [863]	Vulnerable	Species or species habitat likely to occur within area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
Grantiella picta Painted Honeyeater [470]	Vulnerable	Species or species habitat likely to occur within area	In feature area
Hirundapus caudacutus White-throated Needletail [682]	Vulnerable	Species or species habitat known to occur within area	In feature area
Lathamus discolor Swift Parrot [744]	Critically Endangered	Species or species habitat known to occur within area	In feature area
Limosa lapponica baueri Nunivak Bar-tailed Godwit, Western Alaskan Bar-tailed Godwit [86380]	Endangered	Species or species habitat known to occur within area	In feature area
Macronectes giganteus Southern Giant-Petrel, Southern Giant Petrel [1060]	Endangered	Species or species habitat may occur within area	In feature area
Macronectes halli Northern Giant Petrel [1061]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area	In feature area
Melanodryas cucullata cucullata South-eastern Hooded Robin, Hooded Robin (south-eastern) [67093]	Endangered	Species or species habitat may occur within area	In feature area
Neophema chrysostoma Blue-winged Parrot [726]	Vulnerable	Species or species habitat likely to occur within area	In feature area
Numenius madagascariensis Eastern Curlew, Far Eastern Curlew [847]	Critically Endangered	Species or species habitat known to occur within area	In feature area
Pachyptila turtur subantarctica Fairy Prion (southern) [64445]	Vulnerable	Species or species habitat known to occur within area	In feature area
Pterodroma leucoptera leucoptera Gould's Petrel, Australian Gould's Petrel [26033]	Endangered	Species or species habitat may occur within area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
Pterodroma neglecta neglecta Kermadec Petrel (western) [64450]	Vulnerable	Foraging, feeding or related behaviour may occur within area	In feature area
Pycnoptilus floccosus Pilotbird [525]	Vulnerable	Species or species habitat known to occur within area	In feature area
Rostratula australis Australian Painted Snipe [77037]	Endangered	Species or species habitat likely to occur within area	In feature area
Stagonopleura guttata Diamond Firetail [59398]	Vulnerable	Species or species habitat likely to occur within area	In feature area
Sternula nereis nereis Australian Fairy Tern [82950]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area	In feature area
Thalassarche bulleri Buller's Albatross, Pacific Albatross [64460]	Vulnerable	Species or species habitat may occur within area	In feature area
Thalassarche bulleri platei Northern Buller's Albatross, Pacific Albatross [82273]	Vulnerable	Species or species habitat may occur within area	In feature area
Thalassarche carteri Indian Yellow-nosed Albatross [64464]	Vulnerable	Species or species habitat likely to occur within area	In feature area
Thalassarche cauta Shy Albatross [89224]	Endangered	Foraging, feeding or related behaviour likely to occur within area	In feature area
Thalassarche eremita Chatham Albatross [64457]	Endangered	Foraging, feeding or related behaviour may occur within area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
Thalassarche impavida			
Campbell Albatross, Campbell Black-browed Albatross [64459]	Vulnerable	Species or species habitat may occur within area	In feature area
Thalassarche melanophris			
Black-browed Albatross [66472]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area	In feature area
Thalassarche salvini			
Salvin's Albatross [64463]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area	In feature area
Thalassarche steadi			
White-capped Albatross [64462]	Vulnerable	Foraging, feeding or related behaviour known to occur within area	In feature area
Tringa nebularia			
Common Greenshank, Greenshank [832]	Endangered	Species or species habitat likely to occur within area	In feature area
FISH			
Epinephelus daemelii			
Black Rockcod, Black Cod, Saddled Rockcod [68449]	Vulnerable	Species or species habitat likely to occur within area	In feature area
Hippocampus whitei			
White's Seahorse, Crowned Seahorse, Sydney Seahorse [66240]	Endangered	Species or species habitat likely to occur within area	In feature area
Macquaria australasica			
Macquarie Perch [66632]	Endangered	Species or species habitat may occur within area	In feature area
Prototroctes maraena			
Australian Grayling [26179]	Vulnerable	Species or species habitat likely to occur within area	In feature area
Seriolella brama			
Blue Warehou [69374]	Conservation Dependent	Species or species habitat known to occur within area	In feature area
FROG			

Scientific Name	Threatened Category	Presence Text	Buffer Status
Heleioporus australiacus			
Giant Burrowing Frog [1973]	Vulnerable	Species or species habitat known to occur within area	In feature area
Litoria aurea			
Green and Golden Bell Frog [1870]	Vulnerable	Species or species habitat likely to occur within area	In feature area
Litoria littlejohni			
Northern Heath Frog, Littlejohn's Tree Frog [64733]	Endangered	Species or species habitat may occur within area	In buffer area only
Mixophyes balbus			
Stuttering Frog, Southern Barred Frog (in Victoria) [1942]	Vulnerable	Species or species habitat likely to occur within area	In feature area
Mixophyes iteratus			
Giant Barred Frog, Southern Barred Frog [1944]	Vulnerable	Species or species habitat known to occur within area	In buffer area only
MAMMAL			
Balaenoptera musculus			
Blue Whale [36]	Endangered	Species or species habitat may occur within area	In feature area
Chalinolobus dwyeri			
Large-eared Pied Bat, Large Pied Bat [183]	Endangered	Species or species habitat known to occur within area	In feature 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	In feature area
Eubalaena australis			
Southern Right Whale [40]	Endangered	Species or species habitat likely to occur within area	In feature area
Isoodon obesulus obesulus			
Southern Brown Bandicoot (eastern), Southern Brown Bandicoot (south-eastern) [68050]	Endangered	Species or species habitat known to occur within area	In feature area
Notamacropus parma			
Parma Wallaby [89289]	Vulnerable	Species or species habitat likely to occur within area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
Petauroides volans			
Greater Glider (southern and central) [254]	Endangered	Species or species habitat known to occur within area	In feature area
Petaurus australis australis			
Yellow-bellied Glider (south-eastern) [87600]	Vulnerable	Species or species habitat known to occur within area	In feature area
Petrogale penicillata			
Brush-tailed Rock-wallaby [225]	Vulnerable	Species or species habitat may occur within area	In feature area
Phascolarctos cinereus (combined populations of Qld, NSW and the ACT)			
Koala (combined populations of Queensland, New South Wales and the Australian Capital Territory) [85104]	Endangered	Species or species habitat known to occur within area	In feature area
Potorous tridactylus tridactylus			
Long-nosed Potoroo (northern) [66645]	Vulnerable	Species or species habitat likely to occur within area	In feature area
Pseudomys novaehollandiae			
New Holland Mouse, Pookila [96]	Vulnerable	Species or species habitat known to occur within area	In feature area
Pteropus poliocephalus			
Grey-headed Flying-fox [186]	Vulnerable	Roosting known to occur within area	In feature area
OTHER			
Dendronephthya australis			
Cauliflower Soft Coral [90325]	Endangered	Species or species habitat may occur within area	In feature area
PLANT			
Acacia bynoeana			
Bynoe's Wattle, Tiny Wattle [8575]	Vulnerable	Species or species habitat known to occur within area	In feature area
Acacia gordonii			
[5031]	Endangered	Species or species habitat may occur within area	In buffer area only
Acacia terminalis subsp. Eastern Sydney (G.P.Phillips 126) listed as Acacia terminalis subsp. terminalis MS			
Sunshine Wattle (Sydney region) [91564]	Endangered	Species or species habitat known to occur within area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
Allocasuarina glareicola [21932]	Endangered	Species or species habitat may occur within area	In buffer area only
Asterolasia elegans [56780]	Endangered	Species or species habitat known to occur within area	In feature area
Astrotricha crassifolia Thick-leaf Star-hair [10352]	Vulnerable	Species or species habitat known to occur within area	In feature area
Baloskion longipes Dense Cord-rush [68511]	Vulnerable	Species or species habitat may occur within area	In buffer area only
Caladenia tessellata Thick-lipped Spider-orchid, Daddy Long-legs [2119]	Vulnerable	Species or species habitat likely to occur within area	In feature area
Cryptostylis hunteriana Leafless Tongue-orchid [19533]	Vulnerable	Species or species habitat likely to occur within area	In feature area
Cynanchum elegans White-flowered Wax Plant [12533]	Endangered	Species or species habitat likely to occur within area	In feature area
Darwinia biflora [14619]	Vulnerable	Species or species habitat known to occur within area	In feature area
Eucalyptus camfieldii Camfield's Stringybark [15460]	Vulnerable	Species or species habitat known to occur within area	In feature area
Genoplesium baueri Yellow Gnat-orchid, Bauer's Midge Orchid, Brittle Midge Orchid [7528]	Endangered	Species or species habitat known to occur within area	In feature area
Grevillea caleyi Caley's Grevillea [9683]	Critically Endangered	Species or species habitat known to occur within area	In buffer area only

Scientific Name	Threatened Category	Presence Text	Buffer Status
Grevillea shiressii [19186]	Vulnerable	Species or species habitat known to occur within area	In feature area
Haloragis exalata subsp. exalata Wingless Raspwort, Square Raspwort [24636]	Vulnerable	Species or species habitat known to occur within area	In feature area
Haloragodendron lucasii Hal [6480]	Endangered	Species or species habitat likely to occur within area	In feature area
Kunzea rupestris [8798]	Vulnerable	Species or species habitat known to occur within area	In feature area
Lasiopetalum joyceae [20311]	Vulnerable	Species or species habitat known to occur within area	In feature area
Leptospermum deanei Deane's Tea-tree [21777]	Vulnerable	Species or species habitat likely to occur within area	In buffer area only
Leucopogon exolasius Woronora Beard-heath [14251]	Vulnerable	Species or species habitat may occur within area	In feature area
Melaleuca biconvexa Biconvex Paperbark [5583]	Vulnerable	Species or species habitat known to occur within area	In feature area
Melaleuca deanei Deane's Melaleuca [5818]	Vulnerable	Species or species habitat known to occur within area	In feature area
Micromyrtus blakelyi [6870]	Vulnerable	Species or species habitat known to occur within area	In feature area
Microtis angusii Angus's Onion Orchid [64530]	Endangered	Species or species habitat may occur within area	In buffer area only

Scientific Name	Threatened Category	Presence Text	Buffer Status
Persicaria elatior Knotweed, Tall Knotweed [5831]	Vulnerable	Species or species habitat may occur within area	In feature area
Persoonia hirsuta Hairy Geebung, Hairy Persoonia [19006]	Endangered	Species or species habitat known to occur within area	In feature area
Persoonia mollis subsp. maxima [56075]	Endangered	Species or species habitat known to occur within area	In feature area
Pimelea curviflora var. curviflora [4182]	Vulnerable	Species or species habitat known to occur within area	In feature area
Pomaderris brunnea Rufous Pomaderris, Brown Pomaderris [16845]	Vulnerable	Species or species habitat likely to occur within area	In buffer area only
Prostanthera askania Tranquillity Mintbush, Tranquility Mintbush [64958]	Endangered	Species or species habitat known to occur within area	In buffer area only
Prostanthera densa Villous Mintbush [12233]	Vulnerable	Species or species habitat may occur within area	In feature area
Prostanthera junonis Somersby Mintbush [64960]	Endangered	Species or species habitat known to occur within area	In feature area
Rhizanthella slateri Eastern Underground Orchid [11768]	Endangered	Species or species habitat likely to occur within area	In feature area
Rhodamnia rubescens Scrub Turpentine, Brown Malletwood [15763]	Critically Endangered	Species or species habitat known to occur within area	In feature area
Rhodomyrtus psidioides Native Guava [19162]	Critically Endangered	Species or species habitat known to occur within area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
[Syzygium paniculatum](#) Magenta Lilly Pilly, Magenta Cherry, Daguba, Scrub Cherry, Creek Lilly Pilly, Brush Cherry [20307]	Vulnerable	Species or species habitat known to occur within area	In feature area
[Thesium australe](#) Austral Toadflax, Toadflax [15202]	Vulnerable	Species or species habitat likely to occur within area	In feature area
[Zieria involucrata](#) [3087]	Vulnerable	Species or species habitat known to occur within area	In buffer area only
REPTILE			
[Caretta caretta](#) Loggerhead Turtle [1763]	Endangered	Foraging, feeding or related behaviour known to occur within area	In feature area
[Chelonia mydas](#) Green Turtle [1765]	Vulnerable	Foraging, feeding or related behaviour known to occur within area	In feature area
[Dermochelys coriacea](#) Leatherback Turtle, Leathery Turtle, Luth [1768]	Endangered	Foraging, feeding or related behaviour known to occur within area	In feature area
[Eretmochelys imbricata](#) Hawksbill Turtle [1766]	Vulnerable	Species or species habitat known to occur within area	In feature area
[Hoplocephalus bungaroides](#) Broad-headed Snake [1182]	Endangered	Species or species habitat may occur within area	In feature area
[Natator depressus](#) Flatback Turtle [59257]	Vulnerable	Foraging, feeding or related behaviour known to occur within area	In feature area
SHARK			
[Carcharias taurus (east coast population)](#) Grey Nurse Shark (east coast population) [68751]	Critically Endangered	Foraging, feeding or related behaviour likely to occur within area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
Carcharodon carcharias			
White Shark, Great White Shark [64470]	Vulnerable	Species or species habitat known to occur within area	In feature area
Galeorhinus galeus			
School Shark, Eastern School Shark, Snapper Shark, Tope, Soupfin Shark [68453]	Conservation Dependent	Species or species habitat may occur within area	In buffer area only
Rhincodon typus			
Whale Shark [66680]	Vulnerable	Species or species habitat may occur within area	In feature area
Sphyrna lewini			
Scalloped Hammerhead [85267]	Conservation Dependent	Species or species habitat likely to occur within area	In feature area
SNAIL			
Meridolum maryae			
Maroubra Woodland Snail, Maroubra Land Snail [89884]	Endangered	Species or species habitat known to occur within area	In buffer area only

Listed Migratory Species [Resource Information]

Scientific Name	Threatened Category	Presence Text	Buffer Status
Migratory Marine Birds			
Anous stolidus			
Common Noddy [825]		Species or species habitat likely to occur within area	In feature area
Apus pacificus			
Fork-tailed Swift [678]		Species or species habitat likely to occur within area	In feature area
Ardenna carneipes			
Flesh-footed Shearwater, Fleshy-footed Shearwater [82404]		Foraging, feeding or related behaviour likely to occur within area	In feature area
Ardenna grisea			
Sooty Shearwater [82651]	Vulnerable	Breeding known to occur within area	In feature area
Ardenna pacifica			
Wedge-tailed Shearwater [84292]		Breeding known to occur within area	In buffer area only
Ardenna tenuirostris			
Short-tailed Shearwater [82652]		Breeding known to occur within area	In buffer area only

Scientific Name	Threatened Category	Presence Text	Buffer Status
Calonectris leucomelas Streaked Shearwater [1077]		Species or species habitat known to occur within area	In feature area
Diomedea antipodensis Antipodean Albatross [64458]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area	In feature area
Diomedea epomophora Southern Royal Albatross [89221]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area	In feature area
Diomedea exulans Wandering Albatross [89223]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area	In feature area
Diomedea sanfordi Northern Royal Albatross [64456]	Endangered	Species or species habitat may occur within area	In feature area
Fregata ariel Lesser Frigatebird, Least Frigatebird [1012]		Species or species habitat likely to occur within area	In feature area
Fregata minor Great Frigatebird, Greater Frigatebird [1013]		Species or species habitat may occur within area	In feature area
Macronectes giganteus Southern Giant-Petrel, Southern Giant Petrel [1060]	Endangered	Species or species habitat may occur within area	In feature area
Macronectes halli Northern Giant Petrel [1061]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area	In feature area
Phaethon lepturus White-tailed Tropicbird [1014]		Species or species habitat may occur within area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
[Sternula albifrons](#) Little Tern [82849]		Species or species habitat may occur within area	In feature area
[Thalassarche bulleri](#) Buller's Albatross, Pacific Albatross [64460]	Vulnerable	Species or species habitat may occur within area	In feature area
[Thalassarche carteri](#) Indian Yellow-nosed Albatross [64464]	Vulnerable	Species or species habitat likely to occur within area	In feature area
[Thalassarche cauta](#) Shy Albatross [89224]	Endangered	Foraging, feeding or related behaviour likely to occur within area	In feature area
[Thalassarche eremita](#) Chatham Albatross [64457]	Endangered	Foraging, feeding or related behaviour may occur within area	In feature area
[Thalassarche impavida](#) Campbell Albatross, Campbell Black-browed Albatross [64459]	Vulnerable	Species or species habitat may occur within area	In feature area
[Thalassarche melanophris](#) Black-browed Albatross [66472]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area	In feature area
[Thalassarche salvini](#) Salvin's Albatross [64463]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area	In feature area
[Thalassarche steadi](#) White-capped Albatross [64462]	Vulnerable	Foraging, feeding or related behaviour known to occur within area	In feature area
Migratory Marine Species			
[Balaenoptera edeni](#) Bryde's Whale [35]		Species or species habitat may occur within area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
[Balaenoptera musculus](#) Blue Whale [36]	Endangered	Species or species habitat may occur within area	In feature area
[Caperea marginata](#) Pygmy Right Whale [39]		Foraging, feeding or related behaviour may occur within area	In feature area
[Carcharhinus longimanus](#) Oceanic Whitetip Shark [84108]		Species or species habitat may occur within area	In feature area
[Carcharodon carcharias](#) White Shark, Great White Shark [64470]	Vulnerable	Species or species habitat known to occur within area	In feature area
[Caretta caretta](#) Loggerhead Turtle [1763]	Endangered	Foraging, feeding or related behaviour known to occur within area	In feature area
[Chelonia mydas](#) Green Turtle [1765]	Vulnerable	Foraging, feeding or related behaviour known to occur within area	In feature area
[Dermochelys coriacea](#) Leatherback Turtle, Leathery Turtle, Luth [1768]	Endangered	Foraging, feeding or related behaviour known to occur within area	In feature area
[Dugong dugon](#) Dugong [28]		Species or species habitat may occur within area	In feature area
[Eretmochelys imbricata](#) Hawksbill Turtle [1766]	Vulnerable	Species or species habitat known to occur within area	In feature area
[Eubalaena australis as Balaena glacialis australis](#) Southern Right Whale [40]	Endangered	Species or species habitat likely to occur within area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
Lagenorhynchus obscurus Dusky Dolphin [43]		Species or species habitat may occur within area	In feature area
Lamna nasus Porbeagle, Mackerel Shark [83288]		Species or species habitat likely to occur within area	In feature area
Megaptera novaeangliae Humpback Whale [38]		Species or species habitat known to occur within area	In buffer area only
Mobula alfredi as Manta alfredi Reef Manta Ray, Coastal Manta Ray [90033]		Species or species habitat may occur within area	In feature area
Mobula birostris as Manta birostris Giant Manta Ray [90034]		Species or species habitat may occur within area	In feature area
Natator depressus Flatback Turtle [59257]	Vulnerable	Foraging, feeding or related behaviour known to occur within area	In feature area
Orcinus orca Killer Whale, Orca [46]		Species or species habitat may occur within area	In buffer area only
Rhincodon typus Whale Shark [66680]	Vulnerable	Species or species habitat may occur within area	In feature area
Migratory Terrestrial Species			
Cuculus optatus Oriental Cuckoo, Horsfield's Cuckoo [86651]		Species or species habitat may occur within area	In feature area
Hirundapus caudacutus White-throated Needletail [682]	Vulnerable	Species or species habitat known to occur within area	In feature area
Monarcha melanopsis Black-faced Monarch [609]		Species or species habitat known to occur within area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
[Motacilla flava](#) Yellow Wagtail [644]		Species or species habitat likely to occur within area	In feature area
[Myiagra cyanoleuca](#) Satin Flycatcher [612]		Species or species habitat known to occur within area	In feature area
[Rhipidura rufifrons](#) Rufous Fantail [592]		Species or species habitat known to occur within area	In feature area
[Symposiachrus trivirgatus as Monarcha trivirgatus](#) Spectacled Monarch [83946]		Species or species habitat may occur within area	In feature area
Migratory Wetlands Species			
[Actitis hypoleucos](#) Common Sandpiper [59309]		Species or species habitat known to occur within area	In feature area
[Calidris acuminata](#) Sharp-tailed Sandpiper [874]	Vulnerable	Species or species habitat known to occur within area	In feature area
[Calidris canutus](#) Red Knot, Knot [855]	Vulnerable	Species or species habitat known to occur within area	In feature area
[Calidris ferruginea](#) Curlew Sandpiper [856]	Critically Endangered	Species or species habitat known to occur within area	In feature area
[Calidris melanotos](#) Pectoral Sandpiper [858]		Species or species habitat known to occur within area	In feature area
[Charadrius bicinctus](#) Double-banded Plover [895]		Foraging, feeding or related behaviour known to occur within area	In buffer area only
[Charadrius leschenaultii](#) Greater Sand Plover, Large Sand Plover [877]	Vulnerable	Species or species habitat likely to occur within area	In buffer area only

Scientific Name	Threatened Category	Presence Text	Buffer Status
[Gallinago hardwickii](#) Latham's Snipe, Japanese Snipe [863]	Vulnerable	Species or species habitat likely to occur within area	In feature area
[Gallinago megala](#) Swinhoe's Snipe [864]		Foraging, feeding or related behaviour likely to occur within area	In buffer area only
[Gallinago stenura](#) Pin-tailed Snipe [841]		Foraging, feeding or related behaviour likely to occur within area	In buffer area only
[Limosa lapponica](#) Bar-tailed Godwit [844]		Species or species habitat known to occur within area	In feature area
[Numenius madagascariensis](#) Eastern Curlew, Far Eastern Curlew [847]	Critically Endangered	Species or species habitat known to occur within area	In feature area
[Numenius minutus](#) Little Curlew, Little Whimbrel [848]		Foraging, feeding or related behaviour likely to occur within area	In buffer area only
[Numenius phaeopus](#) Whimbrel [849]		Foraging, feeding or related behaviour known to occur within area	In buffer area only
[Pandion haliaetus](#) Osprey [952]		Species or species habitat known to occur within area	In feature area
[Pluvialis fulva](#) Pacific Golden Plover [25545]		Foraging, feeding or related behaviour known to occur within area	In buffer area only
[Tringa brevipes](#) Grey-tailed Tattler [851]		Foraging, feeding or related behaviour known to occur within area	In buffer area only

Scientific Name	Threatened Category	Presence Text	Buffer Status
Tringa nebularia			
Common Greenshank, Greenshank [832]	Endangered	Species or species habitat likely to occur within area	In feature area

Other Matters Protected by the EPBC Act

Commonwealth Lands [Resource Information]

The Commonwealth area listed below may indicate the presence of Commonwealth land in this vicinity. Due to the unreliability of the data source, all proposals should be checked as to whether it impacts on a Commonwealth area, before making a definitive decision. Contact the State or Territory government land department for further information.

Commonwealth Land Name	State	Buffer Status
Communications, Information Technology and the Arts - Telstra Corporation Limited		
Commonwealth Land - Australian Telecommunications Commission [13913]	NSW	In buffer area only
Commonwealth Land - Australian Telecommunications Commission [16081]	NSW	In buffer area only
Commonwealth Land - Australian Telecommunications Commission [11831]	NSW	In buffer area only
Commonwealth Land - Australian Telecommunications Commission [11742]	NSW	In buffer area only
Commonwealth Land - Australian Telecommunications Commission [11830]	NSW	In buffer area only
Commonwealth Land - Australian Telecommunications Commission [14404]	NSW	In feature area
Commonwealth Land - Australian Telecommunications Commission [11829]	NSW	In buffer area only
Commonwealth Land - Australian Telecommunications Commission [11827]	NSW	In buffer area only
Commonwealth Land - Australian Telecommunications Commission [16092]	NSW	In buffer area only
Commonwealth Land - Telstra Corporation Limited [15445]	NSW	In buffer area only
Defence		
Defence - PITTWATER DIVING ANNEX (forms part of "RAN Torpedo Range") [10026]	NSW	In buffer area only
Defence - PITTWATER DIVING ANNEX (forms part of "RAN Torpedo Range") [10027]	NSW	In buffer area only

Commonwealth Land Name	State	Buffer Status
Defence - PITTWATER DIVING ANNEX (forms part of "RAN Torpedo Range") [10028]	NSW	In buffer area only
Defence - Defence Housing Authority		
Commonwealth Land - Director of War Service Homes [11764]	NSW	In buffer area only
Commonwealth Land - Director of War Service Homes [11828]	NSW	In buffer area only
Commonwealth Land - Director of War Service Homes [16556]	NSW	In buffer area only
Unknown		
Commonwealth Land - [15941]	NSW	In feature area

Listed Marine Species [Resource Information]

Scientific Name	Threatened Category	Presence Text	Buffer Status
Bird			
Actitis hypoleucos Common Sandpiper [59309]		Species or species habitat known to occur within area	In feature area
Anous stolidus Common Noddy [825]		Species or species habitat likely to occur within area	In feature area
Apus pacificus Fork-tailed Swift [678]		Species or species habitat likely to occur within area overfly marine area	In feature area
Ardenna carneipes as Puffinus carneipes Flesh-footed Shearwater, Fleshy-footed Shearwater [82404]		Foraging, feeding or related behaviour likely to occur within area	In feature area
Ardenna grisea as Puffinus griseus Sooty Shearwater [82651]	Vulnerable	Breeding known to occur within area	In feature area
Ardenna pacifica as Puffinus pacificus Wedge-tailed Shearwater [84292]		Breeding known to occur within area	In buffer area only
Ardenna tenuirostris as Puffinus tenuirostris Short-tailed Shearwater [82652]		Breeding known to occur within area	In buffer area only

Scientific Name	Threatened Category	Presence Text	Buffer Status
Bubulcus ibis as Ardea ibis Cattle Egret [66521]		Species or species habitat may occur within area overfly marine area	In feature area
Calidris acuminata Sharp-tailed Sandpiper [874]	Vulnerable	Species or species habitat known to occur within area	In feature area
Calidris canutus Red Knot, Knot [855]	Vulnerable	Species or species habitat known to occur within area overfly marine area	In feature area
Calidris ferruginea Curlew Sandpiper [856]	Critically Endangered	Species or species habitat known to occur within area overfly marine area	In feature area
Calidris melanotos Pectoral Sandpiper [858]		Species or species habitat known to occur within area overfly marine area	In feature area
Calonectris leucomelas Streaked Shearwater [1077]		Species or species habitat known to occur within area	In feature area
Charadrius bicinctus Double-banded Plover [895]		Foraging, feeding or related behaviour known to occur within area overfly marine area	In buffer area only
Charadrius leschenaultii Greater Sand Plover, Large Sand Plover [877]	Vulnerable	Species or species habitat likely to occur within area	In buffer area only
Diomedea antipodensis Antipodean Albatross [64458]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area	In feature area
Diomedea antipodensis gibsoni as Diomedea gibsoni Gibson's Albatross [82270]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
Diomedea epomophora Southern Royal Albatross [89221]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area	In feature area
Diomedea exulans Wandering Albatross [89223]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area	In feature area
Diomedea sanfordi Northern Royal Albatross [64456]	Endangered	Species or species habitat may occur within area	In feature area
Eudyptula minor Little Penguin [1085]		Breeding known to occur within area	In buffer area only
Fregata ariel Lesser Frigatebird, Least Frigatebird [1012]		Species or species habitat likely to occur within area	In feature area
Fregata minor Great Frigatebird, Greater Frigatebird [1013]		Species or species habitat may occur within area	In feature area
Gallinago hardwickii Latham's Snipe, Japanese Snipe [863]	Vulnerable	Species or species habitat likely to occur within area overfly marine area	In feature area
Gallinago megala Swinhoe's Snipe [864]		Foraging, feeding or related behaviour likely to occur within area overfly marine area	In buffer area only
Gallinago stenura Pin-tailed Snipe [841]		Foraging, feeding or related behaviour likely to occur within area overfly marine area	In buffer area only
Haliaeetus leucogaster White-bellied Sea-Eagle [943]		Species or species habitat known to occur within area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
Himantopus himantopus Pied Stilt, Black-winged Stilt [870]		Foraging, feeding or related behaviour known to occur within area overfly marine area	In buffer area only
Hirundapus caudacutus White-throated Needletail [682]	Vulnerable	Species or species habitat known to occur within area overfly marine area	In feature area
Lathamus discolor Swift Parrot [744]	Critically Endangered	Species or species habitat known to occur within area overfly marine area	In feature area
Limosa lapponica Bar-tailed Godwit [844]		Species or species habitat known to occur within area	In feature area
Macronectes giganteus Southern Giant-Petrel, Southern Giant Petrel [1060]	Endangered	Species or species habitat may occur within area	In feature area
Macronectes halli Northern Giant Petrel [1061]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area	In feature area
Merops ornatus Rainbow Bee-eater [670]		Species or species habitat may occur within area overfly marine area	In feature area
Monarcha melanopsis Black-faced Monarch [609]		Species or species habitat known to occur within area overfly marine area	In feature area
Motacilla flava Yellow Wagtail [644]		Species or species habitat likely to occur within area overfly marine area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
Myiagra cyanoleuca Satin Flycatcher [612]		Species or species habitat known to occur within area overfly marine area	In feature area
Neophema chrysostoma Blue-winged Parrot [726]	Vulnerable	Species or species habitat likely to occur within area overfly marine area	In feature area
Numenius madagascariensis Eastern Curlew, Far Eastern Curlew [847]	Critically Endangered	Species or species habitat known to occur within area	In feature area
Numenius minutus Little Curlew, Little Whimbrel [848]		Foraging, feeding or related behaviour likely to occur within area overfly marine area	In buffer area only
Numenius phaeopus Whimbrel [849]		Foraging, feeding or related behaviour known to occur within area	In buffer area only
Pachyptila turtur Fairy Prion [1066]		Species or species habitat known to occur within area	In feature area
Pandion haliaetus Osprey [952]		Species or species habitat known to occur within area	In feature area
Phaethon lepturus White-tailed Tropicbird [1014]		Species or species habitat may occur within area	In feature area
Pluvialis fulva Pacific Golden Plover [25545]		Foraging, feeding or related behaviour known to occur within area	In buffer area only
Pterodroma cervicalis White-necked Petrel [59642]		Species or species habitat may occur within area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
Rhipidura rufifrons Rufous Fantail [592]		Species or species habitat known to occur within area overfly marine area	In feature area
Rostratula australis as Rostratula benghalensis (sensu lato) Australian Painted Snipe [77037]	Endangered	Species or species habitat likely to occur within area overfly marine area	In feature area
Stercorarius antarcticus as Catharacta skua Brown Skua [85039]		Species or species habitat may occur within area	In buffer area only
Sterna striata White-fronted Tern [799]		Foraging, feeding or related behaviour likely to occur within area	In feature area
Sternula albifrons as Sterna albifrons Little Tern [82849]		Species or species habitat may occur within area	In feature area
Symposiachrus trivirgatus as Monarcha trivirgatus Spectacled Monarch [83946]		Species or species habitat may occur within area overfly marine area	In feature area
Thalassarche bulleri Buller's Albatross, Pacific Albatross [64460]	Vulnerable	Species or species habitat may occur within area	In feature area
Thalassarche bulleri platei as Thalassarche sp. nov. Northern Buller's Albatross, Pacific Albatross [82273]	Vulnerable	Species or species habitat may occur within area	In feature area
Thalassarche carteri Indian Yellow-nosed Albatross [64464]	Vulnerable	Species or species habitat likely to occur within area	In feature area
Thalassarche cauta Shy Albatross [89224]	Endangered	Foraging, feeding or related behaviour likely to occur within area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
Thalassarche eremita			
Chatham Albatross [64457]	Endangered	Foraging, feeding or related behaviour may occur within area	In feature area
Thalassarche impavida			
Campbell Albatross, Campbell Black-browed Albatross [64459]	Vulnerable	Species or species habitat may occur within area	In feature area
Thalassarche melanophris			
Black-browed Albatross [66472]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area	In feature area
Thalassarche salvini			
Salvin's Albatross [64463]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area	In feature area
Thalassarche steadi			
White-capped Albatross [64462]	Vulnerable	Foraging, feeding or related behaviour known to occur within area	In feature area
Tringa brevipes as Heteroscelus brevipes			
Grey-tailed Tattler [851]		Foraging, feeding or related behaviour known to occur within area	In buffer area only
Tringa nebularia			
Common Greenshank, Greenshank [832]	Endangered	Species or species habitat likely to occur within area overfly marine area	In feature area
Fish			
Acentronura tentaculata			
Shortpouch Pygmy Pipehorse [66187]		Species or species habitat may occur within area	In feature area
Festucalex cinctus			
Girdled Pipefish [66214]		Species or species habitat may occur within area	In feature area
Filicampus tigris			
Tiger Pipefish [66217]		Species or species habitat may occur within area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
Heraldia nocturna Upside-down Pipefish, Eastern Upside-down Pipefish, Eastern Upside-down Pipefish [66227]		Species or species habitat may occur within area	In feature area
Hippichthys penicillus Beady Pipefish, Steep-nosed Pipefish [66231]		Species or species habitat may occur within area	In feature area
Hippocampus abdominalis Big-belly Seahorse, Eastern Potbelly Seahorse, New Zealand Potbelly Seahorse [66233]		Species or species habitat may occur within area	In feature area
Hippocampus whitei White's Seahorse, Crowned Seahorse, Sydney Seahorse [66240]	Endangered	Species or species habitat likely to occur within area	In feature area
Histiogamphelus briggsii Crested Pipefish, Briggs' Crested Pipefish, Briggs' Pipefish [66242]		Species or species habitat may occur within area	In feature area
Lissocampus runa Javelin Pipefish [66251]		Species or species habitat may occur within area	In feature area
Maroubra perserrata Sawtooth Pipefish [66252]		Species or species habitat may occur within area	In feature area
Notiocampus ruber Red Pipefish [66265]		Species or species habitat may occur within area	In feature area
Phyllopteryx taeniolatus Common Seadragon, Weedy Seadragon [66268]		Species or species habitat may occur within area	In feature area
Solegnathus spinosissimus Spiny Pipehorse, Australian Spiny Pipehorse [66275]		Species or species habitat may occur within area	In feature area
Solenostomus cyanopterus Robust Ghostpipefish, Blue-finned Ghost Pipefish, [66183]		Species or species habitat may occur within area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
Solenostomus paradoxus Ornate Ghostpipefish, Harlequin Ghost Pipefish, Ornate Ghost Pipefish [66184]		Species or species habitat may occur within area	In feature area
Stigmatopora argus Spotted Pipefish, Gulf Pipefish, Peacock Pipefish [66276]		Species or species habitat may occur within area	In feature area
Stigmatopora nigra Widebody Pipefish, Wide-bodied Pipefish, Black Pipefish [66277]		Species or species habitat may occur within area	In feature area
Syngnathoides biaculeatus Double-end Pipehorse, Double-ended Pipehorse, Alligator Pipefish [66279]		Species or species habitat may occur within area	In feature area
Trachyrhamphus bicoarctatus Bentstick Pipefish, Bend Stick Pipefish, Short-tailed Pipefish [66280]		Species or species habitat may occur within area	In feature area
Urocampus carinirostris Hairy Pipefish [66282]		Species or species habitat may occur within area	In feature area
Vanacampus margaritifer Mother-of-pearl Pipefish [66283]		Species or species habitat may occur within area	In feature area
Mammal			
Arctocephalus forsteri Long-nosed Fur-seal, New Zealand Fur-seal [20]		Species or species habitat may occur within area	In feature area
Arctocephalus pusillus Australian Fur-seal, Australo-African Fur-seal [21]		Species or species habitat may occur within area	In feature area
Dugong dugon Dugong [28]		Species or species habitat may occur within area	In feature area
Reptile			
Caretta caretta Loggerhead Turtle [1763]	Endangered	Foraging, feeding or related behaviour known to occur within area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
Chelonia mydas			
Green Turtle [1765]	Vulnerable	Foraging, feeding or related behaviour known to occur within area	In feature area
Dermochelys coriacea			
Leatherback Turtle, Leathery Turtle, Luth [1768]	Endangered	Foraging, feeding or related behaviour known to occur within area	In feature area
Eretmochelys imbricata			
Hawksbill Turtle [1766]	Vulnerable	Species or species habitat known to occur within area	In feature area
Hydrophis platura as Pelamis platurus			
Yellow-bellied Sea Snake [93746]		Species or species habitat may occur within area	In feature area
Natator depressus			
Flatback Turtle [59257]	Vulnerable	Foraging, feeding or related behaviour known to occur within area	In feature area

Whales and Other Cetaceans			[Resource Information]
Current Scientific Name	Status	Type of Presence	Buffer Status
Mammal			
Balaenoptera acutorostrata			
Minke Whale [33]		Species or species habitat may occur within area	In buffer area only
Balaenoptera edeni			
Bryde's Whale [35]		Species or species habitat may occur within area	In feature area
Balaenoptera musculus			
Blue Whale [36]	Endangered	Species or species habitat may occur within area	In feature area
Caperea marginata			
Pygmy Right Whale [39]		Foraging, feeding or related behaviour may occur within area	In feature area
Delphinus delphis			
Common Dolphin, Short-beaked Common Dolphin [60]		Species or species habitat may occur within area	In feature area

Current Scientific Name	Status	Type of Presence	Buffer Status
Eubalaena australis Southern Right Whale [40]	Endangered	Species or species habitat likely to occur within area	In feature area
Grampus griseus Risso's Dolphin, Grampus [64]		Species or species habitat may occur within area	In buffer area only
Lagenorhynchus obscurus Dusky Dolphin [43]		Species or species habitat may occur within area	In feature area
Megaptera novaeangliae Humpback Whale [38]		Species or species habitat known to occur within area	In buffer area only
Orcinus orca Killer Whale, Orca [46]		Species or species habitat may occur within area	In buffer area only
Stenella attenuata Spotted Dolphin, Pantropical Spotted Dolphin [51]		Species or species habitat may occur within area	In feature area
Tursiops aduncus Indian Ocean Bottlenose Dolphin, Spotted Bottlenose Dolphin [68418]		Species or species habitat likely to occur within area	In feature area
Tursiops truncatus s. str. Bottlenose Dolphin [68417]		Species or species habitat may occur within area	In feature area

Extra Information

State and Territory Reserves			[Resource Information]
Protected Area Name	Reserve Type	State	Buffer Status
Barrenjoey	Aquatic Reserve	NSW	In buffer area only
Berowra Valley	National Park	NSW	In buffer area only
Bouddi	National Park	NSW	In buffer area only
Brisbane Water	National Park	NSW	In feature area
Dharug	National Park	NSW	In buffer area only

Protected Area Name	Reserve Type	State	Buffer Status
Ku-ring-gai Chase	National Park	NSW	In feature area
Lion Island	Nature Reserve	NSW	In buffer area only
Long Island	Nature Reserve	NSW	In feature area
Marramarra	National Park	NSW	In buffer area only
Muogamarra	Nature Reserve	NSW	In feature area
Pelican Island	Nature Reserve	NSW	In buffer area only
Popran	National Park	NSW	In feature area
Rileys Island	Nature Reserve	NSW	In buffer area only
Saratoga Island	Nature Reserve	NSW	In buffer area only
Spectacle Island	Nature Reserve	NSW	In feature area

Regional Forest Agreements [Resource Information]

Note that all areas with completed RFAs have been included. Please see the associated resource information for specific caveats and use limitations associated with RFA boundary information.

RFA Name	State	Buffer Status
North East NSW RFA	New South Wales	In feature area

Nationally Important Wetlands [Resource Information]

Wetland Name	State	Buffer Status
Brisbane Water Estuary	NSW	In buffer area only

EPBC Act Referrals [Resource Information]

Title of referral	Reference	Referral Outcome	Assessment Status	Buffer Status
Controlled action				
Vegetation Clearing North Pearl Estate section of Kahibah Creek	2003/997	Controlled Action	Post-Approval	In buffer area only
Not controlled action				
Construction of a high-capacity fibre optic submarine cable	2006/2914	Not Controlled Action	Completed	In buffer area only
Currawong Beach residential development adjoining Ku-ring-gai Chase National Par	2008/3988	Not Controlled Action	Completed	In buffer area only
Demolition of Ablutions Block, Snapper Island, NSW	2018/8303	Not Controlled Action	Completed	In buffer area only
Dog swimming area	2002/870	Not Controlled Action	Completed	In buffer area only

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

Biologically Important Areas [Resource Information]

Scientific Name	Behaviour	Presence	Buffer Status
Dolphins			
Tursiops aduncus			
Indo-Pacific/Spotted Bottlenose Dolphin [68418]	Breeding	Likely to occur	In feature area
Seabirds			
Ardenna tenuirostris			
Short-tailed Shearwater [82652]	Foraging	Likely to occur	In feature area
Sharks			
Carcharias taurus			
Grey Nurse Shark [64469]	Foraging	Known to occur	In feature area
Whales			
Megaptera novaeangliae			
Humpback Whale [38]	Migration (north and south)	Known to occur	In buffer area only

Bioregional Assessments [Resource Information]

SubRegion	BioRegion	Website	Buffer Status
Hunter	Northern Sydney Basin	BA website	In buffer area only
Sydney	Sydney Basin	BA website	In feature area

Caveat

1 PURPOSE

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

The report contains the mapped locations of:

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

2 DISCLAIMER

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

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

3 DATA SOURCES

Threatened ecological communities

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

Threatened, migratory and marine species

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

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

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

4 LIMITATIONS

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

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

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

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

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

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

Acknowledgements

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

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

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

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

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Search results

Your search for:LGA: THE COUNCIL OF THE SHIRE OF HORNSBY Matched 24 notices relating to 4 sites.

Search Again

Refine Search

Suburb	Address	Site Name	Notices related to this site
DURAL	21 John Radley AVENUE	21 John Radley Avenue, Dural	2 current
HORNSBY	194- 206 Pacific HIGHWAY	Coles Express Hornsby	6 current and 5 former
MOUNT COLAH	Foxglove ROAD	Foxglove Oval	2 current and 3 former
PENNANT HILLS	386 Pennant Hills ROAD	Shell Coles Express Pennant Hills West	6 former

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Search results

Which species or group?

- ○ All entities
- ○ Animals
- ○ Plants
- ○ Fungi
- ○ Communities
- ○ Threats
- ◉ Endangered populations
- ○ Search for a species or group of species (e.g. birds)

No records found

Search criteria: Public Report of all Valid Records of Endangered Populations in selected area [North: -33.49 West: 151.11 East: 151.33 South: -33.60] returned 0 records for 0 species.
Report generated on 15/07/2024 4:20 PM.

Species Profile and Threats Database

Glossary

Posidonia australis seagrass meadows of the Manning-Hawkesbury ecoregion

SPRAT Profile

For information to assist in referral, environmental assessment and compliance issues, refer to the Listing Advice and/or Conservation Advice and Recovery Plan. The Listing and/or Conservation Advice define the national ecological community and may include *Key Diagnostic Characteristics, Condition Thresholds, Priority Research and Conservation Actions* and additional considerations. In addition, for recovery planning, mitigation and conservation information, refer to the Recovery Plan (where available) or the Conservation Advice.

For ecological communities listed from 2013 onwards, there is no separate listing advice. Instead, the advice from the Threatened Species Scientific Committee regarding the listing status of the ecological community and recommendation regarding a recovery plan are contained within the Conservation Advice.

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EPBC Legal Status and Documents

EPBC Act Listing Status	Listed as Endangered (Date effective 07-May-2015)
Approved Conservation Advice	Department of the Environment (2015). *Approved Conservation Advice (including listing advice) for* Posidonia australis *seagrass meadows of the Manning-Hawkesbury ecoregion ecological community*. Canberra: Department of the Environment. Available from: http://www.environment.gov.au/biodiversity/threatened/communities/pubs/127-conservation-advice.pdf. In effect under the EPBC Act from 07-May-2015.
Listing Advice	**Listing assessment information may be available in the Approved Conservation Advice**
Recovery Plan Decision	Recovery Plan not required, whilst there is no state recovery plan across the full distribution of the ecological community there are existing catchment and estuary management plans and other planning documents relating to the recovery of ecological community. Taking into account the protection from EPBC listing, recovery and threat abatement priorities and actions specified in this Conservation Advice and the existing management and other plans, a recovery plan for the ecological community is not recommended at this time (30/4/2015).
Adopted/Made Recovery Plans	**There is no adopted or made Recovery Plan for this ecological community**
Adopted/Made Threat Abatement Plans	Department of the Environment and Energy (2018). *Threat Abatement Plan for the impacts of marine debris on the vertebrate wildlife of Australia's coasts and oceans (2018)*. Canberra, ACT: Commonwealth of Australia. Available from: http://www.environment.gov.au/biodiversity/threatened/publications/tap/marine-debris-2018. In effect under the EPBC Act from 21-Jul-2018.

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Other Commonwealth Documents

Policy Statements	Posidonia australis *Seagrass Meadows of the Manning-Hawkesbury Ecoregion: A Nationally Significant Ecological Community* (Department of the Environment and Energy, 2018) In effect under the EPBC Act from 06-Sep-2018. [Admin Guideline].
Federal Register of Legislative Instruments	Threatened: *Amendments to the list of threatened ecological communities under section 181 of the Environment Protection and Biodiversity Conservation Act 1999 (EC127) (30/04/2015)* (Commonwealth of Australia, 2015j) [Legislative Instrument].
Indicative Distribution Map(s)	*Map of* Posidonia australis *seagrass meadows of the Manning-Hawkesbury ecoregion ecological community* (Department of the Environment, 2015) [Indicative Map].

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Distribution Map

Distribution Map

This map has been compiled from datasets with a range of scales and quality. Species or ecological community distributions included in this map are only indicative and not meant for local assessment. Planning or investment decisions at a local scale should seek some form of ground-truthing to confirm the existence of the species or ecological community at locations of interest. Such assessments should refer to the text of the Listing Advice, which is the legal entity protected under the EPBC Act.

Top

Newsletters

EPBC Act email updates can be received via the Communities for Communities newsletter and the EPBC Act newsletter.

Top

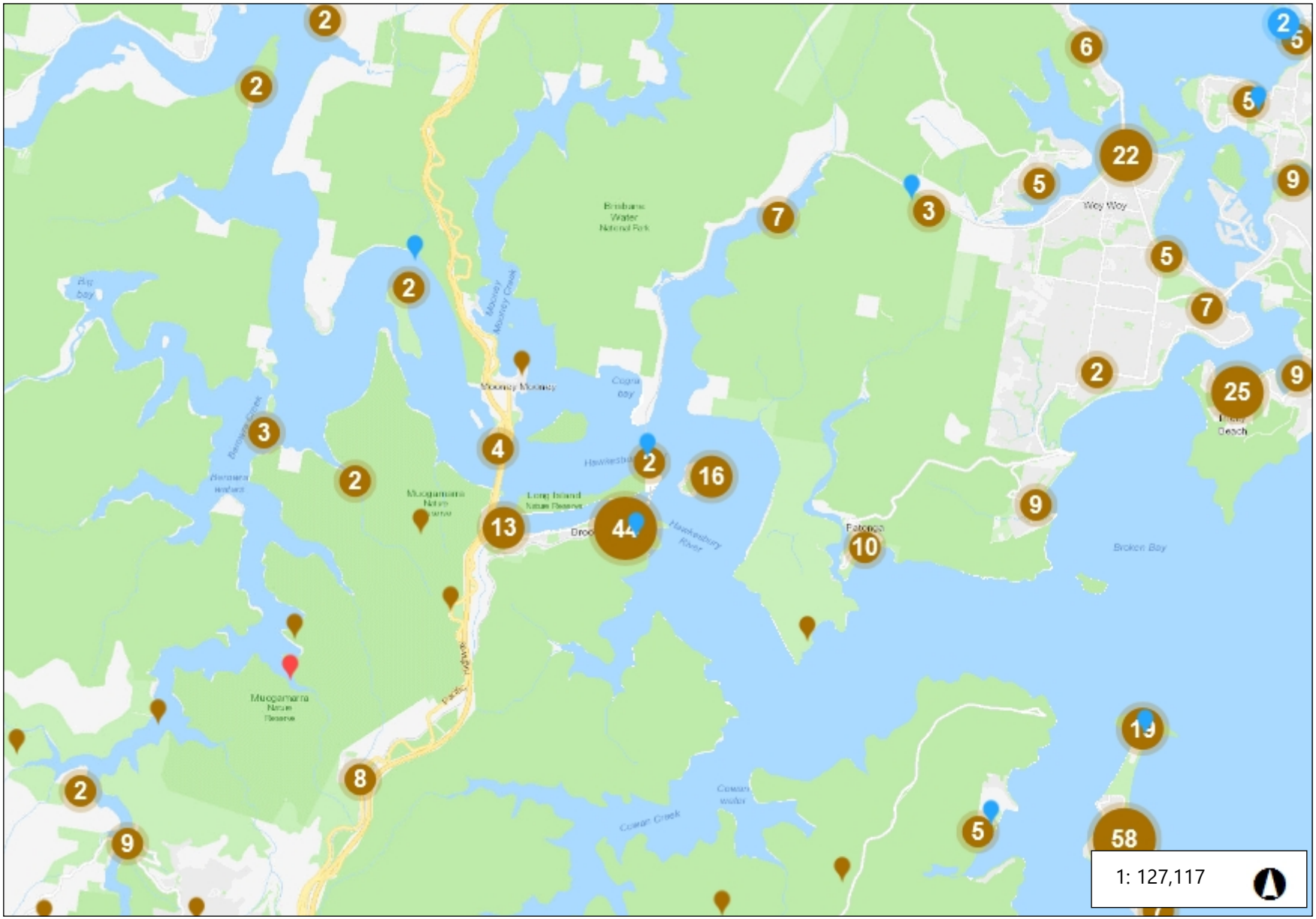
Caveat

This database is designed to provide statutory, biological and ecological information on species and ecological communities, migratory species, marine species, and species and species products subject to international trade and commercial use protected under the *Environment Protection and Biodiversity Conservation Act 1999* (the EPBC Act). It has been compiled from a range of sources including listing advice, recovery plans, published literature and individual experts. While reasonable efforts have been made to ensure the accuracy of the information, no guarantee is given, nor responsibility taken, by the Commonwealth for its accuracy, currency or completeness. The Commonwealth does not accept any responsibility for any loss or damage that may be occasioned directly or indirectly through the use of, or reliance on, the information contained in this database. The information contained in this database does not necessarily represent the views of the Commonwealth. This database is not intended to be a complete source of information on the matters it deals with. Individuals and organisations should consider all the available information, including that available from other sources, in deciding whether there is a need to make a referral or apply for a permit or exemption under the EPBC Act.

Citation: Department of the Environment (2024). Posidonia australis seagrass meadows of the Manning-Hawkesbury ecoregion in Community and Species Profile and Threats Database, Department of the Environment, Canberra. Available

NSW GOVERNMENT | Heritage NSW

Hawkesbury River



Legend

- World Heritage Areas NSW
- SEPP
- World Heritage Site
- Local Environmental Plan
  - Cluster (label denotes number)
- Aboriginal Place
  - Cluster (label denotes number)
- State Heritage Register
  - Cluster (label denotes number)
- Interim Heritage Order
  - Cluster (label denotes number)

Notes

6,457.6 0 3,228.78 6,457.6 Meters

WGS_1984_Web_Mercator_Auxiliary_Sphere

This map is a user generated static output from the Heritage Management System and is for reference only. Information that appears on this map may or may not be accurate, current, or otherwise reliable.

THIS MAP IS NOT TO BE USED FOR NAVIGATION

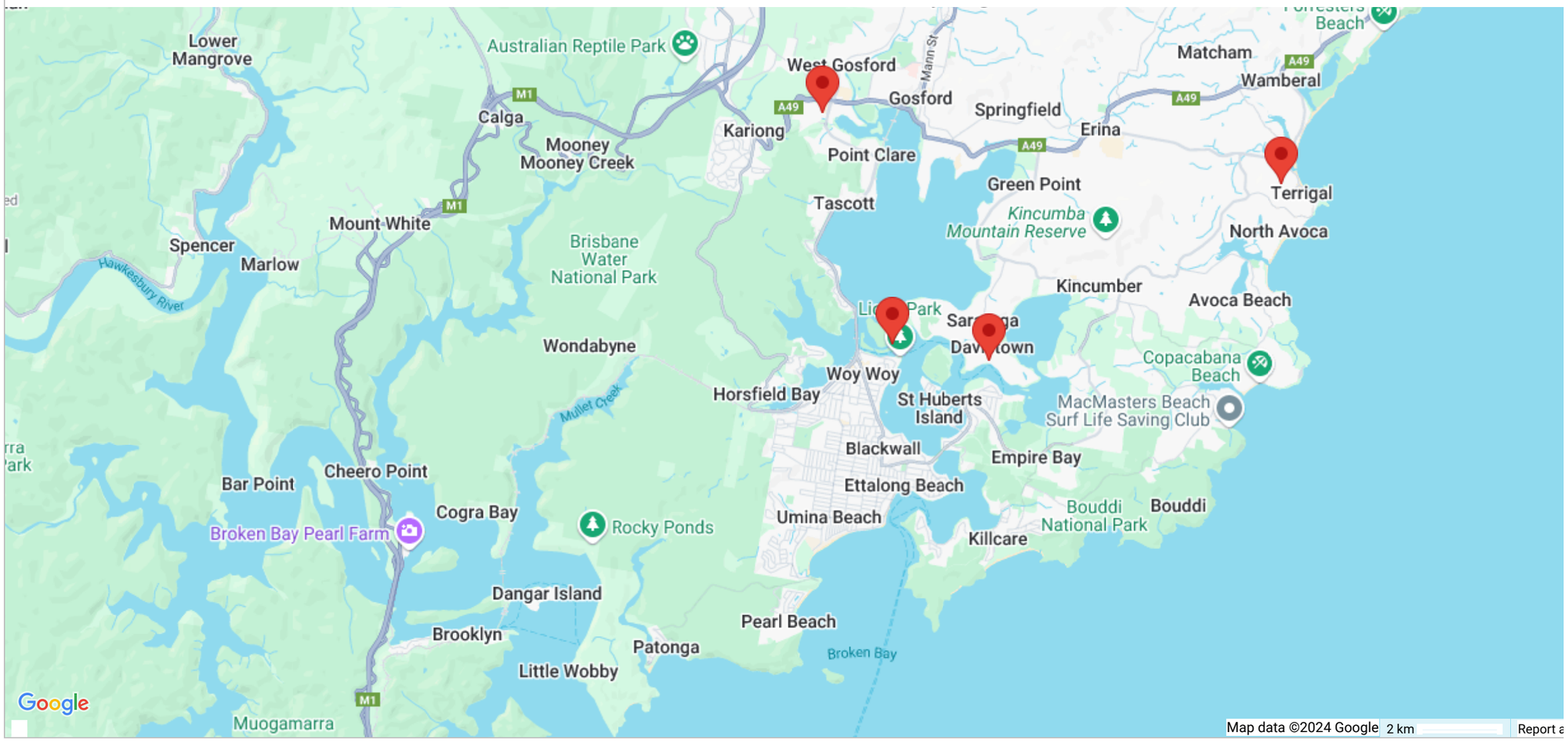
Australian Government
Department of Climate Change, Energy, the Environment and Water

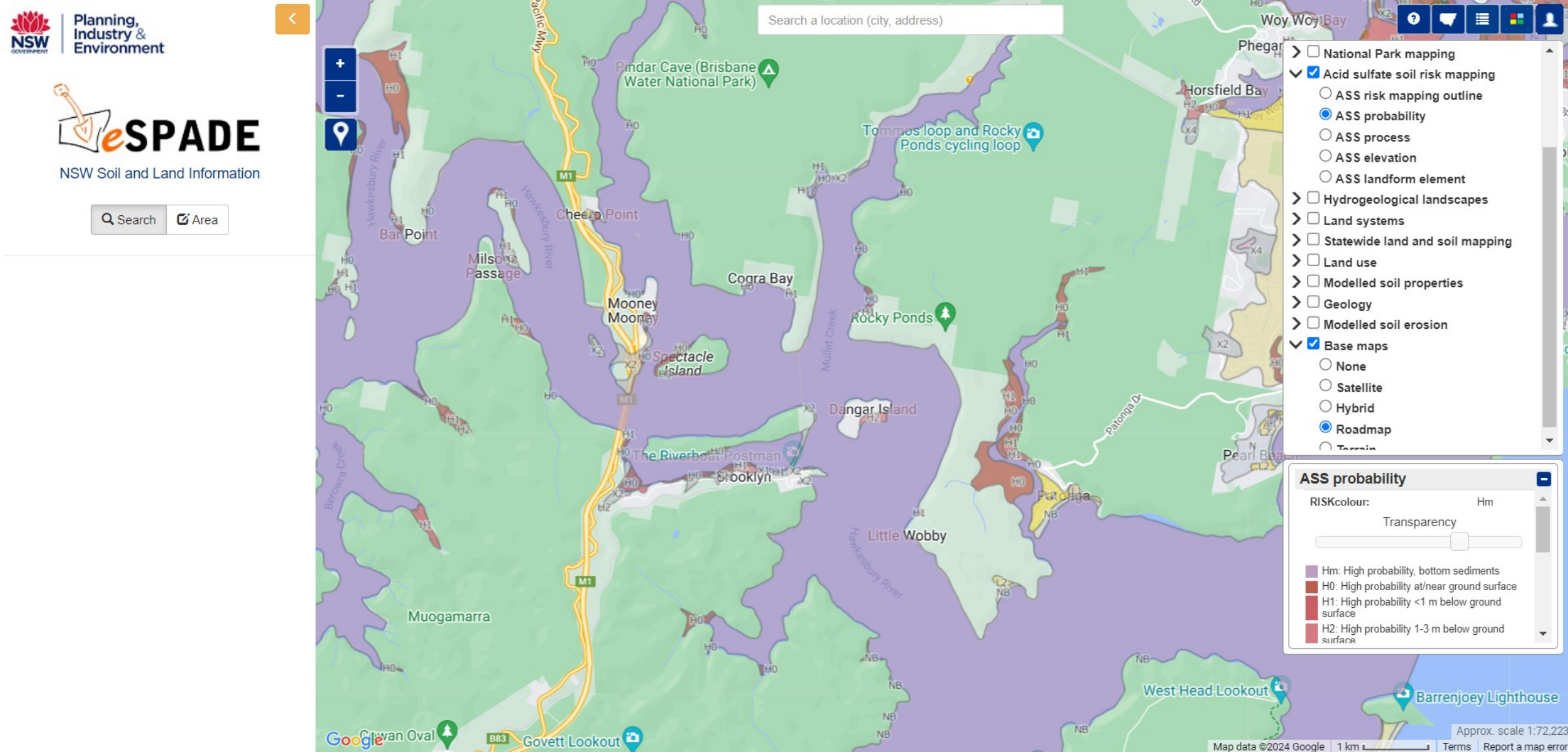
Australasian Underwater Cultural Heritage Database

Search other Underwater Cultural Heritage | Search other Underwater Cultural Heritage on Map

Search other Underwater Cultural Heritage on Map

MAP




Planning, Industry & Environment
eSPADE
NSW Soil and Land Information
Search
Area
Search a location (city, address)
National Park mapping
Acid sulfate soil risk mapping
ASS risk mapping outline
ASS probability
ASS process
ASS elevation
ASS landform element
Hydrogeological landscapes
Land systems
Statewide land and soil mapping
Land use
Modelled soil properties
Geology
Modelled soil erosion
Base maps
None
Satellite
Hybrid
Roadmap
ASS probability
RISKcolour:
Hm
Transparency
Hm: High probability, bottom sediments
H0: High probability at/near ground surface
H1: High probability <1 m below ground surface
H2: High probability 1-3 m below ground surface
Pindar Cave (Brisbane Water National Park)
Tommos loop and Rocky Ponds cycling loop
Cheero Point
Milsons Passage
Cogra Bay
Mooney Mooney
Rocky Ponds
Spectacle Island
Dangar Island
The Riverboat Postman
Brooklyn
Little Wobby
Muogamarra
Horsfield Bay
Woy Woy Bay
Pearl Beach
West Head Lookout
Barrenjoey Lighthouse
Govett Lookout
Google
Map data ©2024 Google
1 km
Terms
Report a map error
Approx. scale 1:72,223

Removed due to sensitivity

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 (https://www.legislation.nsw.gov.au/gazette) website. Gazettal notices published prior to 2001 can be obtained from Heritage NSW 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 Heritage NSW 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.

Level 6, 10 Valentine Ave, Parramatta 2150
Locked Bag 5020 Parramatta NSW 2124
Tel: (02) 9585 6345

ABN 34 945 244 274
Email: ahims@environment.nsw.gov.au
Web: www.heritage.nsw.gov.au

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EPBC Act Protected Matters Report

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

Report created: 21-Jul-2024

Summary

Matters of National Environment Significance

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

World Heritage Properties:	None
National Heritage Places:	None
Wetlands of International Importance (Ramsar	None
Great Barrier Reef Marine Park:	None
Commonwealth Marine Area:	None
Listed Threatened Ecological Communities:	5
Listed Threatened Species:	89
Listed Migratory Species:	47

Other Matters Protected by the EPBC Act

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

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

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

Commonwealth Lands:	2
Commonwealth Heritage Places:	None
Listed Marine Species:	54
Whales and Other Cetaceans:	None
Critical Habitats:	None
Commonwealth Reserves Terrestrial:	None
Australian Marine Parks:	None
Habitat Critical to the Survival of Marine Turtles:	None

Extra Information

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

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

Details

Matters of National Environmental Significance

Listed Threatened Ecological Communities [Resource Information]

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

Community Name	Threatened Category	Presence Text	Buffer Status
Coastal Swamp Oak (Casuarina glauca) Forest of New South Wales and South East Queensland ecological community	Endangered	Community likely to occur within area	In feature area
Coastal Swamp Sclerophyll Forest of New South Wales and South East Queensland	Endangered	Community may occur within area	In feature area
Coastal Upland Swamps in the Sydney Basin Bioregion	Endangered	Community likely to occur within area	In feature area
Posidonia australis seagrass meadows of the Manning-Hawkesbury ecoregion	Endangered	Community likely to occur within area	In feature area
River-flat eucalypt forest on coastal floodplains of southern New South Wales and eastern Victoria	Critically Endangered	Community likely to occur within area	In feature area

Listed Threatened Species [Resource Information]

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

Scientific Name	Threatened Category	Presence Text	Buffer Status
BIRD			
Anthochaera phrygia			
Regent Honeyeater [82338]	Critically Endangered	Species or species habitat known to occur within area	In feature area
Ardenna grisea			
Sooty Shearwater [82651]	Vulnerable	Species or species habitat likely to occur within area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
Botaurus poiciloptilus Australasian Bittern [1001]	Endangered	Species or species habitat known to occur within area	In feature area
Calidris acuminata Sharp-tailed Sandpiper [874]	Vulnerable	Species or species habitat known to occur within area	In feature area
Calidris canutus Red Knot, Knot [855]	Vulnerable	Species or species habitat known to occur within area	In feature area
Calidris ferruginea Curlew Sandpiper [856]	Critically Endangered	Species or species habitat known to occur within area	In feature area
Callocephalon fimbriatum Gang-gang Cockatoo [768]	Endangered	Species or species habitat likely to occur within area	In feature area
Calyptorhynchus lathami lathami South-eastern Glossy Black-Cockatoo [67036]	Vulnerable	Species or species habitat known to occur within area	In feature area
Charadrius leschenaultii Greater Sand Plover, Large Sand Plover [877]	Vulnerable	Species or species habitat likely to occur within area	In feature area
Climacteris picumnus victoriae Brown Treecreeper (south-eastern) [67062]	Vulnerable	Species or species habitat likely to occur within area	In feature area
Diomedea antipodensis Antipodean Albatross [64458]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area	In feature area
Diomedea antipodensis gibsoni Gibson's Albatross [82270]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area	In feature area
Diomedea epomophora Southern Royal Albatross [89221]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
Diomedea exulans Wandering Albatross [89223]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area	In feature area
Diomedea sanfordi Northern Royal Albatross [64456]	Endangered	Species or species habitat may occur within area	In feature area
Erythrotriorchis radiatus Red Goshawk [942]	Endangered	Species or species habitat may occur within area	In feature area
Falco hypoleucos Grey Falcon [929]	Vulnerable	Species or species habitat may occur within area	In feature area
Gallinago hardwickii Latham's Snipe, Japanese Snipe [863]	Vulnerable	Species or species habitat likely to occur within area	In feature area
Grantiella picta Painted Honeyeater [470]	Vulnerable	Species or species habitat likely to occur within area	In feature area
Hirundapus caudacutus White-throated Needletail [682]	Vulnerable	Species or species habitat known to occur within area	In feature area
Lathamus discolor Swift Parrot [744]	Critically Endangered	Species or species habitat known to occur within area	In feature area
Limosa lapponica baueri Nunivak Bar-tailed Godwit, Western Alaskan Bar-tailed Godwit [86380]	Endangered	Species or species habitat known to occur within area	In feature area
Macronectes giganteus Southern Giant-Petrel, Southern Giant Petrel [1060]	Endangered	Species or species habitat may occur within area	In feature area
Macronectes halli Northern Giant Petrel [1061]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
Melanodryas cucullata cucullata South-eastern Hooded Robin, Hooded Robin (south-eastern) [67093]	Endangered	Species or species habitat may occur within area	In feature area
Neophema chrysostoma Blue-winged Parrot [726]	Vulnerable	Species or species habitat may occur within area	In feature area
Numenius madagascariensis Eastern Curlew, Far Eastern Curlew [847]	Critically Endangered	Species or species habitat known to occur within area	In feature area
Pachyptila turtur subantarctica Fairy Prion (southern) [64445]	Vulnerable	Species or species habitat known to occur within area	In feature area
Pycnoptilus floccosus Pilotbird [525]	Vulnerable	Species or species habitat may occur within area	In feature area
Rostratula australis Australian Painted Snipe [77037]	Endangered	Species or species habitat likely to occur within area	In feature area
Stagonopleura guttata Diamond Firetail [59398]	Vulnerable	Species or species habitat likely to occur within area	In feature area
Sternula nereis nereis Australian Fairy Tern [82950]	Vulnerable	Species or species habitat may occur within area	In feature area
Thalassarche bulleri Buller's Albatross, Pacific Albatross [64460]	Vulnerable	Species or species habitat may occur within area	In feature area
Thalassarche bulleri platei Northern Buller's Albatross, Pacific Albatross [82273]	Vulnerable	Species or species habitat may occur within area	In feature area
Thalassarche cauta Shy Albatross [89224]	Endangered	Foraging, feeding or related behaviour likely to occur within area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
Thalassarche eremita Chatham Albatross [64457]	Endangered	Foraging, feeding or related behaviour may occur within area	In feature area
Thalassarche impavida Campbell Albatross, Campbell Black-browed Albatross [64459]	Vulnerable	Species or species habitat may occur within area	In feature area
Thalassarche melanophris Black-browed Albatross [66472]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area	In feature area
Thalassarche salvini Salvin's Albatross [64463]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area	In feature area
Thalassarche steadi White-capped Albatross [64462]	Vulnerable	Foraging, feeding or related behaviour known to occur within area	In feature area
Tringa nebularia Common Greenshank, Greenshank [832]	Endangered	Species or species habitat likely to occur within area	In feature area
FISH			
Epinephelus daemelii Black Rockcod, Black Cod, Saddled Rockcod [68449]	Vulnerable	Species or species habitat likely to occur within area	In feature area
Macquaria australasica Macquarie Perch [66632]	Endangered	Species or species habitat may occur within area	In feature area
Prototroctes maraena Australian Grayling [26179]	Vulnerable	Species or species habitat may occur within area	In feature area
FROG			
Heleioporus australiacus Giant Burrowing Frog [1973]	Vulnerable	Species or species habitat likely to occur within area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
Litoria aurea			
Green and Golden Bell Frog [1870]	Vulnerable	Species or species habitat likely to occur within area	In feature area
Mixophyes balbus			
Stuttering Frog, Southern Barred Frog (in Victoria) [1942]	Vulnerable	Species or species habitat likely to occur within area	In feature area
Mixophyes iteratus			
Giant Barred Frog, Southern Barred Frog [1944]	Vulnerable	Species or species habitat likely to occur within area	In feature area
MAMMAL			
Chalinolobus dwyeri			
Large-eared Pied Bat, Large Pied Bat [183]	Endangered	Species or species habitat likely to occur within area	In feature 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	In feature area
Notamacropus parma			
Parma Wallaby [89289]	Vulnerable	Species or species habitat likely to occur within area	In feature area
Petauroides volans			
Greater Glider (southern and central) [254]	Endangered	Species or species habitat likely to occur within area	In feature area
Petaurus australis australis			
Yellow-bellied Glider (south-eastern) [87600]	Vulnerable	Species or species habitat likely to occur within area	In feature area
Petrogale penicillata			
Brush-tailed Rock-wallaby [225]	Vulnerable	Species or species habitat may occur within area	In feature area
Phascolarctos cinereus (combined populations of Qld, NSW and the ACT)			
Koala (combined populations of Queensland, New South Wales and the Australian Capital Territory) [85104]	Endangered	Species or species habitat known to occur within area	In feature area
Potorous tridactylus tridactylus			
Long-nosed Potoroo (northern) [66645]	Vulnerable	Species or species habitat likely to occur within area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
Pseudomys novaehollandiae New Holland Mouse, Pookila [96]	Vulnerable	Species or species habitat likely to occur within area	In feature area
Pteropus poliocephalus Grey-headed Flying-fox [186]	Vulnerable	Foraging, feeding or related behaviour known to occur within area	In feature area
PLANT			
Acacia bynoeana Bynoe's Wattle, Tiny Wattle [8575]	Vulnerable	Species or species habitat may occur within area	In feature area
Acacia pubescens Downy Wattle, Hairy Stemmed Wattle [18800]	Vulnerable	Species or species habitat may occur within area	In buffer area only
Asterolasia elegans [56780]	Endangered	Species or species habitat may occur within area	In feature area
Baloskion longipes Dense Cord-rush [68511]	Vulnerable	Species or species habitat may occur within area	In feature area
Caladenia tessellata Thick-lipped Spider-orchid, Daddy Long-legs [2119]	Vulnerable	Species or species habitat likely to occur within area	In feature area
Cryptostylis hunteriana Leafless Tongue-orchid [19533]	Vulnerable	Species or species habitat likely to occur within area	In feature area
Cynanchum elegans White-flowered Wax Plant [12533]	Endangered	Species or species habitat likely to occur within area	In buffer area only
Eucalyptus camfieldii Camfield's Stringybark [15460]	Vulnerable	Species or species habitat known to occur within area	In feature area
Genoplesium baueri Yellow Gnat-orchid, Bauer's Midge Orchid, Brittle Midge Orchid [7528]	Endangered	Species or species habitat likely to occur within area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
Lasiopetalum joyceae [20311]	Vulnerable	Species or species habitat may occur within area	In buffer area only
Melaleuca biconvexa Biconvex Paperbark [5583]	Vulnerable	Species or species habitat known to occur within area	In feature area
Melaleuca deanei Deane's Melaleuca [5818]	Vulnerable	Species or species habitat may occur within area	In feature area
Micromyrtus blakelyi [6870]	Vulnerable	Species or species habitat may occur within area	In feature area
Persicaria elatior Knotweed, Tall Knotweed [5831]	Vulnerable	Species or species habitat may occur within area	In feature area
Persoonia hirsuta Hairy Geebung, Hairy Persoonia [19006]	Endangered	Species or species habitat may occur within area	In buffer area only
Pimelea curviflora var. curviflora [4182]	Vulnerable	Species or species habitat may occur within area	In buffer area only
Prostanthera askania Tranquillity Mintbush, Tranquility Mintbush [64958]	Endangered	Species or species habitat may occur within area	In feature area
Prostanthera junonis Somersby Mintbush [64960]	Endangered	Species or species habitat may occur within area	In buffer area only
Rhizanthella slateri Eastern Underground Orchid [11768]	Endangered	Species or species habitat may occur within area	In feature area
Rhodamnia rubescens Scrub Turpentine, Brown Malletwood [15763]	Critically Endangered	Species or species habitat known to occur within area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
[Rhodomyrtus psidioides](#) Native Guava [19162]	Critically Endangered	Species or species habitat likely to occur within area	In feature area
[Rutidosis heterogama](#) Heath Wrinklewort [13132]	Vulnerable	Species or species habitat may occur within area	In buffer area only
[Syzygium paniculatum](#) Magenta Lilly Pilly, Magenta Cherry, Daguba, Scrub Cherry, Creek Lilly Pilly, Brush Cherry [20307]	Vulnerable	Species or species habitat known to occur within area	In feature area
[Thesium australe](#) Austral Toadflax, Toadflax [15202]	Vulnerable	Species or species habitat likely to occur within area	In feature area
REPTILE			
[Caretta caretta](#) Loggerhead Turtle [1763]	Endangered	Species or species habitat known to occur within area	In feature area
[Chelonia mydas](#) Green Turtle [1765]	Vulnerable	Species or species habitat known to occur within area	In feature area
[Dermochelys coriacea](#) Leatherback Turtle, Leathery Turtle, Luth [1768]	Endangered	Species or species habitat known to occur within area	In feature area
[Eretmochelys imbricata](#) Hawksbill Turtle [1766]	Vulnerable	Species or species habitat known to occur within area	In feature area
[Hoplocephalus bungaroides](#) Broad-headed Snake [1182]	Endangered	Species or species habitat may occur within area	In feature area
[Natator depressus](#) Flatback Turtle [59257]	Vulnerable	Species or species habitat known to occur within area	In feature area
SHARK			
[Sphyrna lewini](#) Scalloped Hammerhead [85267]	Conservation Dependent	Species or species habitat likely to occur within area	In feature area

Listed Migratory Species			[Resource Information]
Scientific Name	Threatened Category	Presence Text	Buffer Status
Migratory Marine Birds			
Anous stolidus Common Noddy [825]		Species or species habitat may occur within area	In feature area
Apus pacificus Fork-tailed Swift [678]		Species or species habitat likely to occur within area	In feature area
Ardenna grisea Sooty Shearwater [82651]	Vulnerable	Species or species habitat likely to occur within area	In feature area
Calonectris leucomelas Streaked Shearwater [1077]		Species or species habitat known to occur within area	In feature area
Diomedea antipodensis Antipodean Albatross [64458]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area	In feature area
Diomedea epomophora Southern Royal Albatross [89221]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area	In feature area
Diomedea exulans Wandering Albatross [89223]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area	In feature area
Diomedea sanfordi Northern Royal Albatross [64456]	Endangered	Species or species habitat may occur within area	In feature area
Fregata ariel Lesser Frigatebird, Least Frigatebird [1012]		Species or species habitat likely to occur within area	In feature area
Fregata minor Great Frigatebird, Greater Frigatebird [1013]		Species or species habitat may occur within area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
Macronectes giganteus Southern Giant-Petrel, Southern Giant Petrel [1060]	Endangered	Species or species habitat may occur within area	In feature area
Macronectes halli Northern Giant Petrel [1061]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area	In feature area
Phaethon lepturus White-tailed Tropicbird [1014]		Species or species habitat may occur within area	In feature area
Thalassarche bulleri Buller's Albatross, Pacific Albatross [64460]	Vulnerable	Species or species habitat may occur within area	In feature area
Thalassarche cauta Shy Albatross [89224]	Endangered	Foraging, feeding or related behaviour likely to occur within area	In feature area
Thalassarche eremita Chatham Albatross [64457]	Endangered	Foraging, feeding or related behaviour may occur within area	In feature area
Thalassarche impavida Campbell Albatross, Campbell Black-browed Albatross [64459]	Vulnerable	Species or species habitat may occur within area	In feature area
Thalassarche melanophris Black-browed Albatross [66472]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area	In feature area
Thalassarche salvini Salvin's Albatross [64463]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area	In feature area
Thalassarche steadi White-capped Albatross [64462]	Vulnerable	Foraging, feeding or related behaviour known to occur within area	In feature area
Migratory Marine Species			

Scientific Name	Threatened Category	Presence Text	Buffer Status
Caretta caretta Loggerhead Turtle [1763]	Endangered	Species or species habitat known to occur within area	In feature area
Chelonia mydas Green Turtle [1765]	Vulnerable	Species or species habitat known to occur within area	In feature area
Dermochelys coriacea Leatherback Turtle, Leathery Turtle, Luth [1768]	Endangered	Species or species habitat known to occur within area	In feature area
Dugong dugon Dugong [28]		Species or species habitat may occur within area	In feature area
Eretmochelys imbricata Hawksbill Turtle [1766]	Vulnerable	Species or species habitat known to occur within area	In feature area
Lamna nasus Porbeagle, Mackerel Shark [83288]		Species or species habitat likely to occur within area	In feature area
Mobula alfredi as Manta alfredi Reef Manta Ray, Coastal Manta Ray [90033]		Species or species habitat may occur within area	In feature area
Mobula birostris as Manta birostris Giant Manta Ray [90034]		Species or species habitat may occur within area	In feature area
Natator depressus Flatback Turtle [59257]	Vulnerable	Species or species habitat known to occur within area	In feature area
Migratory Terrestrial Species			
Cuculus optatus Oriental Cuckoo, Horsfield's Cuckoo [86651]		Species or species habitat may occur within area	In feature area
Hirundapus caudacutus White-throated Needletail [682]	Vulnerable	Species or species habitat known to occur within area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
[Monarcha melanopsis](#) Black-faced Monarch [609]		Species or species habitat known to occur within area	In feature area
[Motacilla flava](#) Yellow Wagtail [644]		Species or species habitat likely to occur within area	In feature area
[Myiagra cyanoleuca](#) Satin Flycatcher [612]		Species or species habitat known to occur within area	In feature area
[Rhipidura rufifrons](#) Rufous Fantail [592]		Species or species habitat known to occur within area	In feature area
[Symposiachrus trivirgatus as Monarcha trivirgatus](#) Spectacled Monarch [83946]		Species or species habitat may occur within area	In feature area
Migratory Wetlands Species			
[Actitis hypoleucos](#) Common Sandpiper [59309]		Species or species habitat may occur within area	In feature area
[Calidris acuminata](#) Sharp-tailed Sandpiper [874]	Vulnerable	Species or species habitat known to occur within area	In feature area
[Calidris canutus](#) Red Knot, Knot [855]	Vulnerable	Species or species habitat known to occur within area	In feature area
[Calidris ferruginea](#) Curlew Sandpiper [856]	Critically Endangered	Species or species habitat known to occur within area	In feature area
[Calidris melanotos](#) Pectoral Sandpiper [858]		Species or species habitat known to occur within area	In feature area
[Charadrius leschenaultii](#) Greater Sand Plover, Large Sand Plover [877]	Vulnerable	Species or species habitat likely to occur within area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
[Gallinago hardwickii](#) Latham's Snipe, Japanese Snipe [863]	Vulnerable	Species or species habitat likely to occur within area	In feature area
[Limosa lapponica](#) Bar-tailed Godwit [844]		Species or species habitat known to occur within area	In feature area
[Numenius madagascariensis](#) Eastern Curlew, Far Eastern Curlew [847]	Critically Endangered	Species or species habitat known to occur within area	In feature area
[Pandion haliaetus](#) Osprey [952]		Species or species habitat known to occur within area	In feature area
[Tringa nebularia](#) Common Greenshank, Greenshank [832]	Endangered	Species or species habitat likely to occur within area	In feature area

Other Matters Protected by the EPBC Act

Commonwealth Lands [Resource Information]

The Commonwealth area listed below may indicate the presence of Commonwealth land in this vicinity. Due to the unreliability of the data source, all proposals should be checked as to whether it impacts on a Commonwealth area, before making a definitive decision. Contact the State or Territory government land department for further information.

Commonwealth Land Name	State	Buffer Status
Communications, Information Technology and the Arts - Australian Postal Corporation		
Commonwealth Land - Australian Postal Commission [11776]	NSW	In buffer area only
Defence		
Defence - TS HAWKESBURY [10054]	NSW	In feature area

Listed Marine Species [Resource Information]

Scientific Name	Threatened Category	Presence Text	Buffer Status
Bird			
[Actitis hypoleucos](#) Common Sandpiper [59309]		Species or species habitat may occur within area	In feature area
[Anous stolidus](#) Common Noddy [825]		Species or species habitat may occur within area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
Apus pacificus Fork-tailed Swift [678]		Species or species habitat likely to occur within area overfly marine area	In feature area
Ardenna grisea as Puffinus griseus Sooty Shearwater [82651]	Vulnerable	Species or species habitat likely to occur within area	In feature area
Bubulcus ibis as Ardea ibis Cattle Egret [66521]		Species or species habitat may occur within area overfly marine area	In feature area
Calidris acuminata Sharp-tailed Sandpiper [874]	Vulnerable	Species or species habitat known to occur within area	In feature area
Calidris canutus Red Knot, Knot [855]	Vulnerable	Species or species habitat known to occur within area overfly marine area	In feature area
Calidris ferruginea Curlew Sandpiper [856]	Critically Endangered	Species or species habitat known to occur within area overfly marine area	In feature area
Calidris melanotos Pectoral Sandpiper [858]		Species or species habitat known to occur within area overfly marine area	In feature area
Calonectris leucomelas Streaked Shearwater [1077]		Species or species habitat known to occur within area	In feature area
Charadrius leschenaultii Greater Sand Plover, Large Sand Plover [877]	Vulnerable	Species or species habitat likely to occur within area	In feature area
Diomedea antipodensis Antipodean Albatross [64458]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
Diomedea antipodensis gibsoni as Diomedea gibsoni			
Gibson's Albatross [82270]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area	In feature area
Diomedea epomophora			
Southern Royal Albatross [89221]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area	In feature area
Diomedea exulans			
Wandering Albatross [89223]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area	In feature area
Diomedea sanfordi			
Northern Royal Albatross [64456]	Endangered	Species or species habitat may occur within area	In feature area
Fregata ariel			
Lesser Frigatebird, Least Frigatebird [1012]		Species or species habitat likely to occur within area	In feature area
Fregata minor			
Great Frigatebird, Greater Frigatebird [1013]		Species or species habitat may occur within area	In feature area
Gallinago hardwickii			
Latham's Snipe, Japanese Snipe [863]	Vulnerable	Species or species habitat likely to occur within area overfly marine area	In feature area
Haliaeetus leucogaster			
White-bellied Sea-Eagle [943]		Species or species habitat known to occur within area	In feature area
Hirundapus caudacutus			
White-throated Needletail [682]	Vulnerable	Species or species habitat known to occur within area overfly marine area	In feature area
Lathamus discolor			
Swift Parrot [744]	Critically Endangered	Species or species habitat known to occur within area overfly marine area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
Limosa lapponica Bar-tailed Godwit [844]		Species or species habitat known to occur within area	In feature area
Macronectes giganteus Southern Giant-Petrel, Southern Giant Petrel [1060]	Endangered	Species or species habitat may occur within area	In feature area
Macronectes halli Northern Giant Petrel [1061]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area	In feature area
Merops ornatus Rainbow Bee-eater [670]		Species or species habitat may occur within area overfly marine area	In feature area
Monarcha melanopsis Black-faced Monarch [609]		Species or species habitat known to occur within area overfly marine area	In feature area
Motacilla flava Yellow Wagtail [644]		Species or species habitat likely to occur within area overfly marine area	In feature area
Myiagra cyanoleuca Satin Flycatcher [612]		Species or species habitat known to occur within area overfly marine area	In feature area
Neophema chrysostoma Blue-winged Parrot [726]	Vulnerable	Species or species habitat may occur within area overfly marine area	In feature area
Numenius madagascariensis Eastern Curlew, Far Eastern Curlew [847]	Critically Endangered	Species or species habitat known to occur within area	In feature area
Pachyptila turtur Fairy Prion [1066]		Species or species habitat known to occur within area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
[Pandion haliaetus](#) Osprey [952]		Species or species habitat known to occur within area	In feature area
[Phaethon lepturus](#) White-tailed Tropicbird [1014]		Species or species habitat may occur within area	In feature area
[Pterodroma cervicalis](#) White-necked Petrel [59642]		Species or species habitat may occur within area	In feature area
[Rhipidura rufifrons](#) Rufous Fantail [592]		Species or species habitat known to occur within area overfly marine area	In feature area
[Rostratula australis as Rostratula benghalensis (sensu lato)](#) Australian Painted Snipe [77037]	Endangered	Species or species habitat likely to occur within area overfly marine area	In feature area
[Sterna striata](#) White-fronted Tern [799]		Migration route may occur within area	In feature area
[Symposiachrus trivirgatus as Monarcha trivirgatus](#) Spectacled Monarch [83946]		Species or species habitat may occur within area overfly marine area	In feature area
[Thalassarche bulleri](#) Buller's Albatross, Pacific Albatross [64460]	Vulnerable	Species or species habitat may occur within area	In feature area
[Thalassarche bulleri platei as Thalassarche sp. nov.](#) Northern Buller's Albatross, Pacific Albatross [82273]	Vulnerable	Species or species habitat may occur within area	In feature area
[Thalassarche cauta](#) Shy Albatross [89224]	Endangered	Foraging, feeding or related behaviour likely to occur within area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
[Thalassarche eremita](#) Chatham Albatross [64457]	Endangered	Foraging, feeding or related behaviour may occur within area	In feature area
[Thalassarche impavida](#) Campbell Albatross, Campbell Black-browed Albatross [64459]	Vulnerable	Species or species habitat may occur within area	In feature area
[Thalassarche melanophris](#) Black-browed Albatross [66472]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area	In feature area
[Thalassarche salvini](#) Salvin's Albatross [64463]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area	In feature area
[Thalassarche steadi](#) White-capped Albatross [64462]	Vulnerable	Foraging, feeding or related behaviour known to occur within area	In feature area
[Tringa nebularia](#) Common Greenshank, Greenshank [832]	Endangered	Species or species habitat likely to occur within area overfly marine area	In feature area
Mammal			
[Dugong dugon](#) Dugong [28]		Species or species habitat may occur within area	In feature area
Reptile			
[Caretta caretta](#) Loggerhead Turtle [1763]	Endangered	Species or species habitat known to occur within area	In feature area
[Chelonia mydas](#) Green Turtle [1765]	Vulnerable	Species or species habitat known to occur within area	In feature area
[Dermochelys coriacea](#) Leatherback Turtle, Leathery Turtle, Luth [1768]	Endangered	Species or species habitat known to occur within area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
Eretmochelys imbricata			
Hawksbill Turtle [1766]	Vulnerable	Species or species habitat known to occur within area	In feature area
Natator depressus			
Flatback Turtle [59257]	Vulnerable	Species or species habitat known to occur within area	In feature area

Extra Information

State and Territory Reserves [Resource Information]

Protected Area Name	Reserve Type	State	Buffer Status
Brisbane Water	National Park	NSW	In buffer area only

Regional Forest Agreements [Resource Information]

Note that all areas with completed RFAs have been included. Please see the associated resource information for specific caveats and use limitations associated with RFA boundary information.

RFA Name	State	Buffer Status
North East NSW RFA	New South Wales	In feature area

Nationally Important Wetlands [Resource Information]

Wetland Name	State	Buffer Status
Brisbane Water Estuary	NSW	In feature area

EPBC Act Referrals [Resource Information]

Title of referral	Reference	Referral Outcome	Assessment Status	Buffer Status
Not controlled action				
Improving rabbit biocontrol: releasing another strain of RHDV, sthrn two thirds of Australia	2015/7522	Not Controlled Action	Completed	In feature area

Biologically Important Areas [Resource Information]

Scientific Name	Behaviour	Presence	Buffer Status
Seabirds			
Ardenna tenuirostris			
Short-tailed Shearwater [82652]	Foraging	Likely to occur	In feature area

Bioregional Assessments [Resource Information]

SubRegion	BioRegion	Website	Buffer Status
Hunter	Northern Sydney Basin	BA website	In feature area

Caveat

1 PURPOSE

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

The report contains the mapped locations of:

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

2 DISCLAIMER

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

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

3 DATA SOURCES

Threatened ecological communities

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

Threatened, migratory and marine species

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

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

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

4 LIMITATIONS

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

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

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

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

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

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

Acknowledgements

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

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

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

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

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EPBC Act Protected Matters Report

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

Report created: 21-Jul-2024

Summary

Matters of National Environment Significance

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

World Heritage Properties:	None
National Heritage Places:	None
Wetlands of International Importance (Ramsar	None
Great Barrier Reef Marine Park:	None
Commonwealth Marine Area:	None
Listed Threatened Ecological Communities:	6
Listed Threatened Species:	114
Listed Migratory Species:	68

Other Matters Protected by the EPBC Act

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

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

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

Commonwealth Lands:	26
Commonwealth Heritage Places:	None
Listed Marine Species:	91
Whales and Other Cetaceans:	13
Critical Habitats:	None
Commonwealth Reserves Terrestrial:	None
Australian Marine Parks:	None
Habitat Critical to the Survival of Marine Turtles:	None

Extra Information

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

State and Territory Reserves:	10
Regional Forest Agreements:	1
Nationally Important Wetlands:	4
EPBC Act Referrals:	9
Key Ecological Features (Marine):	None
Biologically Important Areas:	5
Bioregional Assessments:	2
Geological and Bioregional Assessments:	None

Details

Matters of National Environmental Significance

Listed Threatened Ecological Communities [Resource Information]

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

Community Name	Threatened Category	Presence Text	Buffer Status
Coastal Swamp Oak (Casuarina glauca) Forest of New South Wales and South East Queensland ecological community	Endangered	Community likely to occur within area	In feature area
Coastal Swamp Sclerophyll Forest of New South Wales and South East Queensland	Endangered	Community likely to occur within area	In feature area
Coastal Upland Swamps in the Sydney Basin Bioregion	Endangered	Community likely to occur within area	In feature area
Posidonia australis seagrass meadows of the Manning-Hawkesbury ecoregion	Endangered	Community likely to occur within area	In feature area
River-flat eucalypt forest on coastal floodplains of southern New South Wales and eastern Victoria	Critically Endangered	Community likely to occur within area	In feature area
Subtropical and Temperate Coastal Saltmarsh	Vulnerable	Community likely to occur within area	In buffer area only

Listed Threatened Species [Resource Information]

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

Scientific Name	Threatened Category	Presence Text	Buffer Status
BIRD			
Anthochaera phrygia			
Regent Honeyeater [82338]	Critically Endangered	Species or species habitat known to occur within area	In feature area
Ardenna grisea			
Sooty Shearwater [82651]	Vulnerable	Species or species habitat likely to occur within area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
Botaurus poiciloptilus Australasian Bittern [1001]	Endangered	Species or species habitat known to occur within area	In feature area
Calidris acuminata Sharp-tailed Sandpiper [874]	Vulnerable	Species or species habitat known to occur within area	In feature area
Calidris canutus Red Knot, Knot [855]	Vulnerable	Species or species habitat known to occur within area	In feature area
Calidris ferruginea Curlew Sandpiper [856]	Critically Endangered	Species or species habitat known to occur within area	In feature area
Callocephalon fimbriatum Gang-gang Cockatoo [768]	Endangered	Species or species habitat known to occur within area	In feature area
Calyptorhynchus lathami lathami South-eastern Glossy Black-Cockatoo [67036]	Vulnerable	Species or species habitat known to occur within area	In feature area
Charadrius leschenaultii Greater Sand Plover, Large Sand Plover [877]	Vulnerable	Species or species habitat likely to occur within area	In feature area
Climacteris picumnus victoriae Brown Treecreeper (south-eastern) [67062]	Vulnerable	Species or species habitat likely to occur within area	In feature area
Diomedea antipodensis Antipodean Albatross [64458]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area	In feature area
Diomedea antipodensis gibsoni Gibson's Albatross [82270]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area	In feature area
Diomedea epomophora Southern Royal Albatross [89221]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
Diomedea exulans Wandering Albatross [89223]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area	In feature area
Diomedea sanfordi Northern Royal Albatross [64456]	Endangered	Species or species habitat may occur within area	In feature area
Erythrotriorchis radiatus Red Goshawk [942]	Endangered	Species or species habitat may occur within area	In feature area
Falco hypoleucos Grey Falcon [929]	Vulnerable	Species or species habitat may occur within area	In feature 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	In buffer area only
Gallinago hardwickii Latham's Snipe, Japanese Snipe [863]	Vulnerable	Species or species habitat likely to occur within area	In feature area
Grantiella picta Painted Honeyeater [470]	Vulnerable	Species or species habitat known to occur within area	In feature area
Hirundapus caudacutus White-throated Needletail [682]	Vulnerable	Species or species habitat known to occur within area	In feature area
Lathamus discolor Swift Parrot [744]	Critically Endangered	Species or species habitat known to occur within area	In feature area
Limosa lapponica baueri Nunivak Bar-tailed Godwit, Western Alaskan Bar-tailed Godwit [86380]	Endangered	Species or species habitat known to occur within area	In feature area
Macronectes giganteus Southern Giant-Petrel, Southern Giant Petrel [1060]	Endangered	Species or species habitat may occur within area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
Macronectes halli Northern Giant Petrel [1061]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area	In feature area
Melanodryas cucullata cucullata South-eastern Hooded Robin, Hooded Robin (south-eastern) [67093]	Endangered	Species or species habitat may occur within area	In feature area
Neophema chrysostoma Blue-winged Parrot [726]	Vulnerable	Species or species habitat likely to occur within area	In feature area
Numenius madagascariensis Eastern Curlew, Far Eastern Curlew [847]	Critically Endangered	Species or species habitat known to occur within area	In feature area
Pachyptila turtur subantarctica Fairy Prion (southern) [64445]	Vulnerable	Species or species habitat known to occur within area	In feature area
Phoebetria fusca Sooty Albatross [1075]	Vulnerable	Species or species habitat may occur within area	In buffer area only
Pterodroma leucoptera leucoptera Gould's Petrel, Australian Gould's Petrel [26033]	Endangered	Species or species habitat may occur within area	In buffer area only
Pterodroma neglecta neglecta Kermadec Petrel (western) [64450]	Vulnerable	Foraging, feeding or related behaviour may occur within area	In buffer area only
Pycnoptilus floccosus Pilotbird [525]	Vulnerable	Species or species habitat known to occur within area	In feature area
Rostratula australis Australian Painted Snipe [77037]	Endangered	Species or species habitat likely to occur within area	In feature area
Stagonopleura guttata Diamond Firetail [59398]	Vulnerable	Species or species habitat likely to occur within area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
[Sternula nereis nereis](#) Australian Fairy Tern [82950]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area	In feature area
[Thalassarche bulleri](#) Buller's Albatross, Pacific Albatross [64460]	Vulnerable	Species or species habitat may occur within area	In feature area
[Thalassarche bulleri platei](#) Northern Buller's Albatross, Pacific Albatross [82273]	Vulnerable	Species or species habitat may occur within area	In feature area
[Thalassarche carteri](#) Indian Yellow-nosed Albatross [64464]	Vulnerable	Species or species habitat likely to occur within area	In buffer area only
[Thalassarche cauta](#) Shy Albatross [89224]	Endangered	Foraging, feeding or related behaviour likely to occur within area	In feature area
[Thalassarche eremita](#) Chatham Albatross [64457]	Endangered	Foraging, feeding or related behaviour may occur within area	In feature area
[Thalassarche impavida](#) Campbell Albatross, Campbell Black-browed Albatross [64459]	Vulnerable	Species or species habitat may occur within area	In feature area
[Thalassarche melanophris](#) Black-browed Albatross [66472]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area	In feature area
[Thalassarche salvini](#) Salvin's Albatross [64463]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area	In feature area
[Thalassarche steadi](#) White-capped Albatross [64462]	Vulnerable	Foraging, feeding or related behaviour known to occur within area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
[Tringa nebularia](#) Common Greenshank, Greenshank [832]	Endangered	Species or species habitat likely to occur within area	In feature area
FISH			
[Epinephelus daemelii](#) Black Rockcod, Black Cod, Saddled Rockcod [68449]	Vulnerable	Species or species habitat likely to occur within area	In feature area
[Hippocampus whitei](#) White's Seahorse, Crowned Seahorse, Sydney Seahorse [66240]	Endangered	Species or species habitat likely to occur within area	In buffer area only
[Macquaria australasica](#) Macquarie Perch [66632]	Endangered	Species or species habitat may occur within area	In feature area
[Prototroctes maraena](#) Australian Grayling [26179]	Vulnerable	Species or species habitat likely to occur within area	In feature area
[Seriolella brama](#) Blue Warehou [69374]	Conservation Dependent	Species or species habitat known to occur within area	In buffer area only
FROG			
[Heleioporus australiacus](#) Giant Burrowing Frog [1973]	Vulnerable	Species or species habitat known to occur within area	In feature area
[Litoria aurea](#) Green and Golden Bell Frog [1870]	Vulnerable	Species or species habitat known to occur within area	In feature area
[Litoria littlejohni](#) Northern Heath Frog, Littlejohn's Tree Frog [64733]	Endangered	Species or species habitat likely to occur within area	In buffer area only
[Mixophyes balbus](#) Stuttering Frog, Southern Barred Frog (in Victoria) [1942]	Vulnerable	Species or species habitat known to occur within area	In feature area
[Mixophyes iteratus](#) Giant Barred Frog, Southern Barred Frog [1944]	Vulnerable	Species or species habitat known to occur within area	In feature area
MAMMAL			

Scientific Name	Threatened Category	Presence Text	Buffer Status
Balaenoptera musculus			
Blue Whale [36]	Endangered	Species or species habitat may occur within area	In buffer area only
Chalinolobus dwyeri			
Large-eared Pied Bat, Large Pied Bat [183]	Endangered	Species or species habitat known to occur within area	In feature 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	In feature area
Eubalaena australis			
Southern Right Whale [40]	Endangered	Species or species habitat likely to occur within area	In buffer area only
Notamacropus parma			
Parma Wallaby [89289]	Vulnerable	Species or species habitat likely to occur within area	In feature area
Petauroides volans			
Greater Glider (southern and central) [254]	Endangered	Species or species habitat known to occur within area	In feature area
Petaurus australis australis			
Yellow-bellied Glider (south-eastern) [87600]	Vulnerable	Species or species habitat known to occur within area	In feature area
Petrogale penicillata			
Brush-tailed Rock-wallaby [225]	Vulnerable	Species or species habitat may occur within area	In feature area
Phascolarctos cinereus (combined populations of Qld, NSW and the ACT)			
Koala (combined populations of Queensland, New South Wales and the Australian Capital Territory) [85104]	Endangered	Species or species habitat known to occur within area	In feature area
Potorous tridactylus tridactylus			
Long-nosed Potoroo (northern) [66645]	Vulnerable	Species or species habitat known to occur within area	In feature area
Pseudomys novaehollandiae			
New Holland Mouse, Pookila [96]	Vulnerable	Species or species habitat known to occur within area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
Pteropus poliocephalus Grey-headed Flying-fox [186]	Vulnerable	Roosting known to occur within area	In feature area
OTHER			
Dendronephthya australis Cauliflower Soft Coral [90325]	Endangered	Species or species habitat may occur within area	In buffer area only
PLANT			
Acacia bynoeana Bynoe's Wattle, Tiny Wattle [8575]	Vulnerable	Species or species habitat may occur within area	In feature area
Acacia pubescens Downy Wattle, Hairy Stemmed Wattle [18800]	Vulnerable	Species or species habitat may occur within area	In buffer area only
Acacia terminalis subsp. Eastern Sydney (G.P.Phillips 126) listed as Acacia terminalis subsp. terminalis MS Sunshine Wattle (Sydney region) [91564]	Endangered	Species or species habitat may occur within area	In buffer area only
Asterolasia elegans [56780]	Endangered	Species or species habitat may occur within area	In feature area
Astrotricha crassifolia Thick-leaf Star-hair [10352]	Vulnerable	Species or species habitat known to occur within area	In buffer area only
Baloskion longipes Dense Cord-rush [68511]	Vulnerable	Species or species habitat may occur within area	In feature area
Caladenia tessellata Thick-lipped Spider-orchid, Daddy Long-legs [2119]	Vulnerable	Species or species habitat likely to occur within area	In feature area
Cryptostylis hunteriana Leafless Tongue-orchid [19533]	Vulnerable	Species or species habitat likely to occur within area	In feature area
Cynanchum elegans White-flowered Wax Plant [12533]	Endangered	Species or species habitat likely to occur within area	In buffer area only

Scientific Name	Threatened Category	Presence Text	Buffer Status
Darwinia biflora [14619]	Vulnerable	Species or species habitat may occur within area	In buffer area only
Diuris praecox Newcastle Doubletail [55086]	Vulnerable	Species or species habitat likely to occur within area	In buffer area only
Eucalyptus camfieldii Camfield's Stringybark [15460]	Vulnerable	Species or species habitat known to occur within area	In feature area
Genoplesium baueri Yellow Gnat-orchid, Bauer's Midge Orchid, Brittle Midge Orchid [7528]	Endangered	Species or species habitat likely to occur within area	In feature area
Grevillea shiressii [19186]	Vulnerable	Species or species habitat known to occur within area	In buffer area only
Haloragis exalata subsp. exalata Wingless Raspwort, Square Raspwort [24636]	Vulnerable	Species or species habitat may occur within area	In buffer area only
Kunzea rupestris [8798]	Vulnerable	Species or species habitat may occur within area	In buffer area only
Lasiopetalum joyceae [20311]	Vulnerable	Species or species habitat likely to occur within area	In buffer area only
Melaleuca biconvexa Biconvex Paperbark [5583]	Vulnerable	Species or species habitat known to occur within area	In feature area
Melaleuca deanei Deane's Melaleuca [5818]	Vulnerable	Species or species habitat known to occur within area	In feature area
Micromyrtus blakelyi [6870]	Vulnerable	Species or species habitat likely to occur within area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
Persicaria elatior Knotweed, Tall Knotweed [5831]	Vulnerable	Species or species habitat may occur within area	In feature area
Persoonia hirsuta Hairy Geebung, Hairy Persoonia [19006]	Endangered	Species or species habitat may occur within area	In buffer area only
Pimelea curviflora var. curviflora [4182]	Vulnerable	Species or species habitat likely to occur within area	In buffer area only
Prostanthera askania Tranquillity Mintbush, Tranquility Mintbush [64958]	Endangered	Species or species habitat known to occur within area	In feature area
Prostanthera densa Villous Mintbush [12233]	Vulnerable	Species or species habitat may occur within area	In buffer area only
Prostanthera junonis Somersby Mintbush [64960]	Endangered	Species or species habitat known to occur within area	In buffer area only
Rhizanthella slateri Eastern Underground Orchid [11768]	Endangered	Species or species habitat may occur within area	In feature area
Rhodamnia rubescens Scrub Turpentine, Brown Malletwood [15763]	Critically Endangered	Species or species habitat known to occur within area	In feature area
Rhodomyrtus psidioides Native Guava [19162]	Critically Endangered	Species or species habitat known to occur within area	In feature area
Rutidosis heterogama Heath Wrinklewort [13132]	Vulnerable	Species or species habitat may occur within area	In buffer area only
Syzygium paniculatum Magenta Lilly Pilly, Magenta Cherry, Daguba, Scrub Cherry, Creek Lilly Pilly, Brush Cherry [20307]	Vulnerable	Species or species habitat known to occur within area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
[Tetratheca juncea](#) Black-eyed Susan [21407]	Vulnerable	Species or species habitat known to occur within area	In buffer area only
[Thelymitra adorata](#) Wyong Sun Orchid [84724]	Critically Endangered	Species or species habitat may occur within area	In buffer area only
[Thesium australe](#) Austral Toadflax, Toadflax [15202]	Vulnerable	Species or species habitat likely to occur within area	In feature area
REPTILE			
[Caretta caretta](#) Loggerhead Turtle [1763]	Endangered	Foraging, feeding or related behaviour known to occur within area	In feature area
[Chelonia mydas](#) Green Turtle [1765]	Vulnerable	Foraging, feeding or related behaviour known to occur within area	In feature area
[Dermochelys coriacea](#) Leatherback Turtle, Leathery Turtle, Luth [1768]	Endangered	Foraging, feeding or related behaviour known to occur within area	In feature area
[Eretmochelys imbricata](#) Hawksbill Turtle [1766]	Vulnerable	Species or species habitat known to occur within area	In feature area
[Hoplocephalus bungaroides](#) Broad-headed Snake [1182]	Endangered	Species or species habitat likely to occur within area	In feature area
[Natator depressus](#) Flatback Turtle [59257]	Vulnerable	Foraging, feeding or related behaviour known to occur within area	In feature area
SHARK			
[Carcharias taurus (east coast population)](#) Grey Nurse Shark (east coast population) [68751]	Critically Endangered	Foraging, feeding or related behaviour likely to occur within area	In buffer area only

Scientific Name	Threatened Category	Presence Text	Buffer Status
Carcharodon carcharias White Shark, Great White Shark [64470]	Vulnerable	Species or species habitat known to occur within area	In buffer area only
Galeorhinus galeus School Shark, Eastern School Shark, Snapper Shark, Tope, Soupfin Shark [68453]	Conservation Dependent	Species or species habitat may occur within area	In buffer area only
Rhincodon typus Whale Shark [66680]	Vulnerable	Species or species habitat may occur within area	In buffer area only
Sphyrna lewini Scalloped Hammerhead [85267]	Conservation Dependent	Species or species habitat likely to occur within area	In feature area

Listed Migratory Species			[Resource Information]
Scientific Name	Threatened Category	Presence Text	Buffer Status
Migratory Marine Birds			
Anous stolidus Common Noddy [825]		Species or species habitat may occur within area	In feature area
Apus pacificus Fork-tailed Swift [678]		Species or species habitat likely to occur within area	In feature area
Ardenna carneipes Flesh-footed Shearwater, Fleshy-footed Shearwater [82404]		Foraging, feeding or related behaviour likely to occur within area	In buffer area only
Ardenna grisea Sooty Shearwater [82651]	Vulnerable	Species or species habitat likely to occur within area	In feature area
Calonectris leucomelas Streaked Shearwater [1077]		Species or species habitat known to occur within area	In feature area
Diomedea antipodensis Antipodean Albatross [64458]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
Diomedea epomophora Southern Royal Albatross [89221]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area	In feature area
Diomedea exulans Wandering Albatross [89223]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area	In feature area
Diomedea sanfordi Northern Royal Albatross [64456]	Endangered	Species or species habitat may occur within area	In feature area
Fregata ariel Lesser Frigatebird, Least Frigatebird [1012]		Species or species habitat likely to occur within area	In feature area
Fregata minor Great Frigatebird, Greater Frigatebird [1013]		Species or species habitat may occur within area	In feature area
Macronectes giganteus Southern Giant-Petrel, Southern Giant Petrel [1060]	Endangered	Species or species habitat may occur within area	In feature area
Macronectes halli Northern Giant Petrel [1061]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area	In feature area
Phaethon lepturus White-tailed Tropicbird [1014]		Species or species habitat may occur within area	In feature area
Phoebetria fusca Sooty Albatross [1075]	Vulnerable	Species or species habitat may occur within area	In buffer area only
Sternula albifrons Little Tern [82849]		Species or species habitat may occur within area	In buffer area only
Thalassarche bulleri Buller's Albatross, Pacific Albatross [64460]	Vulnerable	Species or species habitat may occur within area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
Thalassarche carteri			
Indian Yellow-nosed Albatross [64464]	Vulnerable	Species or species habitat likely to occur within area	In buffer area only
Thalassarche cauta			
Shy Albatross [89224]	Endangered	Foraging, feeding or related behaviour likely to occur within area	In feature area
Thalassarche eremita			
Chatham Albatross [64457]	Endangered	Foraging, feeding or related behaviour may occur within area	In feature area
Thalassarche impavida			
Campbell Albatross, Campbell Black-browed Albatross [64459]	Vulnerable	Species or species habitat may occur within area	In feature area
Thalassarche melanophris			
Black-browed Albatross [66472]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area	In feature area
Thalassarche salvini			
Salvin's Albatross [64463]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area	In feature area
Thalassarche steadi			
White-capped Albatross [64462]	Vulnerable	Foraging, feeding or related behaviour known to occur within area	In feature area
Migratory Marine Species			
Balaenoptera edeni			
Bryde's Whale [35]		Species or species habitat may occur within area	In buffer area only
Balaenoptera musculus			
Blue Whale [36]	Endangered	Species or species habitat may occur within area	In buffer area only
Caperea marginata			
Pygmy Right Whale [39]		Foraging, feeding or related behaviour may occur within area	In buffer area only

Scientific Name	Threatened Category	Presence Text	Buffer Status
Carcharhinus longimanus Oceanic Whitetip Shark [84108]		Species or species habitat may occur within area	In buffer area only
Carcharodon carcharias White Shark, Great White Shark [64470]	Vulnerable	Species or species habitat known to occur within area	In buffer area only
Caretta caretta Loggerhead Turtle [1763]	Endangered	Foraging, feeding or related behaviour known to occur within area	In feature area
Chelonia mydas Green Turtle [1765]	Vulnerable	Foraging, feeding or related behaviour known to occur within area	In feature area
Dermochelys coriacea Leatherback Turtle, Leathery Turtle, Luth [1768]	Endangered	Foraging, feeding or related behaviour known to occur within area	In feature area
Dugong dugon Dugong [28]		Species or species habitat may occur within area	In feature area
Eretmochelys imbricata Hawksbill Turtle [1766]	Vulnerable	Species or species habitat known to occur within area	In feature area
Eubalaena australis as Balaena glacialis australis Southern Right Whale [40]	Endangered	Species or species habitat likely to occur within area	In buffer area only
Lagenorhynchus obscurus Dusky Dolphin [43]		Species or species habitat may occur within area	In buffer area only
Lamna nasus Porbeagle, Mackerel Shark [83288]		Species or species habitat likely to occur within area	In feature area
Megaptera novaeangliae Humpback Whale [38]		Species or species habitat known to occur within area	In buffer area only

Scientific Name	Threatened Category	Presence Text	Buffer Status
[Mobula alfredi as Manta alfredi](#) Reef Manta Ray, Coastal Manta Ray [90033]		Species or species habitat may occur within area	In feature area
[Mobula birostris as Manta birostris](#) Giant Manta Ray [90034]		Species or species habitat may occur within area	In feature area
[Natator depressus](#) Flatback Turtle [59257]	Vulnerable	Foraging, feeding or related behaviour known to occur within area	In feature area
[Orcinus orca](#) Killer Whale, Orca [46]		Species or species habitat may occur within area	In buffer area only
[Rhincodon typus](#) Whale Shark [66680]	Vulnerable	Species or species habitat may occur within area	In buffer area only
Migratory Terrestrial Species			
[Cuculus optatus](#) Oriental Cuckoo, Horsfield's Cuckoo [86651]		Species or species habitat known to occur within area	In feature area
[Hirundapus caudacutus](#) White-throated Needletail [682]	Vulnerable	Species or species habitat known to occur within area	In feature area
[Monarcha melanopsis](#) Black-faced Monarch [609]		Species or species habitat known to occur within area	In feature area
[Motacilla flava](#) Yellow Wagtail [644]		Species or species habitat likely to occur within area	In feature area
[Myiagra cyanoleuca](#) Satin Flycatcher [612]		Species or species habitat known to occur within area	In feature area
[Rhipidura rufifrons](#) Rufous Fantail [592]		Species or species habitat known to occur within area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
[Symposiachrus trivirgatus as Monarcha trivirgatus](#) Spectacled Monarch [83946]		Species or species habitat known to occur within area	In feature area
Migratory Wetlands Species			
[Actitis hypoleucos](#) Common Sandpiper [59309]		Species or species habitat known to occur within area	In feature area
[Calidris acuminata](#) Sharp-tailed Sandpiper [874]	Vulnerable	Species or species habitat known to occur within area	In feature area
[Calidris canutus](#) Red Knot, Knot [855]	Vulnerable	Species or species habitat known to occur within area	In feature area
[Calidris ferruginea](#) Curlew Sandpiper [856]	Critically Endangered	Species or species habitat known to occur within area	In feature area
[Calidris melanotos](#) Pectoral Sandpiper [858]		Species or species habitat known to occur within area	In feature area
[Charadrius bicinctus](#) Double-banded Plover [895]		Foraging, feeding or related behaviour known to occur within area	In buffer area only
[Charadrius leschenaultii](#) Greater Sand Plover, Large Sand Plover [877]	Vulnerable	Species or species habitat likely to occur within area	In feature area
[Gallinago hardwickii](#) Latham's Snipe, Japanese Snipe [863]	Vulnerable	Species or species habitat likely to occur within area	In feature area
[Gallinago megala](#) Swinhoe's Snipe [864]		Foraging, feeding or related behaviour likely to occur within area	In buffer area only

Scientific Name	Threatened Category	Presence Text	Buffer Status
Gallinago stenura Pin-tailed Snipe [841]		Foraging, feeding or related behaviour likely to occur within area	In buffer area only
Limosa lapponica Bar-tailed Godwit [844]		Species or species habitat known to occur within area	In feature area
Numenius madagascariensis Eastern Curlew, Far Eastern Curlew [847]	Critically Endangered	Species or species habitat known to occur within area	In feature area
Numenius minutus Little Curlew, Little Whimbrel [848]		Foraging, feeding or related behaviour likely to occur within area	In buffer area only
Numenius phaeopus Whimbrel [849]		Foraging, feeding or related behaviour known to occur within area	In buffer area only
Pandion haliaetus Osprey [952]		Species or species habitat known to occur within area	In feature area
Pluvialis fulva Pacific Golden Plover [25545]		Foraging, feeding or related behaviour known to occur within area	In buffer area only
Tringa brevipes Grey-tailed Tattler [851]		Foraging, feeding or related behaviour known to occur within area	In buffer area only
Tringa nebularia Common Greenshank, Greenshank [832]	Endangered	Species or species habitat likely to occur within area	In feature area

Other Matters Protected by the EPBC Act

Commonwealth Lands [Resource Information]

The Commonwealth area listed below may indicate the presence of Commonwealth land in this vicinity. Due to the unreliability of the data source, all proposals should be checked as to whether it impacts on a Commonwealth area, before making a definitive decision. Contact the State or Territory government land department for further information.

Commonwealth Land Name	State	Buffer Status
Communications, Information Technology and the Arts - Australian Postal Corporation		
Commonwealth Land - Australian Postal Commission [11776]	NSW	In buffer area only
Commonwealth Land - Australian Postal Commission [11772]	NSW	In buffer area only
Communications, Information Technology and the Arts - Telstra Corporation Limited		
Commonwealth Land - Australian & Overseas Telecommunications Corporation [11744]	NSW	In buffer area only
Commonwealth Land - Australian Telecommunications Commission [11827]	NSW	In buffer area only
Commonwealth Land - Australian Telecommunications Commission [11829]	NSW	In buffer area only
Commonwealth Land - Australian Telecommunications Commission [11761]	NSW	In buffer area only
Commonwealth Land - Australian Telecommunications Commission [11768]	NSW	In buffer area only
Commonwealth Land - Australian Telecommunications Commission [11769]	NSW	In buffer area only
Commonwealth Land - Australian Telecommunications Commission [11765]	NSW	In buffer area only
Commonwealth Land - Australian Telecommunications Commission [11762]	NSW	In buffer area only
Commonwealth Land - Australian Telecommunications Commission [11763]	NSW	In buffer area only
Commonwealth Land - Australian Telecommunications Commission [11830]	NSW	In buffer area only
Commonwealth Land - Telstra Corporation Limited [16419]	NSW	In buffer area only
Commonwealth Land - Telstra Corporation Limited [11766]	NSW	In buffer area only
Defence		
Commonwealth Land - Defence Service Homes Corporation [15946]	NSW	In buffer area only
Defence - ERINA GRES DEPOT [10070]	NSW	In buffer area only
Defence - TS HAWKESBURY [10054]	NSW	In feature area
Defence - Defence Housing Authority		

Commonwealth Land Name	State	Buffer Status
Commonwealth Land - Defence Housing Authority [11775]	NSW	In buffer area only
Commonwealth Land - Defence Housing Authority [11767]	NSW	In buffer area only
Commonwealth Land - Director of War Service Homes [11774]	NSW	In buffer area only
Commonwealth Land - Director of War Service Homes [11770]	NSW	In buffer area only
Commonwealth Land - Director of War Service Homes [16556]	NSW	In buffer area only
Commonwealth Land - Director of War Service Homes [11773]	NSW	In buffer area only
Commonwealth Land - Director of War Service Homes [11828]	NSW	In buffer area only
Commonwealth Land - Director of War Service Homes [11764]	NSW	In buffer area only
Unknown		
Commonwealth Land - [11760]	NSW	In buffer area only

Listed Marine Species [Resource Information]

Scientific Name	Threatened Category	Presence Text	Buffer Status
Bird			
Actitis hypoleucos Common Sandpiper [59309]		Species or species habitat known to occur within area	In feature area
Anous stolidus Common Noddy [825]		Species or species habitat may occur within area	In feature area
Apus pacificus Fork-tailed Swift [678]		Species or species habitat likely to occur within area overfly marine area	In feature area
Ardenna carneipes as Puffinus carneipes Flesh-footed Shearwater, Fleshy-footed Shearwater [82404]		Foraging, feeding or related behaviour likely to occur within area	In buffer area only
Ardenna grisea as Puffinus griseus Sooty Shearwater [82651]	Vulnerable	Species or species habitat likely to occur within area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
Bubulcus ibis as Ardea ibis Cattle Egret [66521]		Species or species habitat may occur within area overfly marine area	In feature area
Calidris acuminata Sharp-tailed Sandpiper [874]	Vulnerable	Species or species habitat known to occur within area	In feature area
Calidris canutus Red Knot, Knot [855]	Vulnerable	Species or species habitat known to occur within area overfly marine area	In feature area
Calidris ferruginea Curlew Sandpiper [856]	Critically Endangered	Species or species habitat known to occur within area overfly marine area	In feature area
Calidris melanotos Pectoral Sandpiper [858]		Species or species habitat known to occur within area overfly marine area	In feature area
Calonectris leucomelas Streaked Shearwater [1077]		Species or species habitat known to occur within area	In feature area
Charadrius bicinctus Double-banded Plover [895]		Foraging, feeding or related behaviour known to occur within area overfly marine area	In buffer area only
Charadrius leschenaultii Greater Sand Plover, Large Sand Plover [877]	Vulnerable	Species or species habitat likely to occur within area	In feature area
Diomedea antipodensis Antipodean Albatross [64458]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area	In feature area
Diomedea antipodensis gibsoni as Diomedea gibsoni Gibson's Albatross [82270]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
Diomedea epomophora Southern Royal Albatross [89221]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area	In feature area
Diomedea exulans Wandering Albatross [89223]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area	In feature area
Diomedea sanfordi Northern Royal Albatross [64456]	Endangered	Species or species habitat may occur within area	In feature area
Fregata ariel Lesser Frigatebird, Least Frigatebird [1012]		Species or species habitat likely to occur within area	In feature area
Fregata minor Great Frigatebird, Greater Frigatebird [1013]		Species or species habitat may occur within area	In feature area
Gallinago hardwickii Latham's Snipe, Japanese Snipe [863]	Vulnerable	Species or species habitat likely to occur within area overfly marine area	In feature area
Gallinago megala Swinhoe's Snipe [864]		Foraging, feeding or related behaviour likely to occur within area overfly marine area	In buffer area only
Gallinago stenura Pin-tailed Snipe [841]		Foraging, feeding or related behaviour likely to occur within area overfly marine area	In buffer area only
Haliaeetus leucogaster White-bellied Sea-Eagle [943]		Species or species habitat known to occur within area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
Himantopus himantopus Pied Stilt, Black-winged Stilt [870]		Foraging, feeding or related behaviour known to occur within area overfly marine area	In buffer area only
Hirundapus caudacutus White-throated Needletail [682]	Vulnerable	Species or species habitat known to occur within area overfly marine area	In feature area
Lathamus discolor Swift Parrot [744]	Critically Endangered	Species or species habitat known to occur within area overfly marine area	In feature area
Limosa lapponica Bar-tailed Godwit [844]		Species or species habitat known to occur within area	In feature area
Macronectes giganteus Southern Giant-Petrel, Southern Giant Petrel [1060]	Endangered	Species or species habitat may occur within area	In feature area
Macronectes halli Northern Giant Petrel [1061]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area	In feature area
Merops ornatus Rainbow Bee-eater [670]		Species or species habitat may occur within area overfly marine area	In feature area
Monarcha melanopsis Black-faced Monarch [609]		Species or species habitat known to occur within area overfly marine area	In feature area
Motacilla flava Yellow Wagtail [644]		Species or species habitat likely to occur within area overfly marine area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
Myiagra cyanoleuca Satin Flycatcher [612]		Species or species habitat known to occur within area overfly marine area	In feature area
Neophema chrysostoma Blue-winged Parrot [726]	Vulnerable	Species or species habitat likely to occur within area overfly marine area	In feature area
Numenius madagascariensis Eastern Curlew, Far Eastern Curlew [847]	Critically Endangered	Species or species habitat known to occur within area	In feature area
Numenius minutus Little Curlew, Little Whimbrel [848]		Foraging, feeding or related behaviour likely to occur within area overfly marine area	In buffer area only
Numenius phaeopus Whimbrel [849]		Foraging, feeding or related behaviour known to occur within area	In buffer area only
Pachyptila turtur Fairy Prion [1066]		Species or species habitat known to occur within area	In feature area
Pandion haliaetus Osprey [952]		Species or species habitat known to occur within area	In feature area
Phaethon lepturus White-tailed Tropicbird [1014]		Species or species habitat may occur within area	In feature area
Phoebetria fusca Sooty Albatross [1075]	Vulnerable	Species or species habitat may occur within area	In buffer area only
Pluvialis fulva Pacific Golden Plover [25545]		Foraging, feeding or related behaviour known to occur within area	In buffer area only

Scientific Name	Threatened Category	Presence Text	Buffer Status
Pterodroma cervicalis White-necked Petrel [59642]		Species or species habitat may occur within area	In feature area
Rhipidura rufifrons Rufous Fantail [592]		Species or species habitat known to occur within area overfly marine area	In feature area
Rostratula australis as Rostratula benghalensis (sensu lato) Australian Painted Snipe [77037]	Endangered	Species or species habitat likely to occur within area overfly marine area	In feature area
Stercorarius antarcticus as Catharacta skua Brown Skua [85039]		Species or species habitat may occur within area	In buffer area only
Sterna striata White-fronted Tern [799]		Foraging, feeding or related behaviour likely to occur within area	In feature area
Sternula albifrons as Sterna albifrons Little Tern [82849]		Species or species habitat may occur within area	In buffer area only
Symposiachrus trivirgatus as Monarcha trivirgatus Spectacled Monarch [83946]		Species or species habitat known to occur within area overfly marine area	In feature area
Thalassarche bulleri Buller's Albatross, Pacific Albatross [64460]	Vulnerable	Species or species habitat may occur within area	In feature area
Thalassarche bulleri platei as Thalassarche sp. nov. Northern Buller's Albatross, Pacific Albatross [82273]	Vulnerable	Species or species habitat may occur within area	In feature area
Thalassarche carteri Indian Yellow-nosed Albatross [64464]	Vulnerable	Species or species habitat likely to occur within area	In buffer area only

Scientific Name	Threatened Category	Presence Text	Buffer Status
Thalassarche cauta Shy Albatross [89224]	Endangered	Foraging, feeding or related behaviour likely to occur within area	In feature area
Thalassarche eremita Chatham Albatross [64457]	Endangered	Foraging, feeding or related behaviour may occur within area	In feature area
Thalassarche impavida Campbell Albatross, Campbell Black-browed Albatross [64459]	Vulnerable	Species or species habitat may occur within area	In feature area
Thalassarche melanophris Black-browed Albatross [66472]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area	In feature area
Thalassarche salvini Salvin's Albatross [64463]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area	In feature area
Thalassarche steadi White-capped Albatross [64462]	Vulnerable	Foraging, feeding or related behaviour known to occur within area	In feature area
Tringa brevipes as Heteroscelus brevipes Grey-tailed Tattler [851]		Foraging, feeding or related behaviour known to occur within area	In buffer area only
Tringa nebularia Common Greenshank, Greenshank [832]	Endangered	Species or species habitat likely to occur within area overfly marine area	In feature area
Fish			
Acentronura tentaculata Shortpouch Pygmy Pipehorse [66187]		Species or species habitat may occur within area	In buffer area only
Festucalex cinctus Girdled Pipefish [66214]		Species or species habitat may occur within area	In buffer area only

Scientific Name	Threatened Category	Presence Text	Buffer Status
[Filicampus tigris](#) Tiger Pipefish [66217]		Species or species habitat may occur within area	In buffer area only
[Heraldia nocturna](#) Upside-down Pipefish, Eastern Upside-down Pipefish, Eastern Upside-down Pipefish [66227]		Species or species habitat may occur within area	In buffer area only
[Hippichthys penicillus](#) Beady Pipefish, Steep-nosed Pipefish [66231]		Species or species habitat may occur within area	In buffer area only
[Hippocampus abdominalis](#) Big-belly Seahorse, Eastern Potbelly Seahorse, New Zealand Potbelly Seahorse [66233]		Species or species habitat may occur within area	In buffer area only
[Hippocampus whitei](#) White's Seahorse, Crowned Seahorse, Sydney Seahorse [66240]	Endangered	Species or species habitat likely to occur within area	In buffer area only
[Histiogamphelus briggsii](#) Crested Pipefish, Briggs' Crested Pipefish, Briggs' Pipefish [66242]		Species or species habitat may occur within area	In buffer area only
[Lissocampus runa](#) Javelin Pipefish [66251]		Species or species habitat may occur within area	In buffer area only
[Maroubra perserrata](#) Sawtooth Pipefish [66252]		Species or species habitat may occur within area	In buffer area only
[Notiocampus ruber](#) Red Pipefish [66265]		Species or species habitat may occur within area	In buffer area only
[Phyllopteryx taeniolatus](#) Common Seadragon, Weedy Seadragon [66268]		Species or species habitat may occur within area	In buffer area only
[Solegnathus spinosissimus](#) Spiny Pipehorse, Australian Spiny Pipehorse [66275]		Species or species habitat may occur within area	In buffer area only

Scientific Name	Threatened Category	Presence Text	Buffer Status
[Solenostomus cyanopterus](#) Robust Ghostpipefish, Blue-finned Ghost Pipefish, [66183]		Species or species habitat may occur within area	In buffer area only
[Solenostomus paradoxus](#) Ornate Ghostpipefish, Harlequin Ghost Pipefish, Ornate Ghost Pipefish [66184]		Species or species habitat may occur within area	In buffer area only
[Stigmatopora argus](#) Spotted Pipefish, Gulf Pipefish, Peacock Pipefish [66276]		Species or species habitat may occur within area	In buffer area only
[Stigmatopora nigra](#) Widebody Pipefish, Wide-bodied Pipefish, Black Pipefish [66277]		Species or species habitat may occur within area	In buffer area only
[Syngnathoides biaculeatus](#) Double-end Pipehorse, Double-ended Pipehorse, Alligator Pipefish [66279]		Species or species habitat may occur within area	In buffer area only
[Trachyrhamphus bicoarctatus](#) Bentstick Pipefish, Bend Stick Pipefish, Short-tailed Pipefish [66280]		Species or species habitat may occur within area	In buffer area only
[Urocampus carinirostris](#) Hairy Pipefish [66282]		Species or species habitat may occur within area	In buffer area only
[Vanacampus margaritifer](#) Mother-of-pearl Pipefish [66283]		Species or species habitat may occur within area	In buffer area only
Mammal			
[Arctocephalus forsteri](#) Long-nosed Fur-seal, New Zealand Fur-seal [20]		Species or species habitat may occur within area	In buffer area only
[Arctocephalus pusillus](#) Australian Fur-seal, Australo-African Fur-seal [21]		Species or species habitat may occur within area	In buffer area only
[Dugong dugon](#) Dugong [28]		Species or species habitat may occur within area	In feature area
Reptile			

Scientific Name	Threatened Category	Presence Text	Buffer Status
Caretta caretta Loggerhead Turtle [1763]	Endangered	Foraging, feeding or related behaviour known to occur within area	In feature area
Chelonia mydas Green Turtle [1765]	Vulnerable	Foraging, feeding or related behaviour known to occur within area	In feature area
Dermochelys coriacea Leatherback Turtle, Leathery Turtle, Luth [1768]	Endangered	Foraging, feeding or related behaviour known to occur within area	In feature area
Eretmochelys imbricata Hawksbill Turtle [1766]	Vulnerable	Species or species habitat known to occur within area	In feature area
Hydrophis platura as Pelamis platurus Yellow-bellied Sea Snake [93746]		Species or species habitat may occur within area	In buffer area only
Natator depressus Flatback Turtle [59257]	Vulnerable	Foraging, feeding or related behaviour known to occur within area	In feature area

Whales and Other Cetaceans			[Resource Information]
Current Scientific Name	Status	Type of Presence	Buffer Status
Mammal			
Balaenoptera acutorostrata Minke Whale [33]		Species or species habitat may occur within area	In buffer area only
Balaenoptera edeni Bryde's Whale [35]		Species or species habitat may occur within area	In buffer area only
Balaenoptera musculus Blue Whale [36]	Endangered	Species or species habitat may occur within area	In buffer area only

Current Scientific Name	Status	Type of Presence	Buffer Status
[Caperea marginata](#) Pygmy Right Whale [39]		Foraging, feeding or related behaviour may occur within area	In buffer area only
[Delphinus delphis](#) Common Dolphin, Short-beaked Common Dolphin [60]		Species or species habitat may occur within area	In buffer area only
[Eubalaena australis](#) Southern Right Whale [40]	Endangered	Species or species habitat likely to occur within area	In buffer area only
[Grampus griseus](#) Risso's Dolphin, Grampus [64]		Species or species habitat may occur within area	In buffer area only
[Lagenorhynchus obscurus](#) Dusky Dolphin [43]		Species or species habitat may occur within area	In buffer area only
[Megaptera novaeangliae](#) Humpback Whale [38]		Species or species habitat known to occur within area	In buffer area only
[Orcinus orca](#) Killer Whale, Orca [46]		Species or species habitat may occur within area	In buffer area only
[Stenella attenuata](#) Spotted Dolphin, Pantropical Spotted Dolphin [51]		Species or species habitat may occur within area	In buffer area only
[Tursiops aduncus](#) Indian Ocean Bottlenose Dolphin, Spotted Bottlenose Dolphin [68418]		Species or species habitat likely to occur within area	In buffer area only
[Tursiops truncatus s. str.](#) Bottlenose Dolphin [68417]		Species or species habitat may occur within area	In buffer area only

Extra Information

State and Territory Reserves [Resource Information]

Protected Area Name	Reserve Type	State	Buffer Status
Bouddi	National Park	NSW	In buffer area only
Brisbane Water	National Park	NSW	In buffer area only
Cockle Bay	Nature Reserve	NSW	In buffer area only
Gosford Coastal Open Space System	NRS Addition - Gazettal in Progress	NSW	In buffer area only
Jilliby	State Conservation Area	NSW	In buffer area only
Palm Grove	Nature Reserve	NSW	In buffer area only
Pelican Island	Nature Reserve	NSW	In buffer area only
Rileys Island	Nature Reserve	NSW	In buffer area only
Saratoga Island	Nature Reserve	NSW	In buffer area only
Wambina	Nature Reserve	NSW	In buffer area only

Regional Forest Agreements [Resource Information]

Note that all areas with completed RFAs have been included. Please see the associated resource information for specific caveats and use limitations associated with RFA boundary information.

RFA Name	State	Buffer Status
North East NSW RFA	New South Wales	In feature area

Nationally Important Wetlands [Resource Information]

Wetland Name	State	Buffer Status
Avoca Lagoon	NSW	In buffer area only
Brisbane Water Estuary	NSW	In feature area
Cockrone Lagoon	NSW	In buffer area only
Terrigal Lagoon	NSW	In buffer area only

EPBC Act Referrals [Resource Information]

Title of referral	Reference	Referral Outcome	Assessment Status	Buffer Status
Controlled action				
New Intercity Fleet Maintenance Facility Kangy Angy, NSW	2016/7681	Controlled Action	Post-Approval	In buffer area only
Vegetation Clearing North Pearl Estate section of Kahibah Creek	2003/997	Controlled Action	Post-Approval	In buffer area only

Title of referral	Reference	Referral Outcome	Assessment Status	Buffer Status
Controlled action				
Not controlled action				
Central Coast Highway Upgrade from Ocean View Dve to Matcham Rd	2009/4815	Not Controlled Action	Completed	In buffer area only
Demolition of Ablutions Block, Snapper Island, NSW	2018/8303	Not Controlled Action	Completed	In buffer area only
Improving rabbit biocontrol: releasing another strain of RHDV, sthrn two thirds of Australia	2015/7522	Not Controlled Action	Completed	In feature area
Somersby Industrial Estate, Stage 1	2002/548	Not Controlled Action	Completed	In buffer area only
Terrigal Sewer Pumping Station Upgrade	2001/128	Not Controlled Action	Completed	In buffer area only
Not controlled action (particular manner)				
Repair and Upgrade of North Avoca Sewerage System	2010/5740	Not Controlled Action (Particular Manner)	Post-Approval	In buffer area only
Referral decision				
Breeding program for Grey Nurse Sharks	2007/3245	Referral Decision	Completed	In buffer area only

Biologically Important Areas			[Resource Information]
Scientific Name	Behaviour	Presence	Buffer Status
Dolphins			
Tursiops aduncus			
Indo-Pacific/Spotted Bottlenose Dolphin [68418]	Breeding	Likely to occur	In buffer area only
Seabirds			
Ardenna tenuirostris			
Short-tailed Shearwater [82652]	Foraging	Likely to occur	In feature area
Ardenna tenuirostris			
Short-tailed Shearwater [82652]	Foraging	Likely to occur	In buffer area only
Sharks			
Carcharias taurus			
Grey Nurse Shark [64469]	Foraging	Known to occur	In buffer area only
Whales			
Megaptera novaeangliae			
Humpback Whale [38]	Migration (north and south)	Known to occur	In buffer area only

Bioregional Assessments	[Resource Information]

SubRegion	BioRegion	Website	Buffer Status
Sydney	Sydney Basin	BA website	In buffer area only
Hunter	Northern Sydney Basin	BA website	In feature area

Caveat

1 PURPOSE

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

The report contains the mapped locations of:

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

2 DISCLAIMER

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

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

3 DATA SOURCES

Threatened ecological communities

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

Threatened, migratory and marine species

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

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

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

4 LIMITATIONS

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

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

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

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

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

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

Acknowledgements

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

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

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

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

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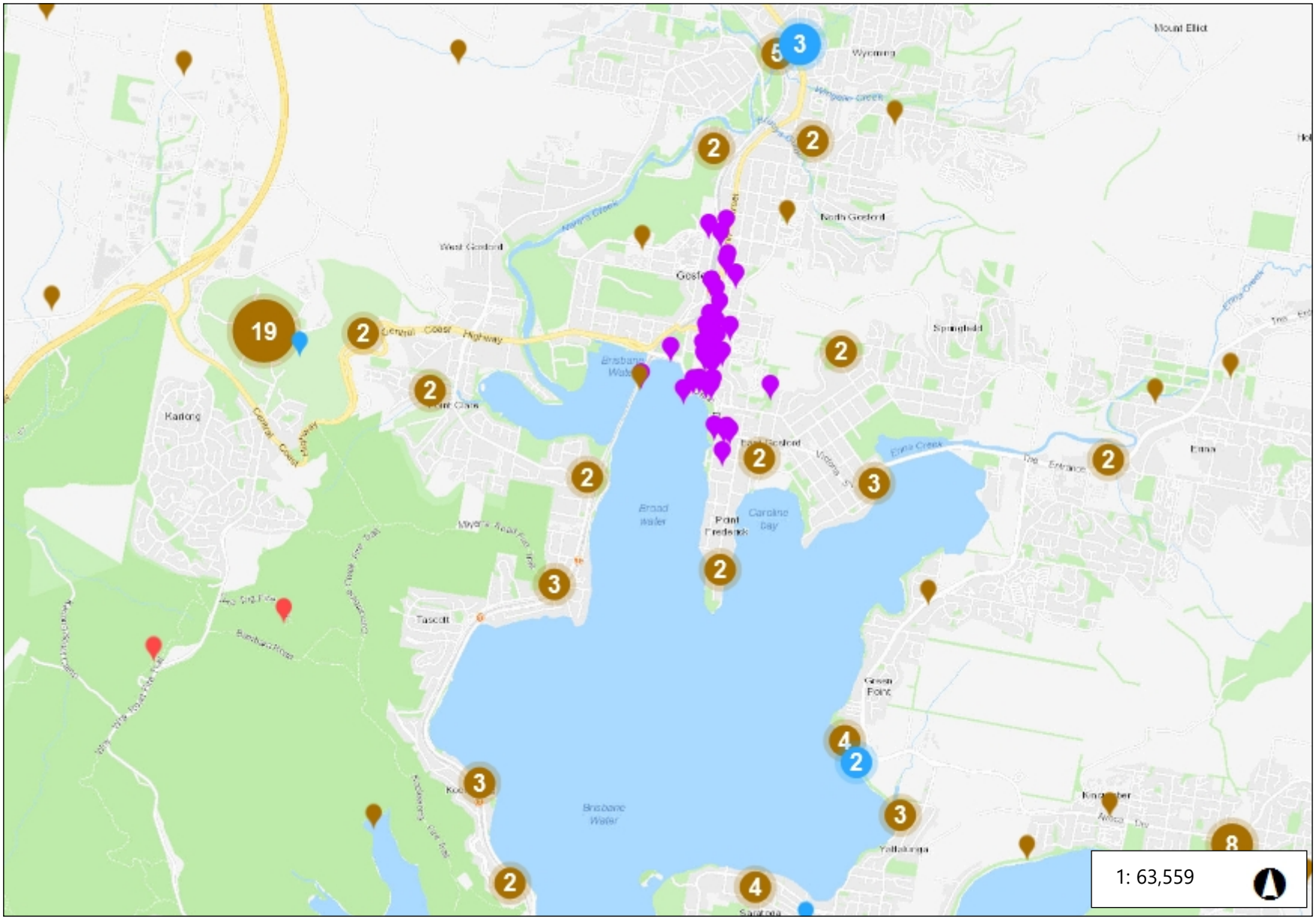
NSW GOVERNMENT | Heritage NSW

Brisbane Waters



Legend

- World Heritage Areas NSW
- SEPP
- Local Environmental Plan
  - Cluster (label denotes number)
- Aboriginal Place
  - Cluster (label denotes number)
- State Heritage Register
  - Cluster (label denotes number)
- Interim Heritage Order
  - Cluster (label denotes number)

Notes

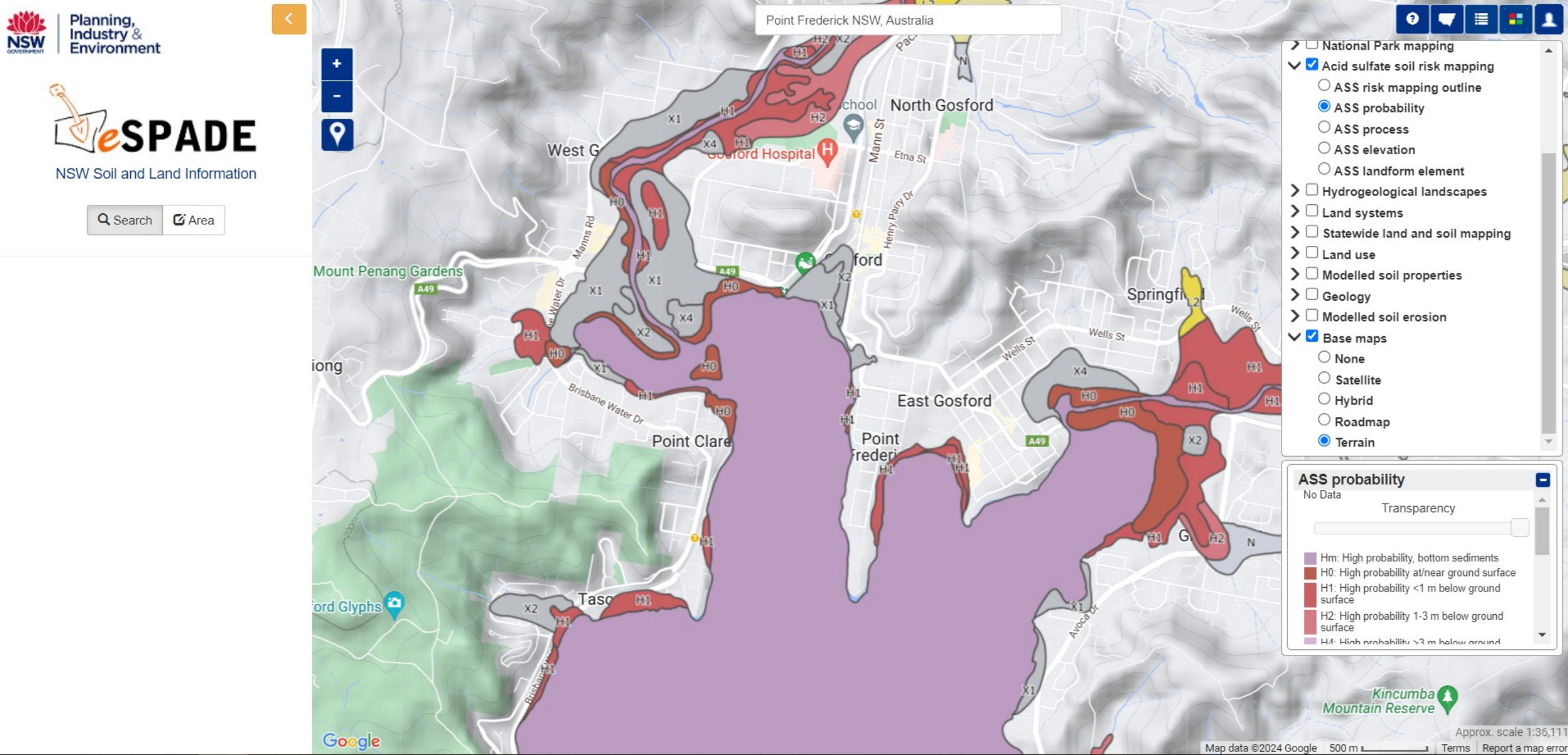
3,228.8 0 1,614.39 3,228.8 Meters

WGS_1984_Web_Mercator_Auxiliary_Sphere

This map is a user generated static output from the Heritage Management System and is for reference only. Information that appears on this map may or may not be accurate, current, or otherwise reliable.

THIS MAP IS NOT TO BE USED FOR NAVIGATION

Removed due to sensitivity


Planning, Industry & Environment
eSPADE
NSW Soil and Land Information
Search
Area
Point Frederick NSW, Australia
National Park mapping
Acid sulfate soil risk mapping
ASS risk mapping outline
ASS probability
ASS process
ASS elevation
ASS landform element
Hydrogeological landscapes
Land systems
Statewide land and soil mapping
Land use
Modelled soil properties
Geology
Modelled soil erosion
Base maps
None
Satellite
Hybrid
Roadmap
Terrain
ASS probability
No Data
Transparency
Hm: High probability, bottom sediments
H0: High probability at/near ground surface
H1: High probability <1 m below ground surface
H2: High probability 1-3 m below ground surface
North Gosford
East Gosford
Point Clare
Mount Penang Gardens
Kincumba Mountain Reserve
Google
Map data ©2024 Google
500 m
Terms
Report a map error
Approx. scale 1:36,111

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 (https://www.legislation.nsw.gov.au/gazette) website. Gazettal notices published prior to 2001 can be obtained from Heritage NSW 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 Heritage NSW 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.

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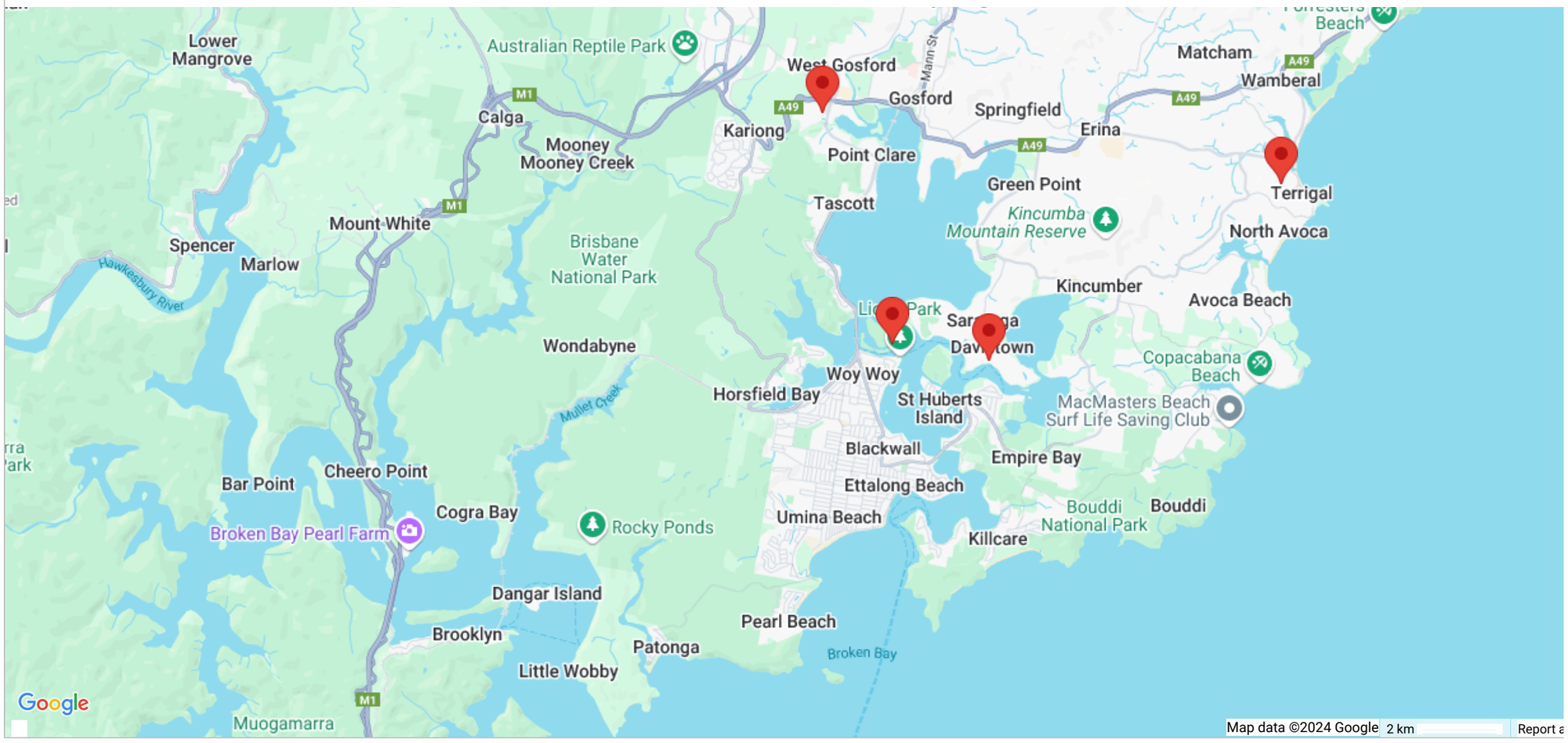
Australian Government
Department of Climate Change, Energy, the Environment and Water

Australasian Underwater Cultural Heritage Database

Search other Underwater Cultural Heritage | Search other Underwater Cultural Heritage on Map

Search other Underwater Cultural Heritage on Map

MAP



Appendix G – Marine Ecological Assessment Technical Memorandum

High Speed Rail – Sydney to Newcastle

Technical Memorandum Marine Ecology Impact Assessment

Catalyst HSR Powered by WSP + Arcadis

Detailed Business Case: Technical advisory, environment & sustainability, community & stakeholder engagement services

September 2024

Document control

Project Name	High Speed Rail – Sydney to Newcastle
Document Title	Technical Memorandum Marine Ecology Impact Assessment Proposed High Speed Rail Geotechnical Investigations
Prepared for	Catalyst HSR
Prepared by	Earth & Sea Consulting Pty Ltd
Filename/Reference	ESC0000-REP-01 Rev. O5

Revision history

Rev	Date	Details
Rev_A	17/09/2024	Draft – Mathew Davis
REV _B	17/09/2024	Internal Review – Pete Wulf
REV _O	18/09/2024	Final – Mathew Davis
REV _O_2	18/09/2024	Review – Mathew Davis
REV _O_3	19/09/2024	Client Submission – Mathew Davis
REV_O_4	20/09/2024	Final Memo Review Submission
REV_O_5	20/09/2024	Final Memo

	Name	Date	Signature
Prepared by:	Mathew Davis (Earth & Sea Consulting Pty Ltd)	20/09/2024	
Reviewed by:	Pujyata Karmacharya Morgan Cardiff	20/09/2024	
Approved by:	Alex McDonald	20/09/2024	

Limitation Statement

The sole purpose of this memorandum and associated services performed by Earth & Sea Pty Ltd (Earth & Sea) is to provide a Technical Memorandum for marine impacts from proposed geotechnical investigations in accordance with the scope of services set out between Earth & Sea and Catalyst ('the Client) dated 12 September 2024.

In preparing this memorandum, Earth & Sea has relied upon and presumed accurate certain information. This memorandum is accurate in accordance with data and information provided during the development of this report. It does not allow for the passage of time or the manifestation of latent conditions / impact of future events.

Earth & Sea accepts no liability or responsibility for use or reliance upon this report, its data, findings or conclusions by any third party for the purposes outside the context of the scope of works and agreement between Earth & Sea and the Client.

Contents

List of figures

Glossary

Term	Definition
ASS	Acid Sulfate Soil
DCCEEW	Department of Climate Change, Energy, the Environment, and Water
DPI	Department of Primary Industries
DPHI	Department of Planning, Housing and Infrastructure
Earth & Sea	Earth and Sea Consulting
EPBC Act	Environmental Protection and Biodiversity Conservation Act 1999
MPA	Marine Protected Area
MNES	Matters of National Environmental Significance
DECC	NSW Department of Environment and Climate Change
PMST	Protected Matters Search Tool

1 Background

The Australian Government is developing a High-Speed Rail (HSR) Network to connect major cities and regional communities along the east coast, including Brisbane, Sydney, Canberra, and Melbourne. The first stage focuses on the Sydney to Newcastle route and aims to connect the two cities with a fast and efficient rail service, reducing travel times and easing congestion on existing transport networks for future growth.

The High Speed Rail Authority (HSRA) is currently undertaking a program of both land based and marine geotechnical investigations to support the business case for the Sydney to Newcastle HSR. For this assessment, the geotechnical investigation program includes the drilling of six marine boreholes, five in the Hawkesbury River and one in Brisbane Water, which would be drilled using barge mounted drill rigs (the proposal).

Earth and Sea Consulting (Earth & Sea) were engaged to prepare a Technical Memorandum on the potential marine subtidal ecological impacts form the Proposal. The location of the proposed boreholes is shown on Figures 1-1, and Figure 1-2.

Figure 1-1 Brisbane Water Borehole Location

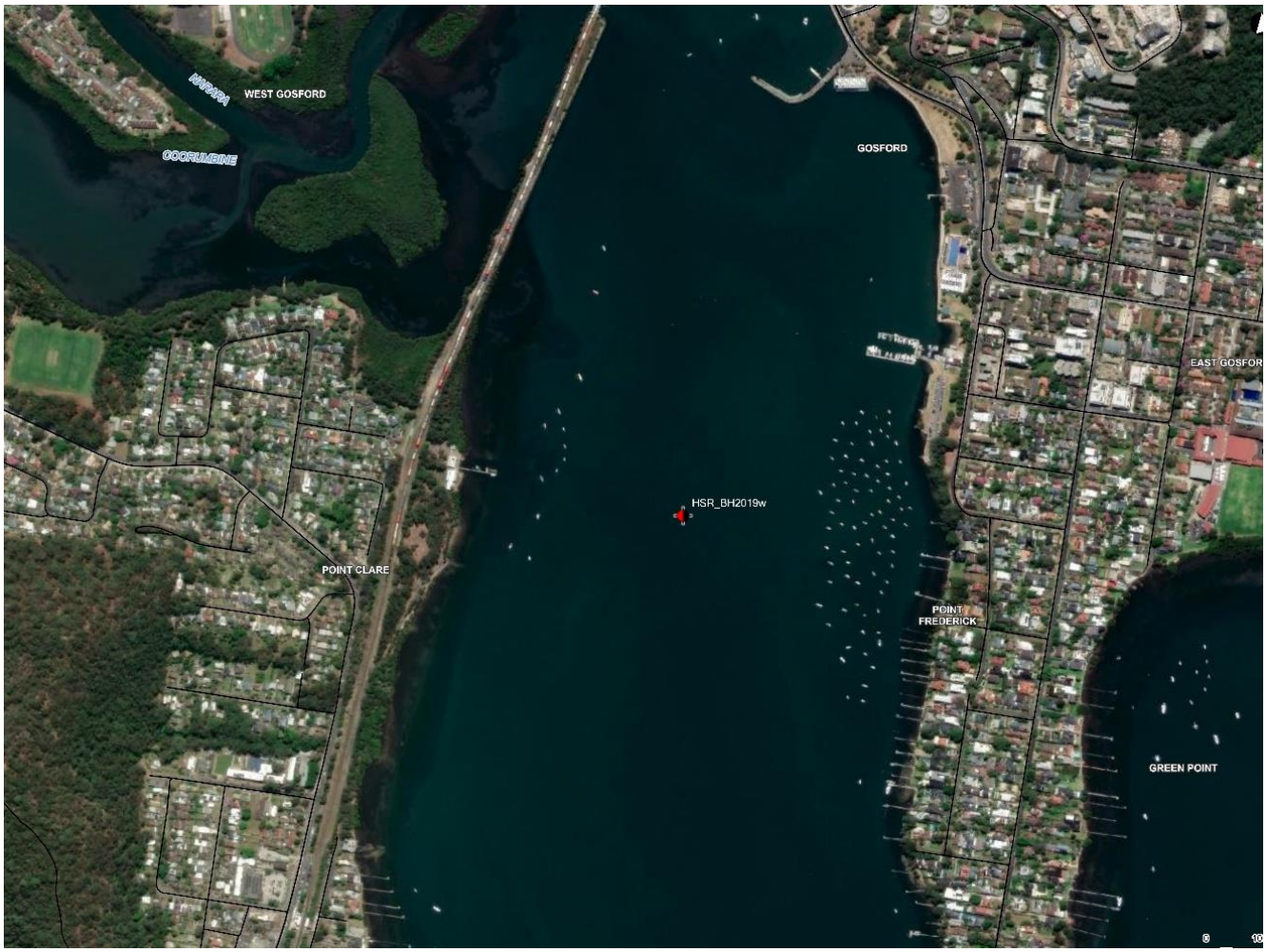


Figure 1-2 Hawkesbury River Borehole Locations

2 Proposed methodology

The proposal would involve the drilling of six marine geotechnical boreholes of various depths up to approximately 140 metres (subject to the geological conditions encountered). Five of the boreholes would be in the Hawkesbury River and one borehole would be in Brisbane Water. The marine boreholes would be drilled using Hanjin D&B 8D geotechnical drill rigs, mounted on the deck of jack-up barges. The proposal would include the following methodology:

2.1 Mobilisation

Mobilisation of the jack-up barges (Sea Lift 3 and Sea Lift 11) would occur from nearby boat ramps. Sea Lift 3 would be mobilised at Deerubbun Boat Ramp at Mooney Mooney and Koolewong Waterfront Reserve Boat Ramp (1&2), requiring a temporary closure for about one to two days. The barge would be assembled in stages, starting with the 22-metre legs to fit under the Pacific Highway and railway bridges, with additional tops assembled at Parsley Boat Ramp. Sea Lift 11 would be mobilised at Koolewong Waterfront Reserve Boat Ramp, occupying part of the car park for one to two days.

2.2 Positioning jack-up barges

The barges would be positioned within 20 metres of the proposed borehole location using transfer boats and an onboard satellite system. One leg of the barge would be lowered to the river/seabed to hold it in place. The barge would remain in position for the duration of each borehole (around two weeks), with the deck lifted out of the water to provide a stable work platform. The deck level would be surveyed and adjusted as needed to correct for any settlement. Spuds will be deployed into the sediment causing localised minor temporary increases in sedimentation. For drilling, bore casings are designed to recirculate within the encapsulated core, retaining sediment and sediment laden water within.

Figure 2-1Sea Lift 3 Barge

2.3 Drilling of marine boreholes

Prior to drilling, a 140-millimetre diameter steel casing would be lowered from the drill rig to the river/seabed. Geotechnical boreholes would be drilled within this casing using methods such as Rotary washboring, Mazier coring, and HQ3 coring.

Rotary washboring

Some boreholes would be advanced through sediments and soils by rotary washboring, with standard penetration tests (SPTs) and/or push tube samples (U75s) collected approximately every three metres. The sediment/soil would be broken up by the drill bit and flushed from the borehole by drilling fluid, with particles captured in a mud tank.

Standard penetration testing

A steel tube sampler would be driven into the sediment/soil by a drive hammer assembly, collecting a 35-millimetre diameter sample. The sample would be inspected, photographed, and retained for further testing.

U75 push tube sampling

A 75-millimetre diameter steel tube would be used to collect sediment/soil samples, which would be sealed and retained for inspection and testing.

Mazier coring

The remaining boreholes would be advanced through the river/seabed sediments and soils using the Mazier core sampling technique. Mazier coring would use a specialised steel coring barrel attached to the end of the drill rods. It would produce a 101 mm-diameter borehole and collect a continuous 74 mm-diameter core sample of the sediment/soil, which would be brought to the surface by removing the drilling rods from the borehole to access the core barrel. The sample would be removed from the core barrel and retained in a plastic liner for inspection and testing.

HQ3 coring

All boreholes would be advanced into rock using the HQ3 triple-tube wireline coring technique, producing a 96-millimetre diameter borehole and collecting a continuous 61-millimetre diameter core sample.

2.4 In-situ testing

Three types of in-situ testing are proposed to be completed for the proposal, including:

- Packer testing, which would involve isolating a section of the borehole and pumping water into it and recording the flow required to maintain pressure.
- Overcore In-situ stress testing, which would involve drilling a smaller pilot hole, placing a strain cell and measuring the rock's natural stresses.
- Televiewer imaging, which would include lowering of cameras and sensors to the borehole to capture information for assessing rock and groundwater properties.

2.5 Reinstatement

Upon completion of drilling and testing, all equipment and drill rods (except the outermost casing) would be removed. The borehole would be filled with cement or cement-bentonite grout, mixed in batches and pumped to the bottom of the borehole. The tremie pipe would be removed, and the grout allowed to cure until the top can be 'tagged'.

2.6 Waste disposal

All waste generated by the works, including pressure testing waters, would be temporarily stored aboard the barges before transfer to shore for collection via a vacuum truck and transportation to an appropriately licenced facilities for disposal.

3 Site characteristics

The Hawkesbury River catchment encompasses over 21,400 km2, comprising 70% mountainous terrain, with the remaining catchment flat and plateau type terrain. Brisbane Water catchment extends 165km2 encompassing 49.9% forested habitat and remaining urban development (Cardno 2009). Both Brisbane Water and Hawkesbury River sites are characterised by saline tidal waters (NSW DECC 2009). In the upper reaches of the catchments, NSW SEED Dataset portal recorded species of freshwater fish comprising:

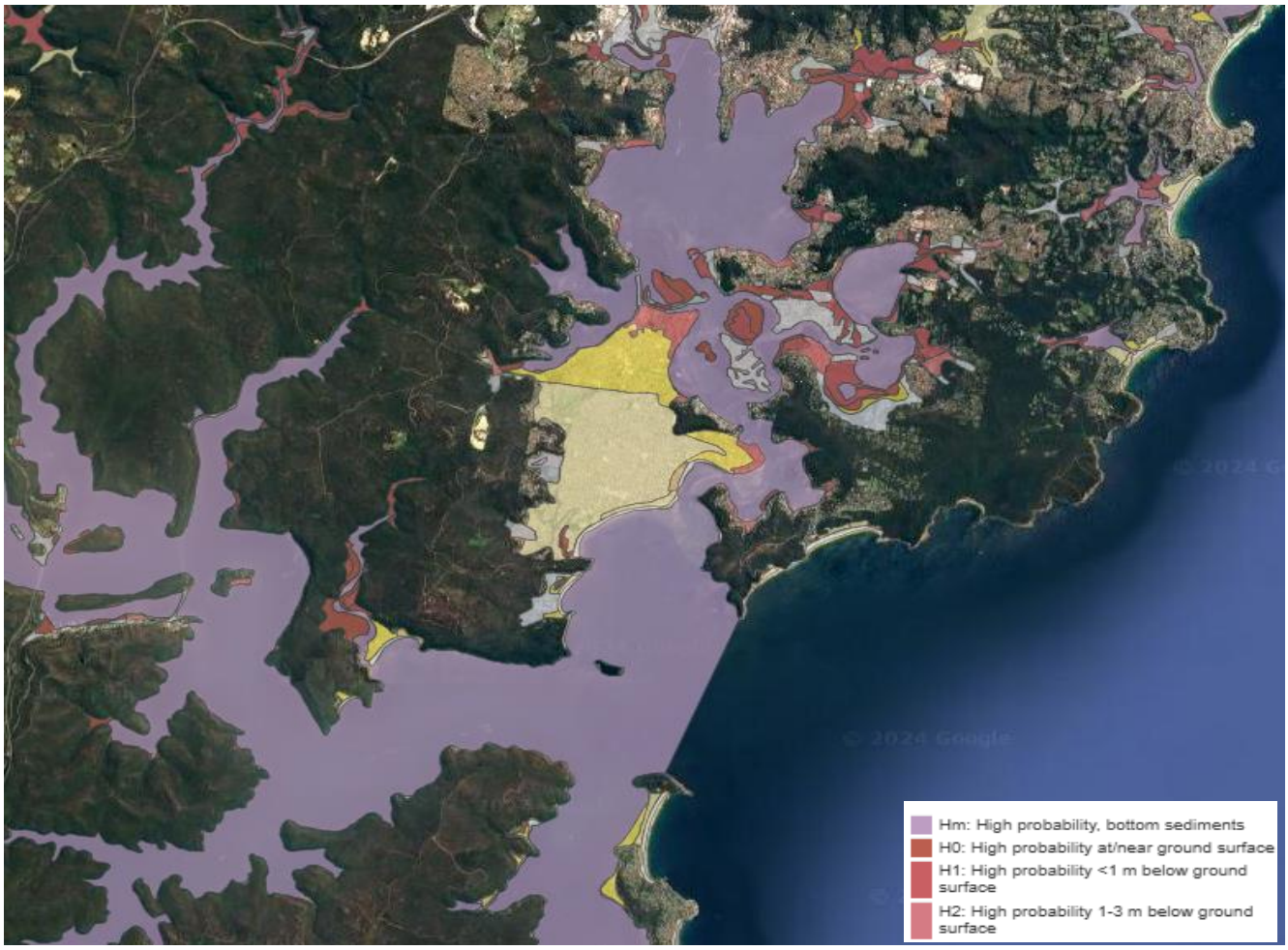
- **Eastern Freshwater Cod**: *Macquaria castomaris*
- **Eel Tailed Catfish:** *Arius graeffei*
- **Fitzroy Falls Spiny Crayfish**: *Euastacus spinifer*
- **Flathead Galaxias**: *Galaxias truttaceus*
- **Macquarie Perch**: *Macquaria australasica*
- **Murray Crayfish**: *Euastacus armatus*
- **Olive Perchlet**: *Ambassis macleayi*
- **Southern Purple Spotted Gudgeon**: *Mogurnda adspersa*
- **River Blackfish**: *Gadopsis marmoratus*
- **Silver Perch**: *Bidyanus bidyanus*
- **Southern Pygmy Perch**: *Nannoperca australis*
- **Trout Cod:** Scleropages leichhardti
- **Australian Grayling:** *Thymallus australis*
- **Darling River Hardyhead:** Craterocephalus fluviatilis

These fish species are primarily freshwater and not likely to be encountered during the proposed works.

Borehole sites at Hawkesbury River range from 10–20m depth contours, while Brisbane Waters is much shallower at between 3-5m (Garmin Navionics Chart 2024). All sites are characterised primarily by soft sediments, which provide habitat for interstitial fauna, including a range of invertebrates including but not limited to polychaetes, bivalves, crustaceans, amphipods, and isopods contributing to the overall ecological value of the ecosystem. Infauna provide structure by engineering the sediment (Guitierrez et al.2011), and thereby increasing porosity and aeration to deeper layers. Infauna (bivalves, gastropods, crustaceans and polychaetes) are a source of food for fish (Sheaves et al. 2013) and provide important trophic links to the broader aquatic food web. While infauna will be directly impacted by the works spatially and temporally, given the nature of the work and the rapid recolonisation of these animals following disturbance, significant impacts to community composition are not likely.

Sediment at both Brisbane Water and Hawkesbury sites are mapped as having a high probability of Acid Sulfate Soil (ASS) presence in bottom sediment (Figure 3-1).

Figure 3-1ASS Probability Map

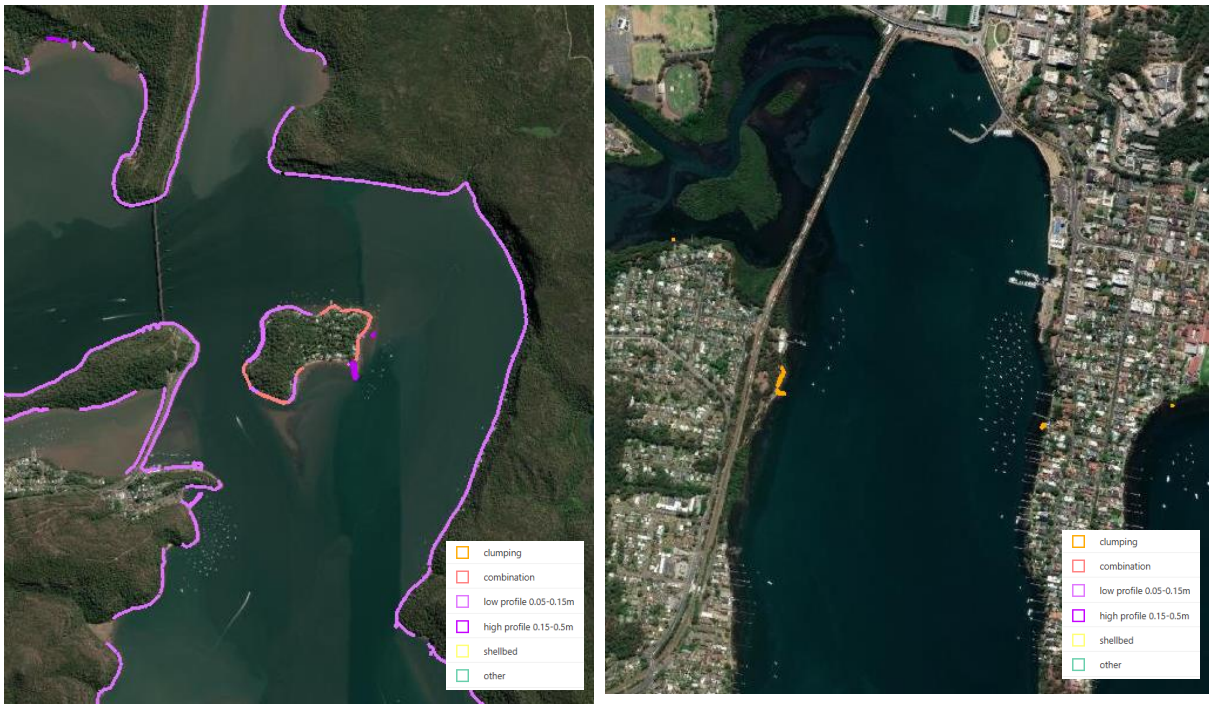


(Source https://www.environment.nsw.gov.au/eSpade2Webapp accessed 16/09/2024)

Although mapped as coastal wetlands, under the State Environmental Planning Policy (SEPP) (Resilience and Hazards) 2021, Coastal Wetlands and Coastal Wetlands Proximity Area are mapped adjacent to the Brisbane Water sites and in proximity to the Hawkesbury River sites south of Spectacle Island Reserve under the SEPP (Resilience and Hazards) 2021. These areas are unlikely to be impacted given the limited spatial and temporal nature of the works.

There are no mapped Marine Protected Areas (MPA) in proximity to any borehole locations, although the whole Hawkesbury River area is mapped as key fish habitat, with a number of mapped oyster reefs within the vicinity of boreholes at both Hawkesbury River and Brisbane Water (Figure 3-2) (DPI Fisheries NSW Spatial Data Portal 2024. Sedimentation may cause a negative impact on both wild and farmed oysters (Tuckey et. Al. 2008), however given the proximity to sites and the proposed methodology, very limited impacts are anticipated as a result of the proposed works.

Figure 3-2 Mapped Oyster Reef a) Hawkesbury River, b) Brisbane Water



a) b)

(source:https://webmap.industry.nsw.gov.au/Html5Viewer/index.html?viewer=Fisheries_Data_Portal accessed 17/09/2024)

Hornsby Shire Council undertake water quality monitoring at fixed points, with the most relevant locations located at Gunyah Point (~1.4 nautical miles) and Mullet Creek (~2.44 nautical miles) from the closest bore. Gunya Point, Hawkesbury River and Mullet Creek have received B and B+ Grade rating based on the Hornsby Shire Council monitoring program (Hornsby Shire Council 2024). Sites are characteristic of marine tidal waters.

4 Seagrass

4.1 Brisbane Water

The Brisbane Water Borehole HSR_BH2019w site does not contain any mapped seagrass (NSW DPI 2024), with mapped *Zostera* and Posidonia spp. approximately 290m from the proposed borehole location. (Figure 4-1) (NSW DPI 2024). Posidonia australis is listed as endangered under the Environmental Protection and Conservation Act 1999 (Cth) (EPBC Act). A self-assessment on the likely impacts on this species suggest that the works will not have a significant impact on a Matter of National Environmental Significance (MNES).

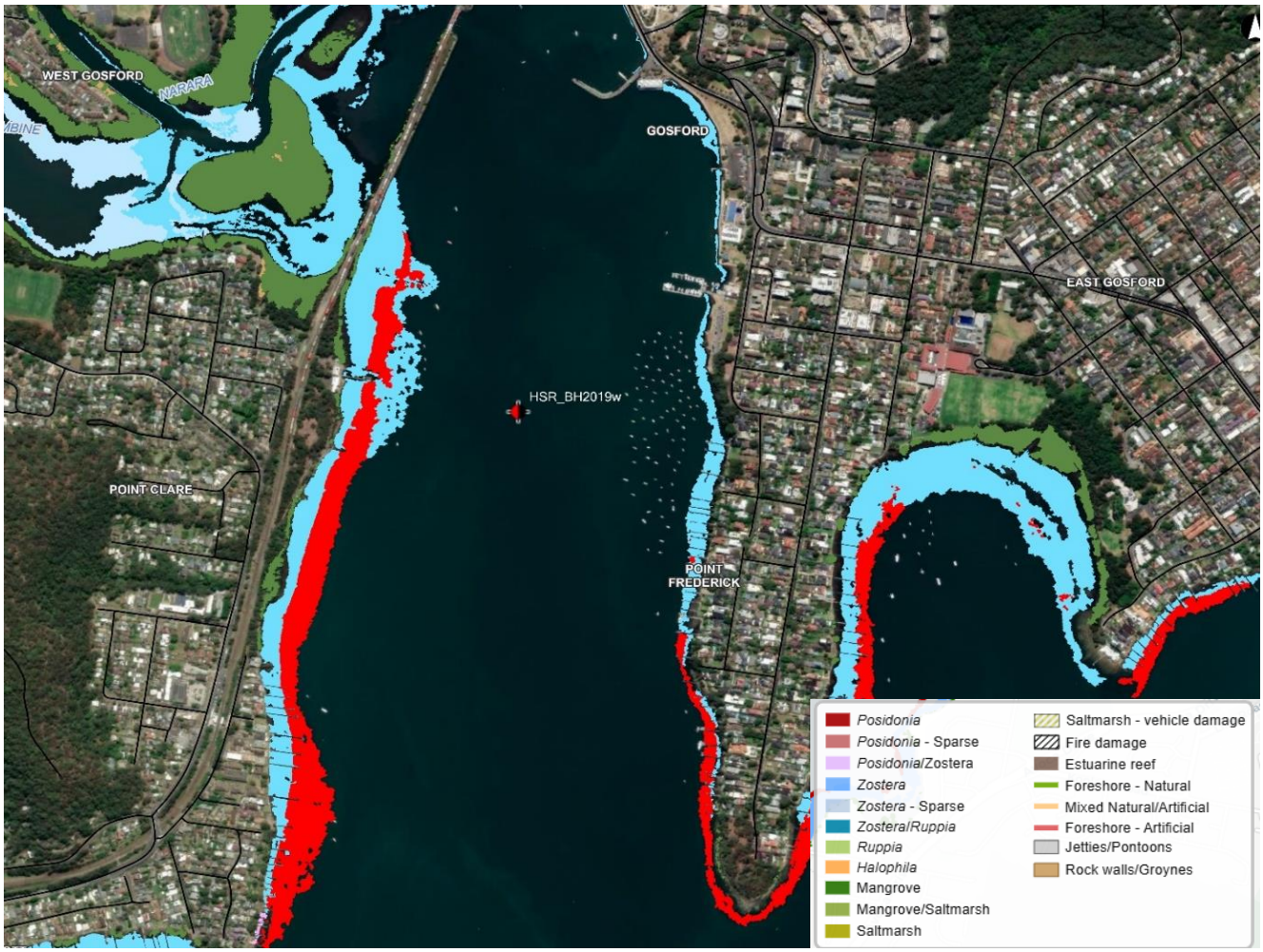


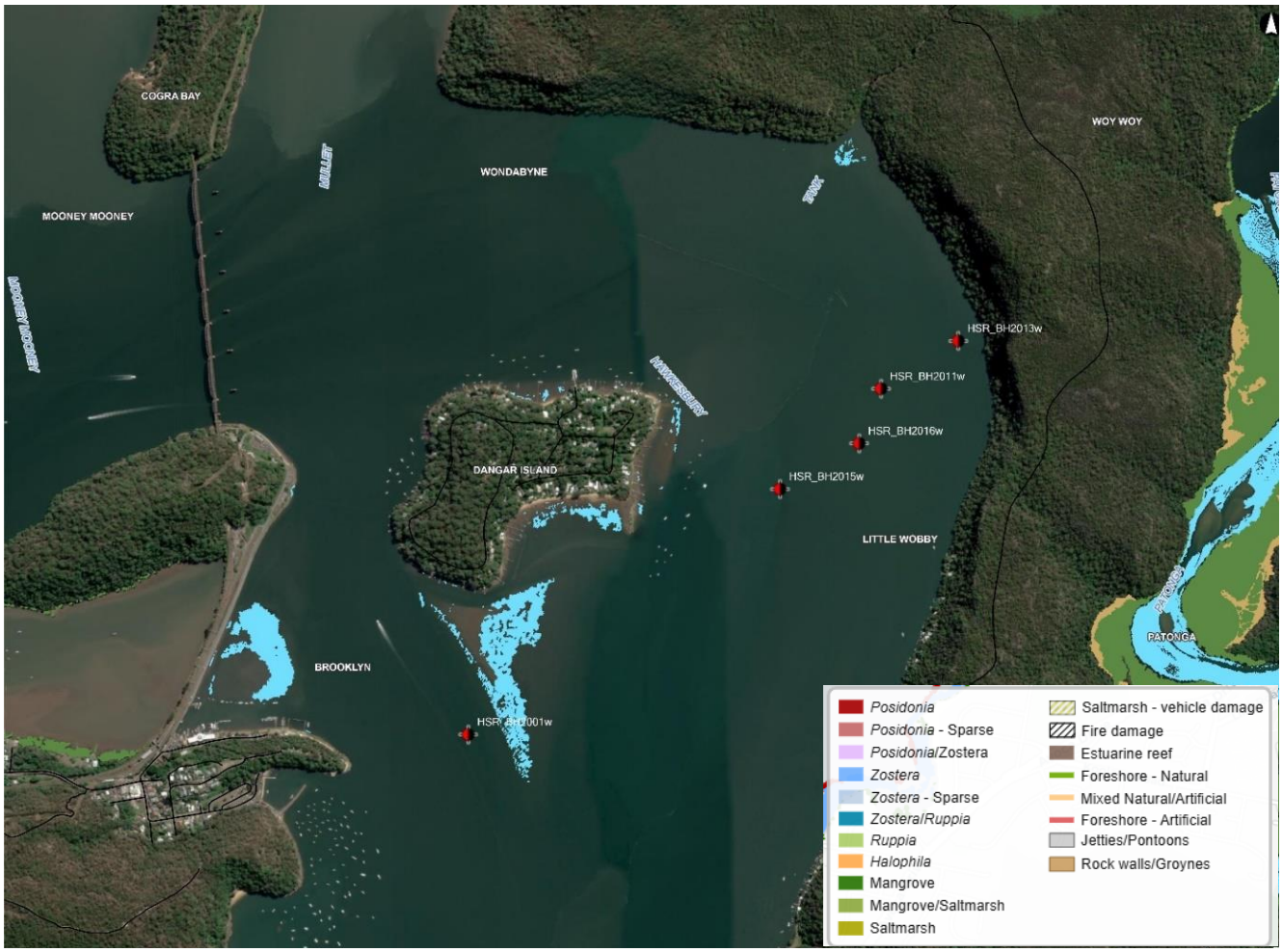
Figure 4-1Brisbane Water Seagrass Mapping

(Source: https://nsw-dpi.shinyapps.io/NSW_Estuarine_Habitat/ accessed 15/09/2024)

4.2 Hawkesbury River

The Hawkesbury River contains small intermittent patches of mapped Zostera seagrass in the vicinity of the proposed borehole sites (Figure 4-2). The closest borehole (HSR_BH2001w) lies approximately 100 m to the west of a mapped patch of *Zostera* seagrass (Figure 4-2). There is an aquaculture lease approximately 690m to the northwest of Borehole HSR_BH2013w at Tank Cove, which coincides with an isolated patch of *Zostera*. Neither are likely to be impacted by the proposed works due to the proximity and proposed methodology. To the north-west of Danger Island, around1.1 kilometres from the nearest bore, is a mapped estuarine reef, however this would unlikely be impacted by the proposal.

Figure 4-2Hawkesbury River Seagrass Mapping



(Source: https://nsw-dpi.shinyapps.io/NSW_Estuarine_Habitat/ accessed 15/09/2024)

5 Matters of National Environmental Significance protected under the *Environmental Protection and Biodiversity Conservation Act 1999 (Cth)*

The Protected Matters Search Tool (PMST) identified potential marine MNES and other matters protected under the EPBC Act within a 1km radius of the proposed boreholes including:

- listed threatened ecological communities
- listed threatened species
- listed migratory species
- listed marine species.

There are no Ramsar, Commonwealth Marine Areas, or World Heritage Places within 1km of the proposed borehole sites.

No impacts are anticipated to listed State Reserves (Brisbane Water, Ku-ring-gai Chase National Park (National Heritage Place Listed), Long Island, Muogamarra, Popran, or Spectacle Island).

5.1 Hawkesbury River

Threatened Ecological Communities (TEC) comprise solely of terrestrial habitats and will not be impacted by the proposed works.

All 57 threatened migratory avian species listed as having the potential to occur within 1km of the proposed borehole sites are unlikely to be impacted by the proposed geotechnical investigations.

No impacts are anticipated to the National Heritage Place, Ku-ring-gai Chase National Park.

Of the one hundred and seven (107) listed threatened species potentially occurring in proximity to the borehole sites, most are avian and terrestrial species. The threatened species relevant to the proposal area:

- five (5) fish species;
- two (2) cetaceans;
- four (4) species of sharks;
- five (5) marine reptiles listed as endangered, threatened, or vulnerable potentially inhabiting the area, including:
  - Loggerhead (*Caretta caretta*) – Endangered
  - Green Turtle (*Chelonia mydas*) – Vulnerable;
  - Leatherback Turtle (*Dermochelys coriacea*) – Endangered;
  - Hawksbill Turtle (*Eretmochelys imbricata*) – Vulnerable; and
  - Flatback Turtle (*Natator depressus*) – Vulnerable.
- one (1) species of Cauliflower soft coral (*Dendronephthya australis*).

Of the 80 listed marine species, these are mostly avian species and are not likely to be impacted. Twenty one (21) marine fish species have been listed as having potential to inhabit the area, of which only the White's Seahorse (*Hippocampus whitei*) is listed as endangered.

Typically, the White's Seahorse (*Hippocampus whitei*) is found in estuarine habitats less than 10m comprising sponge gardens, seagrass meadows and soft corals (NSW DPI 2021). White's Seahorse is typically found in 1-15m depth range. The species is dependent on bathymetry, seabed slope, speed of tidal currents and distance from the estuary mouth in the Hawkesbury River (NSW DPI 2021). Seagrass meadows and soft corals (*Dendronephthya australis*) are an important habitat for the endangered White's Seahorse. Although seagrass is mapped in the vicinity of boreholes, there is no mapped seagrass at any of the proposed borehole locations. The proposal poses risks to the White's Seahorse and their habitat from anchors dragging through the seabed, which can impact corals (NSW DPI 2021). Recommendations have been identified to avoid and minimise impacts to the habitat of the White's Seahorse.

Highly mobile pelagic and demersal species, including cetaceans, fish, sharks, rays and marine reptiles are unlikely to be impacted by the temporary works, which will be further mitigated by the presence of a specialised marine fauna spotter catcher.

The location is listed as likely breeding area for the Indo Pacific Bottlenose Dolphin (*Tursiops aduncus*), commonly occurring during spring and summer (Society for Marine Mammalogy 2024).

Grey Nurse Shark (*Carcharias taurus*) foraging is known to occur within the borehole sites or the vicinity, although unlikely to be impacted by the proposal (refer conclusion and recommendations).

Short-tailed Shearwater (*Ardenna tenuirostris*) foraging habitat is likely to occur in proximity to borehole sites, although no impact is anticipated as a result of the proposal.

5.2 Brisbane Water

Of the five (5) listed TECs, *Posidonia australis* seagrass is the only listed marine community (**Error! Reference source not found.**) and is in proximity of the proposed borehole location.

Posidonia australis provide key ecological functions supporting biodiversity, providing habitat, stablilising sediments, improving water quality and sequestering carbon (Department of the Environment (DEE) 2018). Seagrass beds are at risk of suspended sediment and sediment deposition caused by dredging and potential release of turbid water during boring (DEE 2008). *Posidonia australis* Significant Ecological Communities within the Manning-Hawkesbury Ecoregion specifically provides nursery habitat for commercially viable Yellowfin Bream (*Acanthopagrus australis*), Black Bream (*A. butcheri*), Sea Mullet (*Mugil cephalus*), Luderick (*Girella xiiiricuspidate*), Fanbelly Leatherjacket *(Monacanthus chinensis*), Six-spine Leatherjacket (*Meuschenia freycineti*) and Yellowfin Leatherjacket (*Meuschenia trachylepis*) (DEE 2018).

Although sites are in proximity to the seagrass, there are no seagrass beds mapped near the proposed borehole and the proposed methodology is not anticipated to result in increased suspended sediment or relative deposition on seagrass meadows.

There are three (3) threatened fish species potentially occurring in the area although none are marine: the vulnerable Black Rockcod (*Epinephelus daemelii*), endangered Macquarie Perch (*Macquaria australasica*); and the vulnerable Australian Grayling (*Prototroctes maraena*). These species are all native inland freshwater species and will not be impacted by the proposed works.

There are 92 listed threatened species, 54 migratory species, and 62 listed marine species comprising avian, reptile and mammal terrestrial species that are un likely to be impacted by the proposed works. Five (5) species of marine turtle listed as endangered, threatened, or vulnerable potentially inhabiting the area (refer conclusion and recommendations):

- Loggerhead (*Caretta caretta*) – Endangered
- Green Turtle (*Chelonia mydas*) – Vulnerable;
- Leatherback Turtle (*Dermochelys coriacea*) – Endangered;
- Hawksbill Turtle (*Eretmochelys imbricata*) – Vulnerable; and
- Flatback Turtle (*Natator depressus*) – Vulnerable.

6 Potential impacts

Notwithstanding direct impacts to benthic species during anchoring and drilling as discussed above, it is well documented that increased sediment suspension in the water column resulting in high turbidity can have significant impacts on marine systems. Likewise, the deposition of sediment leads to a combination of decreased light penetration and reduced nutrient availability, impeding primary productivity (Wood & Armitage 1997). In estuaries, microalgae (diatoms) drive this process and are a source of food for mieofauna and macrofauna (Cahoon, 1999). Any losses in microalgae productivity inevitably transfers up trophic levels (Gibbs and Hewitt, 2004), which reduce the overall productivity, biodiversity and nutrient cycling capacity of the system.

Elevated turbidity causing reduced visibility negatively impacts predators, such as fish and birds to hunt (Wood and Armitage 1997).

Overloading of fine sediments impacts infauna bioturbation potential through infilling of interstitial spaces. Less motile infauna cannot move freely in areas of increased sedimentation, which leads to decreases in species diversity, individual size and total biomass (Curry and Small, 2005). Sedimentation rates can exceed the vertical migration rates of animals, smothering them and causing widescale dieback (Gibbs and Hewitt, 2004).

The proposed methodology outlined in the REF (WSP 2024) utilises an enclosed corer to encapsulate sediment within, causing very limited sediment plume or anticipated adverse deposition within the sampling sites or vicinity (refer conclusion and recommendations).

As such, it is unlikely that the works will have a significant impact on MNES at the six borehole sites.

7 Conclusion and Recommendations

Soft sediments are important habitats contributing to the overall biodiversity of the aquatic ecosystem through infauna, aeration of sediments and providing trophic links through the food web. Aside from direct impacts on infauna and minor temporary increases in localised turbidity, the proposed methodology poses limited risk to significant increase in suspended sediment or increased sedimentation on sensitive receptors. Residual risks will be managed through recommendations in this memorandum and through the REF, and Environmental Management Plan, setting water quality objectives and aiming to limit or eliminate sediment plumes, runoff, and contamination while maintaining background water quality.

While some shading may temporarily occur as a result of the geotechnical investigations, there is unlikely to have any short to long terms impacts on the current aquatic ecosystem across all sampling locations, due to the temporary nature, and relative small size and positioning of machinery.

7.1 Key Recommendations:

- The highest risk is impacting Cauliflower Soft Corals (*Dendronephthya australis*) and consequently White's Seahorse (*Hyppocampus whitei*) during initial anchoring and drilling activity. Anchor points should not drag across the seabed causing unnecessary damage and should rather be fixed via spuds immediately at the four (4) anchor points. This will be mitigated by camera survey at each of the spud and sample locations to avoid potential impact. In the event of encountering protected species, boreholes will need to be relocated to avoid any adverse impacts.
- Sonar Scan or Drop video cameras will be utilised to determine seagrass extent. Prohibit barge access across *Zostera* seagrass beds at Hawkesbury River borehole HSR_BH2001w by timing sampling with slack-water to allow the barge to pivot away from the seagrass bed. Establish spuds to the west of the mapped seagrass patch to avoid impact to the mapped seagrass meadow.
- Avoid vessel motoring and establishment works during low tide at Brisbane Water due to shallow depth and potential impact to substrate. Motoring and anchoring spuds will be timed to coincide with high tide slack water.
- Limit exposure of sediment to air to avoid oxidation of potential ASS and retain residual sediment for samples in correct receptacles.
- Ensure bores are cased off and fully contained within to Inhibit sediment release and consider sampling during slack water.
- As a backup in the event of the failure of equipment, slit curtains on standby in the event of failure of machinery is recommended.
- During establishment, it is recommended that a specialised marine fauna spotter is to be engaged to ensure no impact to cetaceans, turtles, fish, sharks and rays, particularly to observe:
  - Indo-Pacific Bottlenose presence and mating and calving behaviour;
  - Marine Turtle presence;
  - Grey Nurse Shark presence;
- Noise from standard penetration testing could pose risk to marine fauna. Cease works in the event of marine fauna sightings, particular cetaceans. Consider engaging a specialised marine fauna spotter.

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Appendix F – Preliminary heritage advice (Artefact Heritage)

Removed due to sensitivity

Appendix H – Noise estimator tool output

Transport for NSW

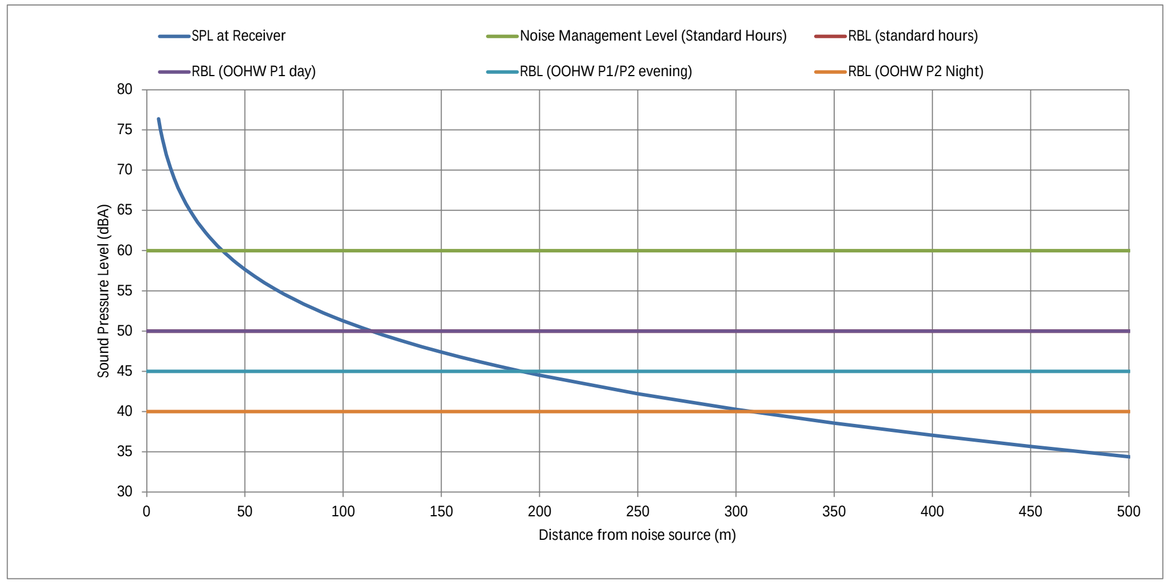
Noise Estimate Results

	Sound Power Level (dBA)	Distance (m)	Sound Pressure Level (dBA)	Air Attenuation (dBA) Day and Evening	Air Attenuation (dBA) Night	Additional Attenuation (whole site hoarding etc) (dBA)[1]	Predicted Noise level (SPL dBA LAeq) Day and Evening	Predicted Noise level (SPL dBA LAeq) Night
Oct to April	**100**	550	**37**	**4.01**	**2.23**	0	**33**	**35**

Area Type: **R3**

	Standard Hours	OOHW P1 Day	OOHW P1/P2 Evening	OOHW P2 Night
Standard Rating Background Level (RBL),or Measured RBL	50	50	45	40
RBL Exceedance	Compliant	Compliant	Compliant	Compliant
Noise Management Level (NML)	**60**	**55**	**50**	**45**

Oct to April



Notes: Where the SPL line intersects with the RBL line in the graph above demonstrates the total radius (m) of impacted receivers
SPL = SWL(point) - 20log (r) - 8 - Additional Attenuation
Sound Power Level includes +5dBA adjustment for noise with special audible characteristics (if requried)

[1] Continuous, long solid barrier within the project boundary, that breaks line of sight between work area and receiver = 5dBA reduction
Enclosed, solid structure around work area/equipment = 10dBA reduction

Transport for NSW

The required mitigation measures for your activity are:

	Exceedance of RBL (dBA)																			
	Standard Hours				OOHW Period 1 - Day				OOHW Period 1 - Evening				OOHW Period 2 - Evening				OOHW Period 2 - Night			
	≤20	20-30	>30	>75dBA*	≤10	10-20	20-30	>30	≤10	10-20	20-30	>30	≤10	10-20	20-30	>30	≤10	10-20	20-30	>30
Standard Mitigation Measures (CNVG-PTI Sec 7.1)	Yes				Yes				Yes				Yes				Yes			
Additional Mitigation Measures (CNVG-PTI Sec 7.2):																				
Periodic notification																				
Verification monitoring																				
Specific Notification																				
Respite Offer																				
Respite Period																				
Duration Reduction																				
Alternative Accommodation																				

*** Any work above 75dBA regardless of RBL exceedance**

	Day & Evening	Night
Predicted Noise Level	38 dBA	40 dBA

Assessment Summary

Site Locality	
Construction Scenario	Marine Borehole (BH2019W)
User Name and Company	Catalyst
Number of Sources and SWL	1 Sources with overall SWL of 105 dBA
Receiver Distance	550 m
Site Barrier attenuation	0 dBA
Assessment Date	16 January 1900

Period	RBL	NML	+ RBL
Standard Hours	50	60	-12
OOHW Period 1 - Day	50	55	-12
OOHW Period 1/2 - Evening	45	50	-7
OOHW Period 2 - Night	40	45	0

Transport for NSW

The mitigation distances for your activity are:

	Additional Mitigation Measure - Minimum Distance (m)				
	Standard Hours	OOHW Period 1 - Day	OOHW Period 1 - Evening	OOHW Period 2 - Evening	OOHW Period 2 - Night
Periodic notification	22	71	126	224	398
Verification monitoring	22	22	40	126	224
Specific Notification	13	22	40	126	71
Respite Offer	-	22	40	126	-
Respite Period	-	-	126	126	71
Duration Reduction	-	-	126	126	71
Alternative Accommodation	-	-	-	13	22

Assessment Summary

Site Locality	
Construction Scenario	Marine Borehole (BH2019W)
User Name and Company	Catalyst
Number of Sources and SWL	1 Sources with overall SWL of 105 dBA
Receiver Distance	550 m
Barrier/enclosure attenuation	0 dBA
Assessment Date	16 January 1900

Period	RBL	NML
Standard Hours	50	60
OOHW Period 1 - Day	50	55
OOHW Period 1/2 - Evening	45	50
OOHW Period 2 - Night	40	45

Transport for NSW

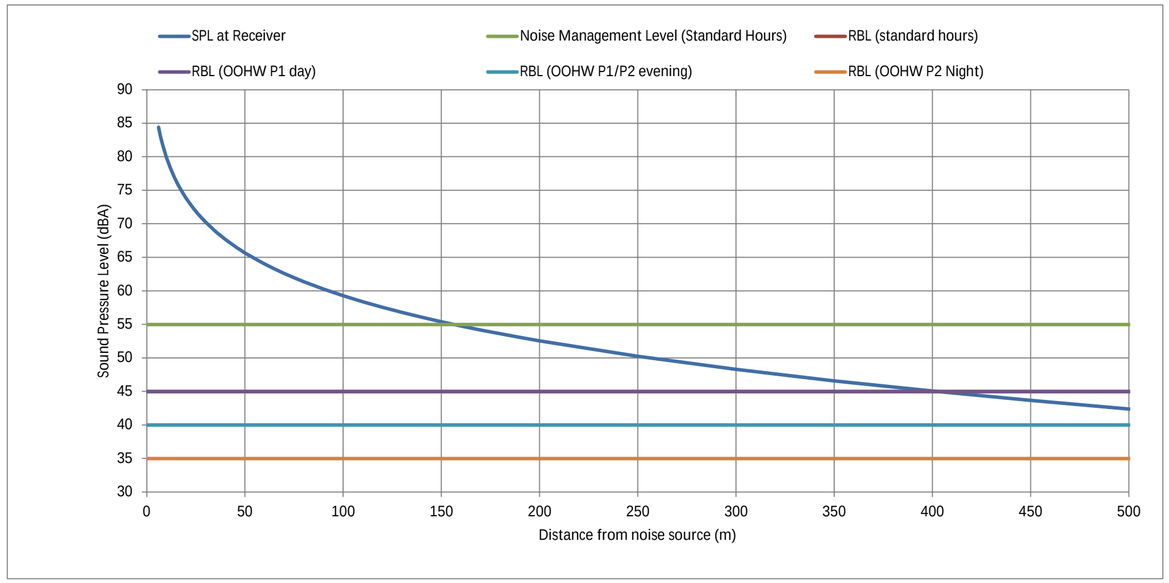
Noise Estimate Results

	Sound Power Level (dBA)	Distance (m)	Sound Pressure Level (dBA)	Air Attenuation (dBA) Day and Evening	Air Attenuation (dBA) Night	Additional Attenuation (whole site hoarding etc) (dBA)[1]	Predicted Noise level (SPL dBA LAeq) Day and Evening	Predicted Noise level (SPL dBA LAeq) Night
Oct to April	**108**	500	**46**	**3.65**	**2.03**	0	**42**	**44**

Area Type: R2

	Standard Hours	OOHW P1 Day	OOHW P1/P2 Evening	OOHW P2 Night
Standard Rating Background Level (RBL),or Measured RBL	45	45	40	35
RBL Exceedance	Compliant	Compliant	2	9
Noise Management Level (NML)	**55**	**50**	**45**	**40**

Oct to April



Notes:

Where the SPL line intersects with the RBL line in the graph above demonstrates the total radius (m) of impacted receivers
SPL = SWL(point) - 20log (r) - 8 - Additional Attenuation
Sound Power Level includes +5dBA adjustment for noise with special audible characteristics (if requried)

[1] Continuous, long solid barrier within the project boundary, that breaks line of sight between work area and receiver = 5dBA reduction
Enclosed, solid structure around work area/equipment = 10dBA reduction

Transport for NSW

The required mitigation measures for your activity are:

	Exceedance of RBL (dBA)																			
	Standard Hours				OOHW Period 1 - Day				OOHW Period 1 - Evening				OOHW Period 2 - Evening				OOHW Period 2 - Night			
	≤20	20-30	>30	>75dBA*	≤10	10-20	20-30	>30	≤10	10-20	20-30	>30	≤10	10-20	20-30	>30	≤10	10-20	20-30	>30
Standard Mitigation Measures (CNVG-PTI Sec 7.1)	Yes				Yes				Yes				Yes				Yes			
Additional Mitigation Measures (CNVG-PTI Sec 7.2):																				
Periodic notification																	Yes			
Verification monitoring																				
Specific Notification																				
Respite Offer																				
Respite Period																				
Duration Reduction																				
Alternative Accommodation																				

*** Any work above 75dBA regardless of RBL exceedance**

	Day & Evening	Night
Predicted Noise Level	42 dBA	44 dBA

Assessment Summary

Site Locality	
Construction Scenario	Sydney Harbour Investigatio Site
User Name and Company	Catalyst
Number of Sources and SWL	2 Sources with overall SWL of 108 dBA
Receiver Distance	500 m
Site Barrier attenuation	0 dBA
Assessment Date	16 January 1900

Period	RBL	NML	+ RBL
Standard Hours	45	55	-3
OOHW Period 1 - Day	45	50	-3
OOHW Period 1/2 - Evening	40	45	2
OOHW Period 2 - Night	35	40	9

The mitigation distances for your activity are:

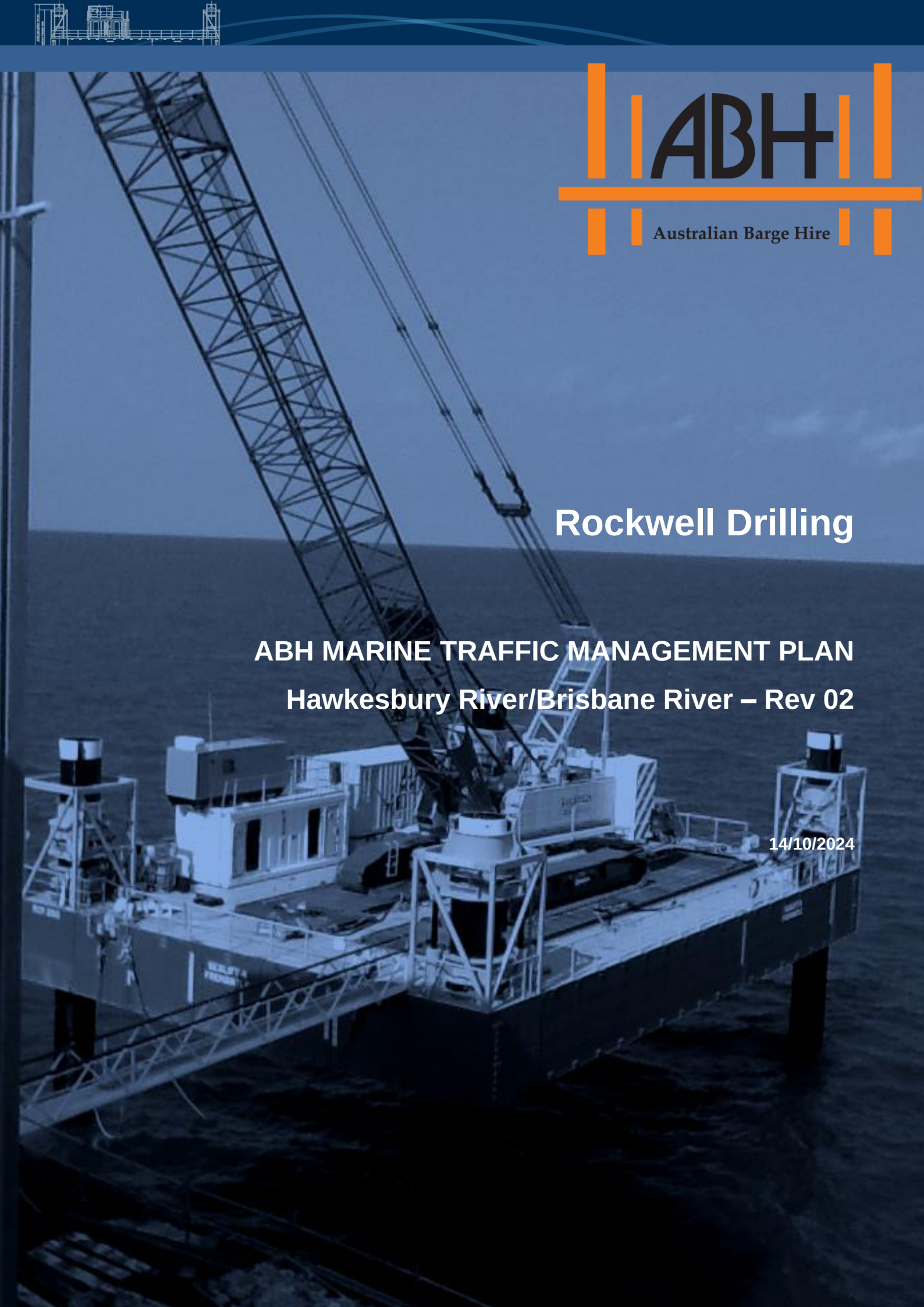
	Additional Mitigation Measure - Minimum Distance (m)				
	Standard Hours	OOHW Period 1 - Day	OOHW Period 1 - Evening	OOHW Period 2 - Evening	OOHW Period 2 - Night
Periodic notification	56	178	317	563	1001
Verification monitoring	56	56	100	317	563
Specific Notification	18	56	100	317	178
Respite Offer	-	56	100	317	-
Respite Period	-	-	317	317	178
Duration Reduction	-	-	317	317	178
Alternative Accommodation	-	-	-	32	56

Assessment Summary

Site Locality	
Construction Scenario	Sydney Harbour Investigatio Site
User Name and Company	Catalyst
Number of Sources and SWL	2 Sources with overall SWL of 108 dBA
Receiver Distance	500 m
Barrier/enclosure attenuation	0 dBA
Assessment Date	16 January 1900

Period	RBL	NML
Standard Hours	45	55
OOHW Period 1 - Day	45	50
OOHW Period 1/2 - Evening	40	45
OOHW Period 2 - Night	35	40

Appendix I – Marine Traffic Management Plan



Australian Barge Hire

Rockwell Drilling

ABH MARINE TRAFFIC MANAGEMENT PLAN

Hawkesbury River/Brisbane River – Rev 02

14/10/2024

TABLE OF CONTENTS

ROCKWELL DRILLING – HAWKESBURY RIVER/ BRISBANE RIVER

MARINE TRAFFIC MANAGEMENT PLAN

Rev	Date	Description	Prepared	Checked	Approved
00	23/8/2024	Rev 00		To be review by client	-
01	12/9/2024	Rev 01		By client	-
02	14/10/2024	Rev 02		By client & ABH	TBA

INTRODUCTION

Australian Barge Hire (ABH) has been engaged by Rockwell Drilling to supply jack up barges and marine services for the project which includes drilling of five (5) boreholes in the Hawkesbury River and one (1) borehole in Brisbane Water *(see Appendix A for demographic location images and coordinates).*

The plant and equipment to be used to facilitate these works include Sea Lift 11, Sea Lift 3, Sea Transfer 1 and Sea Punt 1. ABH will use Sea Transfer 1 to relocate the JUB to the work site from the mobilisation point will tow the JUB between locations, provide safe transfer of personnel, transportation of fuel, consumables, freshwater and drilling waste to or from the barge. Both the Sea Transfer and Sea Punt will be utilised for relocating the JUB between locations.

The proposed hours to work for this project will be 7 am to 5 pm Monday to Saturday, and 7am to 5pm every second Sunday. Proposed working Sundays are:

27 October
10 November
24 November
8 December (if required).

Sealift 11 will be mobilised first on Thursday 17 October, to commence the Brisbane Waters (Gosford) BH 2019w and brought around to Brooklyn once finish to make a start on those shallow water holes using Sea Transfer 1.

Sea Lift 3 to be mobilised the following week on Tuesday 22 October and Wednesday 23 October at Parsley Bay Boat Ramp *(refer to section Mobilisation and Demobilisation for more details)* then continue with remaining boreholes.

Client preferred schedule of work – to be confirmed.
Barge 1: BH2015w, BH2016w, BH2013w
Barge 2: BH2019w, BH2001w, BH2011w

Operations are scheduled to start in mid-October and run for 9 weeks – approximately 9 December (to be reviewed by client during project). Suggested programmes provided by ABH to be confirmed by client.

PURPOSE

Safe navigation in the port area is maintained through an ongoing process of risk evaluation and mitigation of which pilotage, Vessel Traffic Service (VTS) and port procedures are all integral components. The movement of the JUB and personnel within the Hawkesbury River and surrounds has the potential to impact on existing commercial and recreational activities.

This Marine Traffic Management Plan (MTMP) provides a management strategy to effectively manage the risks associated with marine works undertaken by ABH and its sub-contractors for the Hawkesbury River & Brisbane Water project.

This MTMP is applicable to all ABH staff, crews, vessels, equipment and sub-contractors and establishes the baseline for ABH's commitment to Health, Safety and Environment on all aspects of its marine works within Hawkesbury River and surrounds.

The MTMP when approved by NSW Maritime becomes the prime document detailing the traffic management arrangements under which ABH and sub-contractors will operate.

It will be distributed as required to:

- Australian Barge Hire
- Clients
- Sub-Contractors

MARINE SPREAD

Vessel		**Owner / Operator**
1	Sea Lift 11	ABH
2	Sea Lift 3	ABH

3	Sea Transfer 1	ABH
4	Sea Punt 4	ABH
5	Sea Punt 6	ABH

Refer APPENDIX A for Vessel Specifications. * Vessel details may change based on availability

MOBILISATION AND DEMOBILISATION

Proposed mobilisation and demobilisation sites for Sea Lift 11 will occur over 1 day and Sea Lift 3 will occur over 2 days.

Site Location for Sea Lift 11 mobilisation and demobilisation is Koolewong Waterfront Reserve (Brisbane Water Drive, Koolewong, NSW 2256). Mobilisation date for Sea Lift 11 is scheduled for Thursday 17 October 2024.

Proposed site Location for Sea Lift 3 mobilisation is Parsley Bay Boat Ramp (25 Karoola Street, Brooklyn, NSW 2083). Mobilisation dates for Sea Lift 3 are Tuesday 22 October and Wednesday 23 October 2024.

A possible alternative location for reinstalling legs for Sea Lift 11 and demobilisation of both barges at Sydney Trains wharf at Long Island (pending approval from Sydney Trains).

RELOCATING THE JUB BETWEEN BOREHOLES

ABH will use Sea Transfer 1 to relocate the JUB to the work site from the assembly point. The ABH vessel, Sea Transfer will tow the JUB between locations, provide safe transfer of personnel, transportation of fuel, consumables, freshwater and drilling waste to or from the barge.

Rockwell Drilling will store all drill cuttings and liquid waste on board the barge in a 1000L IBC or multiple IBC’s (exact number to be determined based on weight items on deck and Rockwell requirements). One the IBC is filled to 50% capacity (500kgs), ABH will use the

crane on Sea Lift 11 to transfer the IBC into the Sea Punt 1. The vessel will then travel to a designated area on shore closest to BH location where there will be a VAC truck ready to dispose of the contents from the IBC. All liquid waste disposal will be transported to Re-Direct – an EPA licenced facility for liquid waste. The average frequency for the disposal of liquid waste is dependent on the drilling completed on the day and the soil conditions.

Refer to Rockwell Drilling for Waste Management plan.

Relocation of the JUB shall be in accordance with the requirements of Project safe work procedures and the requirements for safe operation of JUB's within the port. In the event of an incident precipitating an emergency relocation, a time period of no longer than 8 hours will be required to pull up drill rods, jack down and relocate the JUB to another location. On completion of the borehole and prior to relocating, the Barge Master will call VTS and clearly state that "the seabed is clear".

A summary is as follows:
No borehole shall be accessed without prior discussion and scheduling at the Daily Scheduling Meeting. The Tug Master and Barge Master shall discuss relocation procedures in accordance with ABH Safe Work Procedures and complete a *Pre-tow Checklist* and *JUB Relocation Planner and Briefing Record*.

The Tug Master and/or Barge Master shall liaise with NSW Maritime and ensure all the required permits (including environmental issues) and notifications are in place.
The Barge Master and Tug Master shall also confirm that there are no visible obstructions in the vicinity of the JUB or vessel and confirm the route of the relocation. Communications between the Tug vessel and JUB shall be maintained for the duration of the relocation. When the destination is reached the JUB shall be jacked up into position. A marine exclusion zone (25m) indicated by buoys and signage will be established around the JUB.

No bridge channel closures, or partial closures will be required – subject to NSW Maritime approval.

BOREHOLE LOCATIONS

Borehole locations in numerical order. ABH have also taken notes from the site visit.

Hawkesbury River location

BH2001W - 3.8M deep on a 0.8 tide.

BH2011W - 11.5M deep on a 0.9 tide, this is 143M from an underground power cable.

BH2013W - 5M deep on a 0.9 tide, this hole is 10-20M from the shoreline.

BH2015W - 4.8M deep on a 0.9 tide, shallows out towards Dangar Island.

BH2016W - 11.4M deep on a 1.0 tide, 44M from an underground power cable (Client confirmed it is a Telstra cable and it is required to maintain a 2.0 m offset).

Brisbane Water location

BH2019W - 4.3M deep on a 0.3 tide

PERSONNEL TRANSFER POINTS

Personnel transfer and crew transfers will occur via the Sea Transfer 1 and Sea Punt 1 Routes will be discussed and agreed with NSW Maritime.

Hawkesbury River

Personnel will be transferred from JUB to Hawkesbury Marina each morning and afternoon once operations have stopped for the day.

Brisbane Water

Personnel will be transferred from JUB to Gosford Boat Ramp each morning and afternoon once operations have stopped for the day.

COMMUNICATIONS

ABH Barges will have following radios on board:

- VHF radio's fixed installations,
- VHF hand-held radios,
- Emergency Position Indicating Radio Beacon (EPIRB)

Radios will be switched on from the initial pre-departure checks until arrival at the vessel's destination or until the current work period is complete and the vessel shut-down.

The Barge Masters will maintain a listening watch on VHF 13 (frequency) and the International Distress/Calling frequency (VHF channel 16).
A working channel will be requested prior to re-location from VTS.

Whilst conducting vessel movements the Barge Masters shall:

- Ensure all local communication procedures are correctly adhered to.
- Inform VTS, VHF 13 for the controlled area when boarding and prior to departure.
- Complete logging of transit details.

PROJECT CONTACT LIST			
Name	**Role**	**Contact**	**Email**
Ben Slater	ABH General Manager	0411 515 203	bslater@australianbargehire.com
Jordan Wickens	ABH Operations Supervisor	0416 891 596	jwickens@australianbargehire.com
Stephanie Turner	ABH Project Coordinator/ Designated Persons Onshore	0449 767 075	sturner@australianbargehire.com
Bill Smith	Rockwell Drilling	0422 224 763	Bill@rockwelldrilling.com.au
Myles Harris-Ayling	WSP	0461 413 184	myles.harris-ayling@wsp.com

EMERGENCY CONTACTS		
Police/Ambulance/Fire		000 or 112

Water Police		1800 658 784
Hospital	Woy Woy Hospital – Ocean Beach Road, Woy Woy, NSW	(02) 4344 8444
State Emergency Services (SES)		132 500
NSW Roads and Maritime Services	Traffic Incident Reporting	131 700
Hawkesbury River Rescue	Channel 88 [27Mhz] 16 [VHF]	02 9985 1111
Marine Rescue Hawkesbury	3 Kowan Road Mooney Mooney NSW 2083	02 9985 2100
Poisons Information Centre		131 116
Australian Maritime Safety Authority (AMSA)		1800 627 484
NSW Fisheries		1300 550 474
Distress Beacon and Maritime Mobile Service Identity (MMSI)		1800 406 406

AUTOMATIC IDENTIFICATION SYSTEMS (AIS)

Sea Transfer 1 will have the ability to identify themselves to other vessels automatically through the use of an active AIS transmitter. This unit will enable other users within the river to interpret the vessels' location, speed and direction of movement and therefore determine if a risk of collision exists.

VESSEL MOVEMENTS

Operations will occur for 6 days on week A and 7 days on week B, over an estimated 9 weeks for a 13/1 roster. ABH will coordinate operations with Rockwell Drilling for each JUB relocation. Where a risk management approach has deemed that factors such as borehole location, type of ship and estimated relocation times provide a reasonable safety buffer, approval may be sought from the NSW Maritime to proceed with works.

Notices to Mariners to be confirmed once dates have been finalised.

SAFE LOCATIONS

In the event of adverse weather conditions, the tug and JUB will move to a safe mooring at an exact location.

MARINE TRAFFIC CONTROLS

The JUB will display the appropriate day shapes and lights when required under the International Rules for Prevention of Collision at Sea.

ABH will supply marker buoys labelled "No Wash" to be positioned around the barge. These will outline the work area and exclusion zone as requested by NSW Maritime, aiming to minimize wash in the vicinity of our operations.

Flashing yellow lights will be fitted to the corner extremities of the barge and lights will be attached to each of the spud legs.

The Barge Master will make use of 2 warning blasts from the blast horn to warn off recreational vessels encroaching into the project work area.

WEATHER FORECAST

The weather forecast will be obtained by monitoring of BOM, Buoyweather, Seabreeze and monitored on VHF 16. The weather forecast will be communicated at the daily toolbox meetings.

TIDAL & WEATHER FORECAST

The weather forecast will be obtained by monitoring of BOM, Buoy weather, Seabreeze and monitored throughout the day. The weather forecast will be communicated at the daily toolbox meetings.

ABH personnel will monitor and advise the best traffic management plan suitable for productivity around the tides.

APPENDIX A

Refer Attached:

BH demographic location and coordinates

Sea Lift 11 Specification sheet

Sea Lift 3 Specification sheet

Sea Transfer 1 Specification sheet

Sea Punt Specification sheet

Barge Safety Equipment

(A)

Hawkesbury River BH locations (5)

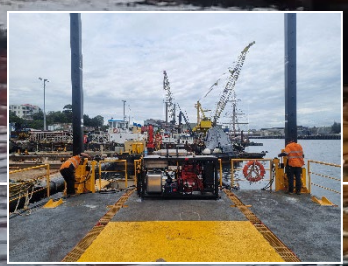
BH_No	Eastings (mMGA 56)	Northings (mMGA 56)	Latitude	Longitude	Location
HSR_BH2001w	336348	6286717	33° 32.799 S	151° 14.238' E	Hawkesbury River
HSR_BH2011w	337657	6287820	33° 32.215' S	151° 15.095' E	Hawkesbury River
HSR_BH2013w	337902	6287972	33° 32.134' S	151° 15.255' E	Hawkesbury River
HSR_BH2015w	337336	6287500	33° 32.385' S	151° 14.885' E	Hawkesbury River
HSR_BH2016w	337587	6287646	33° 32.308' S	151° 15.048' E	Hawkesbury River
HSR_BH2019w	345342	6298760	33° 26.365' S	151° 20.172' E	Brisbane Water

Hawkesbury River (1)

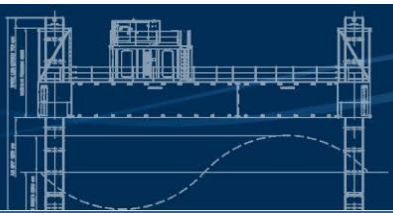
Brisbane Water

ABH

Australian Barge Hire



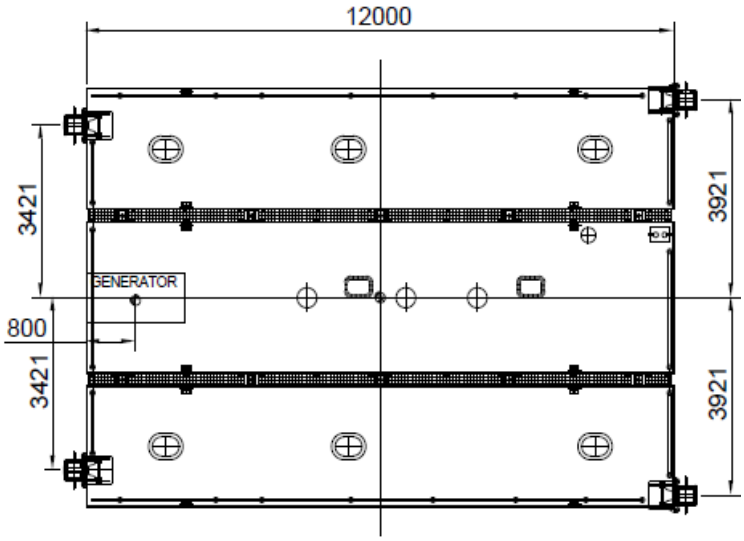
SEA LIFT 11

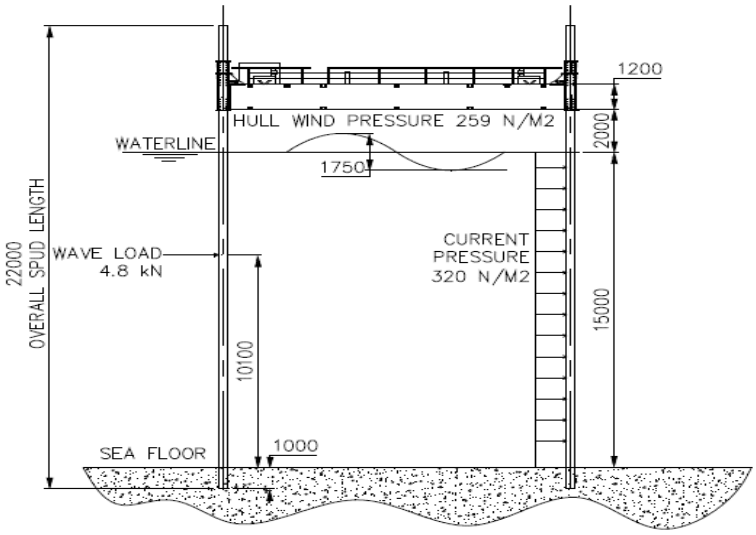


JACK-UP BARGE

SELF ELEVATING PLATFORM

SEA LIFT 11





General

Type	Jack Up Barge
Operator	Australian Barge Hire Pty Ltd
Survey	Australian Maritime Safety Authority
Classification	AMSA 2C
Construction	Steel
Road Transport	2 standard Semi Trailers
Working Depth	Up to 15 metres

Main Dimensions

Length Overall	13.500	metres
Beam	8.2	metres
Depth	1.20	metres
Draft	0.250	metres
Displacement	25.30	tonnes (unladen)

Jacking System

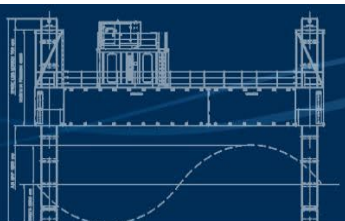
Jacking system	hydraulic	
Jacking Rate	10	metres per hour
Load Lift Capacity	20	tonnes
Spud Length	7,15, 22	metres
Generator		kWA 10

Features

- 300mm Diameter Moon Pool
- Spud Cans
- Onboard Site Office
- Max 1 tonne Deck Crane
- Remote controlled gangway access
- Road Transportable
- Up to 20 tonne deck load

Note: The below figures are a guide only and a full analysis would need to be undertaken for project specific parameters.

Water Depth	Wave Height
5m	2.5m
10m	2.25m
15m	2m



Australian Barge Hire

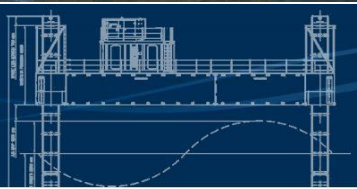
PO Box 749 CARINGBAH NSW 1495

Phone: 02 9531 2900 Email: info@australianbargehire.com

ABH

Australian Barge Hire

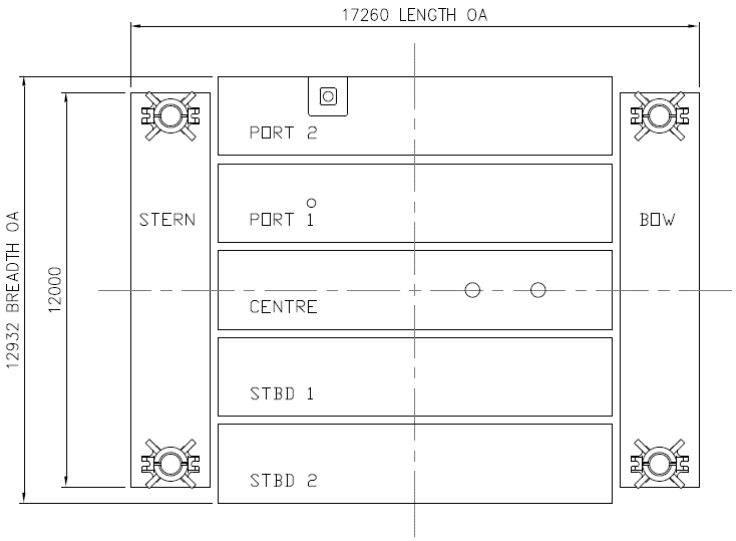
SEA LIFT 3

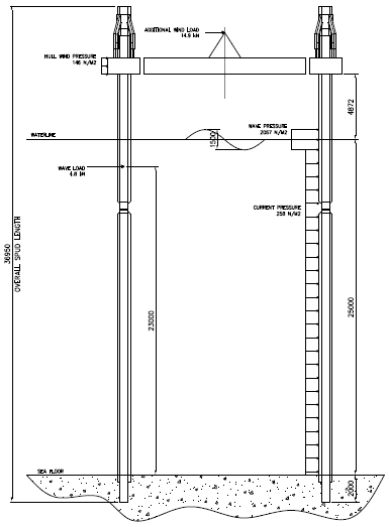


JACK-UP

BARGE SELF ELEVATING PLATFORM

SEA LIFT 3





General

Type	Jack Up Barge
Operator	Australian Barge Hire Pty Ltd
Survey	Australian Maritime Safety Authority
Classification	AMSA 2D
Construction	Steel
Road Transport	7 standard Semi Trailers, 2 extendable trailers (18m)
Working Depth	Up to 25+ metres

Main Dimensions

Length Overall	17.20	metres
Beam	12.90	metres
Depth	1.20	metres
Draft	0.80	metres
Displacement	80	tonnes (unladen)

Jacking System

Jacking system	Electronic over hydraulic	
Jacking Rate	10	metres per hour
Load Lift Capacity	30	tonnes
Spud Length	15 ,21, 36	metres
Power Unit	HPU 4 x 30	kW

Features

- 475mm Diameter Moon Pool
- 420mmDiameter Rod Rack
- Onboard Site Office
- Remote controlled jacking operation
- Remote controlled gangway access
- Max 3 tonne Deck Crane
- Road Transportable

Note: The below figures are a guide only and a full analysis would need to be undertaken for project specific parameters.

Water Depth	Wave Height
20m	1.5m
25m	1.5m

Australian Barge Hire

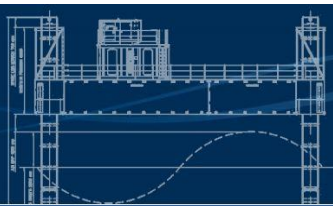
PO Box 749 CARINGBAH NSW 1495

Phone: 02 9531 2900 Email: info@australianbargehire.com

ABH

Australian Barge Hire

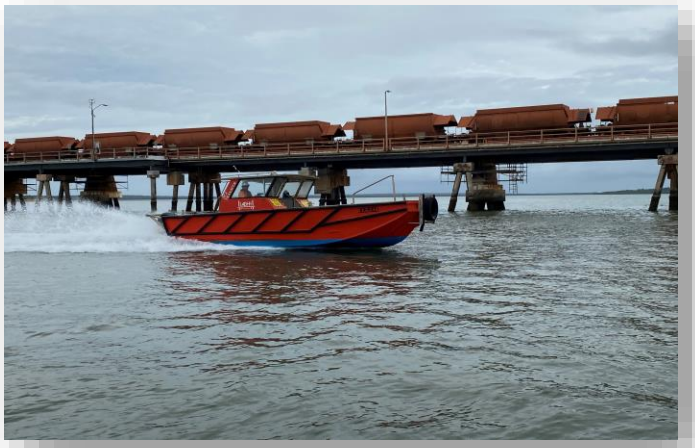
SEA TRANSFER 1



SEA TRANSFER

CREW TRANSFER VESSEL

ST 01



General

Type	Crew Transfer Vessel
Operator	Australian Barge Hire Pty Ltd
Survey	Australian Maritime Safety Authority
Classification	AMSA 2C
Construction	Aluminum
Road Transport	1 Trailer

Main Dimensions

Length Overall	7.82	metres
Beam	2.87	metres
Depth	1.40	metres
Draft	1.00	metres
Horse Power	2 x 150	hp

Features

- Smooth Ride
- Stable Access Platform
- Side opening doors on one side
- Pusher frame for limited barge relocations
- GPS Moving Mapping
- Depth Sounder
- Qualified experienced operators
- Surveyed to carry 12 people

Operation

Sea Transfer 1 has been developed as a crew and equipment transfer vessel that also provides onsite relocation services for the barges.

Sea Transfer 1 is equipped with side opening doors on both sides of vessel providing safe crew access and equipment loading to and from the barges. The elevated wheel house provides our Masters with clear vision for transporting loads or relocating barges with a front pusher bar designed to make transfers over the bow a safe and smooth transition.

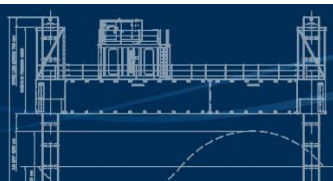
Returning to base in late afternoon chop is a calm and smooth ride thanks to Sea Transfers hull shape. Fitted with the latest navigation, depth sounding and safety equipment Sea Transfer 1 is a safe and versatile vessel that meets our client's needs.

Australian Barge Hire
PO Box 749 CARINGBAH NSW 1495
Phone: 02 9531 2900 Email: info@australianbargehire.com

ABH

Australian Barge Hire

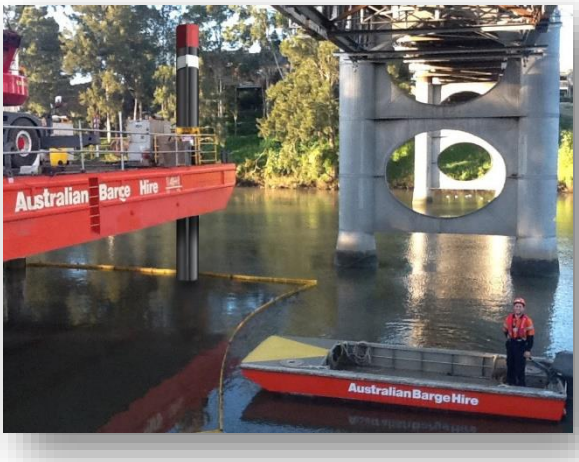
SEA PUNT



SEA PUNT

SUPPORT VESSEL

SP 01



General

Type	Work Punt
Operator	Australian Barge Hire Pty Ltd
Survey	Australian Maritime Safety Authority
Classification	AMSA 2D
Construction	Aluminum
Road Transport	1 Boat Trailer

Main Dimensions

Length Overall	5.90	metres
Beam	2.40	metres
Depth	0.80	metres
Draft	0.50	metres
Propulsion	60	Hp outboard motor

Features

- Clear Open Deck
- 15 knots cruise speed
- Optional Environmental spill containment equipment
- Carrying capacity 500kg
- Surveyed to carry 6 people

Operation

Australian Barge Hire has a fleet of 5.9m long by 2.4m wide plate aluminium work punts powered by fuel efficient outboard engines. The work boats have in built under floor buoyancy and are commercially registered and supplied with all necessary safety equipment. The work punts are road trailerable and have the capacity to transfer personnel, core trays and skip bins in class 2D waters.

Australian Barge Hire
10 Pembury Road Minto NSW 2566
Phone: 02 9531 2900 Email: info@australianbargehire.com

Australian Barge Hire - Barge Safety Equipment

Unit	Item
1	Automated External Defibrillator (AED)
1	Stretcher
1	EPRIB & Hydrostatic Release Unit (HRU)
6	Flares (3 x red star parachute, 2 x red hand-held, 1 x orange hand-held smoke)
4	Powder ABE 4.5kg extinguishers
1	Scale F First Aid Kit
All personnel	Life jackets – Level 150+
1	VHF Marine Radio
1	Air horn
1	Biler bucket
2	Torches
1	V-sheet
4	Yellow Flashing lights
1	Restricted inability to manoeuvre shapes
1	ABH Safety Management System documentation
1	Silt Curtain (standby)
1	Spill Kit - Red/Green Bin with White Lid – 140L containing: - Oil Fuel Absorbent Boom – 3m x 75mm - Oil Fuel Absorbent Sweep – 50L Bag - Contaminated Waste Bags & Ties - Oil Resistant Gloves - Tamper Evident Spill Kit Audit Tag - Clear PVC Spill Kit Cover - Laminated Instruction Sheet

Scale F first aid kit list

Items to be stored in first aid kit

GES 2015/01 provides an equivalent means of compliance with Annex H for vessels operating in operational areas C, C Restricted, D or E.

Items shown in *italics* are considered an equivalent substitution only when the medication required by the standard is unavailable and Owners/Operators have conducted a risk assessment in accordance with GES 2015/01 to ensure that those items are sufficient for the relevant area of operation.

	Description	Qty	Notes	Comments
	Bandage, conforming 5cm	2		Secure dressing and support injured parts
	Bandage, conforming 10cm	2		Secure dressing and support injured parts
	Bandage, heavy crepe 7.5cm	2		Support bandage
	Bandage, heavy crepe 10cm	1		Support bandage, wide
	Bandage, triangular	4		Sling
	Dressing, combine 10 x 10cm, sterile	3	†	Bleeding control
	Dressing, combine 10 x 20cm, sterile	5	†	Bleeding control, large
	Dressing, non-adherent (10 x 10cm or similar)	10	†	Wound cover
	Dressing, hydroactive (10 x 10cm or similar)	2	†	"Blisters, burns and minor exudate wounds"
	Wound dressing, combination, large	3		Major wounds
	Wound dressing, combination, small	2		Major wounds
	Adhesive roll non-woven fabric 5cm x 10m	1		Securing dressings
	Dressings, elastic fabric strips	50		Minor wound cover
	Gauze swabs, sterile (single use pkt of 3)	9	†	Cleansing / dressing wound
	Eye pad, sterile	4	†	Eye cover
	Wound closure strips, wide, 6 x 38mm	3	†	Securing wound sides
	Tape surgical waterproof 2.5cm x 5m	1		Secure dressing
	Tape surgical waterproof 5cm x 5m	1		Secure dressing
	Towels, disposable, pkt of 2	3		
	Plastic bag set (3 asst L, M and S)	2		Amputated parts
	Plastic bag	2		Disposal of soiled dressings
	Gloves, disposable, large	10		
	Safety pins, stainless, assorted pkt of 12	1		
	Blanket, emergency thermal	1		Hypothermia and shock
	Ice pack, instant	1		
	Resuscitation mask, disposable	1		
	Resuscitation mask, pocket	1		
	Splinter probes, sterile, disposable	10		
	Shears, Stainless, 19cm minimum	1		
	Splinter forceps, 12.5cm	1		
	Scalpel, disposable	2		
	Splint malleable, universal	2		
	Normal saline, sterile 30ml polyamp, or	10	†	Eye irrigation / wound cleaning
	• *Sodium Chloride 0.9% (Normal Saline) ampoule 10mL, or*	20	†	
	• *Sterile injection and irrigation 50mL, or*	3	†	

	Description	Qty	Notes	Comments
	• *Sodium Chloride compound eye rinse 120mL*	2	†	
	Povidone iodine swabs (single use), or	20	†	Antiseptic
	• *Povidone-Iodine 10% antiseptic liquid 100mL*	1	†	
	Anaesthetic + antiseptic cream 30g, or	1	†	
	• *Cetrimide/Lignocaine compound cream 100g, or*	1	†	
	• *Benzalkonium Chloride/Lignocaine sunburn relief spray 125mL.*	1	†	
	Hydrocortisone 1% cream 30g, or	1	†	Rashes & bites
	• *Hydrocortisone 0.5% Cream 30g, or*	1	†	
	• *Betamethasone Valerate 0.02% Cream 100g*	1	*†	
	Paracetamol 500mg tabs or caps	2 x 20	†	Mild pain relief
	Paracetamol 500mg/Codeine Phosphate 15mg tablets, or	*40*	*†	Moderate pain relief *Do NOT exceed EIGHT tablets in ONE day*
	• *Paracetamol 500mg / Codeine 8mg, or*	*24*	*†	*Moderate pain relief*
	• *Paracetamol or ibuprofen, or the two products in combination*	*20*	*†	
	Ibuprofen 200mg tablets, or	24	†	Anti-inflammatory
	• *Ibuprofen 400mg tablets, or*	*30*	*†	
	• *Naproxen 250mg tablets.*	*50*	*†	
	Hyoscine hydrobromide 0.3mg tablets, or	10	†	Seasickness
	• *Hyoscine Hydrobromide 0.2mg, Dimenhydrinate 50mg, or*	*10*	*†	*Potentially more sedating. Alcohol must be avoided.*
	• *Caffeine 20mg tablets.*	*10*		
	Loperimide 2mg tablets, or	16	†	Diarrhoea
	• *Loperamide 2mg capsules, or*	*24*	*†	
	• *Diphenoxylate HCl 2.5mg/Atropine Sulfate 25mcg tablets.*	*20*	*†	
	Loratadine HCl 10mg or Fexofenadine HCl 120mg tablets, or	10	†	Antihistamine (non-sedating)
	• *Cetirizine 10mg Tablets.*	*10*	*†	
	Antacid tablets, or	50	†	
	• *Antacid liquid 500mL.*	*1*	*†	
	List of contents, brief instructions for use, expiry dates, and last check dates	1		Stowed within or adjacent to the kit
	CPR Instruction chart or card	1		
	Australian First Aid Book	1		

***Notes**:*
† Expiry dated
** Requires prescription*