Shute Habour Boating Facility

EPBC Referral

Customer	Maritime Safety Queensland
Project	004043
Deliverable	003
Version	02
	15 July 2026

Document Control

Document Identification

Title	Shute Habour Boating Facility
Project No	004043
Deliverable No	003
Version No	02
Version Date	15 July 2026
Customer	Maritime Safety Queensland
Classification	OFFICIAL

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Amendment Record

The Amendment Record below records the history and issue status of this document.

Version	Version Date	Distribution	Record
00	15 May 2026	MSQ	Draft report
01	01 July 2026	MSQ	Updated draft
02	15 July 2026	MSQ	Final

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Executive Summary

This assessment has been prepared to support a determination of a referral for the proposed Shute Harbour Boating Facility (the Project) under the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act)

Maritime Safety Queensland (MSQ) is proposing upgrades, and expansion works to existing recreational boating infrastructure at Shute Harbour to address a recognised shortfall in boating infrastructure within the Whitsunday region. The Project consists of:

- Construction of a four-lane boat ramp with two floating walkways and a revetment wall that will achieve 'good' wave climate conditions, as set out under Australian Standard (AS) 3962:2020 Marina design.
- Capital dredging up to ~40,000 m^3 to allow navigational access (~12,000 m^3) for the boat ramp (initial dredging to -1.5 m LAT) and footing stabilisation of the revetment walls (~27,000 m^3)
- A reclaimed carpark accommodating 130 car trailer units (CTU) bays
- Connection to the Shute Harbour Road including a roundabout and extension of the existing stormwater culvert via easement AHR1907 through the reclaimed area
- Minor (<5,000 m^3) and infrequent (every 8—10 years) requirement for future maintenance dredging to be undertaken to maintain depths of -0.5 m LAT, with material to be disposed of to an onshore licensed facility.

The Project is located within a highly modified coastal environment, characterised by fragmented intertidal and marine habitats adjoining existing maritime infrastructure, a ferry terminal, rock revetments and Shute Harbour Road. Marine habitats within the Project Area are dominated by unconsolidated sediments with sparse seagrass, macroalgae and a small number of isolated coral colonies. Mangroves occur as narrow, fragmented fringes along drainage channels and embayment margins. Habitat quality is low and subject to existing disturbance from vessels, roads and industrial land uses.

The assessment identified the potential relevance of the Great Barrier Reef World Heritage Area (GBRWHA), Great Barrier Reef National Heritage Place (GBRNHP), the adjacent Great Barrier Reef Marine Park (GBRMP), listed threatened and migratory species and two threatened ecological communities.

Field surveys and desktop assessment confirmed that no threatened ecological communities occur within or adjacent to the Project Area, and that the site does not contain habitat critical to the survival of threatened or migratory species. Species that may occur within the broader Shute Harbour area, including marine turtles, dolphins, dugong, sawfish and migratory shorebirds, are expected to use the Project Area only incidentally or in transit due to the limited extent and low quality of available habitat.

Direct impacts of the Project are limited to small areas of already disturbed habitat. Reclamation and associated civil works will result in the permanent loss of approximately 0.2535 ha of mangroves, 0.0981 ha of sparse seagrass and macroalgae, and 0.0361 ha of macroalgae and sponge habitat, and the removal of three isolated coral colonies. The dredging footprint for the navigational channel has been defined based on the access requirements for trailerable recreational vessels and comprises an area incorporating a +5 m offset, totalling approximately 0.57 ha. Direct impacts to benthic habitats as a

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result of the navigational channel will result in the permanent loss of approximately 0.029 ha of macroalgae and sponge habitat and 0.394 ha of sparse seagrass and macroalgae habitat.

Potential indirect impacts include temporary and localised changes to water quality, underwater noise from dredging and piling, vessel interaction with marine fauna, accidental spills, lighting, air emissions and introduction of pests.

Potential environmental impacts associated with the Project have been identified and assessed, with the assessment concluding that residual risks are low following the implementation of proposed mitigation and management measures. These measures will be implemented through a Construction Environmental Management Plan (CEMP), Dredge Management Plan (DMP), and associated sub-plans which will be in compliance with MRTS51 TMR's environmental management technical specification and MRTS52 TMR's technical specification for Erosion and Sediment Control under TMR's Environmental Management System.

Cumulative impacts were considered in the context of the approved Shute Harbour Marina EIS within the adjacent embayment. The Project would result in the disturbance of approximately 0.56 ha of benthic habitat and 0.25 ha of mangroves, compared to approximately 48.75 ha of benthic habitats and 1.84 ha of mangroves approved as part of the Shute Harbour Marina development. The Project is therefore not expected to materially alter habitat availability, connectivity or ecological function at an embayment scale.

The significant impact assessment concludes that the Project will not result in significant impacts to the vales of the GBRWHA or GBRNHP, GBRMP and listed threatened or migratory species. Impacts are localised, temporary, minor in scale and are not of a magnitude or duration that would trigger significance under the EPBC Act.

Accordingly, on the basis of the assessment presented in this referral and the implementation of proposed mitigation and management measures, the Project is not likely to have a significant impact on any MNES and as such. offsets under the *EPBC Act Environmental Offsets Policy 2012* are therefore not expected.

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1 Introduction

1.1 Overview and Purpose

The Maritime Safety Queensland (MSQ) is proposing upgrades and expansion works to existing recreational boating infrastructure at Shute Harbour (the Project) to accommodate increasing boating demand within the Whitsunday region.

The proposed works include construction of a four-lane boat ramp, associated floating walkways, a revetment wall, a reclaimed car park, and associated navigational areas. This will occur adjacent to existing maritime infrastructure at Shute Harbour and will require some reclamation works for the carpark footprint. Dredging is required for the project to establish the navigational areas as well as to excavate the foundations of the outer wall for the reclamation.

Under the provisions of the *Environmental Protection and Biodiversity Conservation Act 1999* (Cth) (EPBC Act), any action that is likely to result in a significant impact on a Matters of National Environmental Significance (MNES), must be referred to the Minister administering the Act, through the Department of Climate Change, Energy, the Environment and Water (DCCEEW), for assessment and decision on whether approval is required under the EPBC Act.

This document has been prepared to support a referral submission under the EPBC Act and assesses the potential impacts of the Project on MNES, including the significance of potential impacts, the proposed management and mitigation measures, and the anticipated residual impacts relevant to the EPBC Act.

1.2 Background

The Queensland Recreational Boating Facilities Demand Forecasting Study (BMT 2022) identified a significant shortfall in recreational boating infrastructure across the Whitsunday region, with an estimated deficit of approximately 11 effective boat ramp lanes in 2021 with limited car-trailer unit (CTU) parking. This infrastructure shortfall is under increasing pressure as a result of continued growth in the local boating fleet, strong tourism demand, and a limited supply of sheltered, all-tide boating facilities. These findings were informed by consultation process involving Whitsunday Regional Council, MSQ, Sunwater and recreational groups. Importantly, stakeholder feedback consistently identified capacity constraints, insufficient CTU parking, and a preference for sheltered, all-tide facilities, confirming that the identified infrastructure shortfall reflects both modelled demand and demonstrated user experience. While Shute Harbour's location makes it highly desirable for recreational boating, the existing boating facility is constrained by limited land availability, insufficient car-trailer unit CTU parking, exposure to waves and cyclonic conditions, and operational inefficiencies associated with its current configuration. These constraints significantly limit the ability to safely and effectively expand or upgrade the existing facility. The study determined that incremental upgrades at the current Shute Harbour boat ramp would not resolve capacity, safety, or usability issues and would not provide a long-term solution to the identified demand pressures.

Accordingly, the study recommended development of a new recreational boating facility at Grubby Bay (referred to within this report as Project Area) within the Shute Harbour area as the preferred long-term solution. The recommended Stage 1 development comprises a four-lane boat ramp, two floating walkways and approximately 145 CTU parking spaces, providing around 5.5 additional effective lanes and delivering a fully sheltered, all-tide facility capable of addressing regional boating demand pressures. The new facility would be intended to replace the existing Shute Harbour boat ramp, which could be decommissioned once the new facility is operational. A future Stage 2 expansion (additional

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lanes and CTUs) was identified in BMT (2022) as a longer-term option if demand continues to grow, however geotechnical constraints identified during planning of Stage 1 have indicated that another site would need to be found to accommodate any future additional boating facilities.

1.3 Existing Environment

Shute Harbour is located within the Whitsunday region, approximately 10 km east of Airlie Beach, and forms part of a broader semi-enclosed coastal embayment that connects the mainland to the Whitsunday Islands and the Great Barrier Reef (Cardno 2008). The Shute Harbour area is characterised by a mosaic of terrestrial, intertidal and marine environments typical of the Whitsunday region. The surrounding landscape comprises steep, vegetated hillslopes associated with Conway National Park, which extend to the foreshore and contribute runoff to the harbour during rainfall events, while coastal environments within the wider Shute Harbour area include intertidal mudflats, mangrove forests, seagrass meadows and subtidal soft sediments (Cardno 2008).

Marine waters within the Shute Harbour area are influenced by tidal exchange, prevailing south-easterly trade winds and episodic wet season rainfall, resulting in natural variability in turbidity and sediment resuspension (Cardno 2008; Bluecoast 2026). The harbour is generally sheltered from regional swell by the Whitsunday Islands, surrounding reefs and shallow bathymetry, and is typically characterised by low-energy, locally generated wind waves under ambient conditions (Bluecoast 2026). Higher energy wave and water level conditions occur infrequently and are generally associated with severe weather events, including tropical cyclones (Bluecoast 2026).

The broader harbour is also used intensively for marine transport, recreational boating and tourism activities. Within this regional setting the Project Area is located within Unallocated State Land (USL) and is bound by the following:

- Eastern side is bound by land lease ACP849951 and Lot 310 CP849951. Further east consists of the existing Shute Harbour boat ramp and Shute Harbour Marine Terminal
- Western side by Lot 252 and 301 on HR1717 consisting of a maritime commercial facility. Further west consists of the adjacent embayment where the approved coordinated project Shute Harbour Marina will be developed.
- Northern side by state-controlled road Shute Harbour Road. Further North consists of a logistics shipping facility and Conway Conservation and National Park
- Southern side by land lease Lot 23 on SP20807

There are no dedicated pedestrian pathways, bicycle infrastructure or bus stops within the road reserve adjacent to the Project Area. Informal parking occurs along the eastern end of Shute Harbour Road, predominantly associated with vehicles towing boat trailers. During peak usage periods, parking demand can extend beyond the immediate vicinity of the proposed site access.

The Project Area comprises a sheltered intertidal embayment characterised by muddy substrates and a stormwater outlet channel that dissects the site. The area has been substantially modified by existing infrastructure, including rock revetments along the eastern and western boundaries, adjacent road infrastructure and maritime facilities associated with the existing ferry terminal and boat ramp precinct. Shute Harbour Road to the north is a state-controlled road that provides the primary access to Shute Harbour and supports the connectivity from the Bruce Highway through to Cannonvale, Airlie Beach and Shutehaven. Parking occurs informally along the eastern end of Shute Harbour Road, predominantly associated with vehicles towing boat trailers, with parking demand extending beyond the immediate vicinity of the Project Area during peak periods.

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Figure 1.1 illustrates the Project Area including the proposed infrastructure footprint (23,362 m^2) and dredging channel for navigational access (with an offset of 5 m with a total area of 5,739 m^2) to be further discussed in the below sections and the Study Area (35,060 m^2), comprising a nominal 5 m buffer surrounding the Project Area.

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Title:

Proposed Project Location

Figure: **1.1**

Rev: **C**

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1.4 Project Description

The purpose of the Project is to support the growing boating demands of the Whitsunday region and improve key limitations associated with the existing facility. As such the Project includes:

- Construction of a four-lane boat ramp with two floating walkways and a revetment wall that will achieve 'good' wave climate conditions, as set out under Australian Standard (AS) 3962:2020 Marina design.
- Capital dredging up to ~40,000 m^3 to allow navigational access for the boat ramp and stabilisation of the revetment wall.
- A reclaimed carpark accommodating 130 CTU bays
- Connection to the Shute Harbour Road including a roundabout and extension of the existing stormwater culvert via easement AHR1907 through the reclaimed area
- Ongoing maintenance dredging to be disposed of to an onshore licensed facility

The Project preliminary concept design is illustrated in Figure 1.2 and discussed in further sections.

The general construction sequencing is expected to be as follows:

- Capital dredging for the foundation of revetment structures, with material either placed immediately into trucks for offsite disposal or placed onshore in contained stockpiles or geobags (or similar containment structures) for dewatering and either retained on site as part of reclamation works or taken offsite after some level of dewatering.
- Construction of the outer revetment of the reclamation, progressing generally west to east.
- Progressive filling of the reclamation and dewatering of retained seawater via a weirbox or similar.
- Construction of the boat ramp infrastructure.
- Civil works for the carpark and associated interfaces
- Navigational access channel dredging will occur through the same material management methodology as dredging for the revetment wall foundations described above.

Details on key steps are set out below.

MSQ would retain ownership and management responsibility of all maritime infrastructure but would transfer the carpark asset to Whitsunday Regional Council to manage. This is consistent with existing arrangements for other boat ramps in the State.

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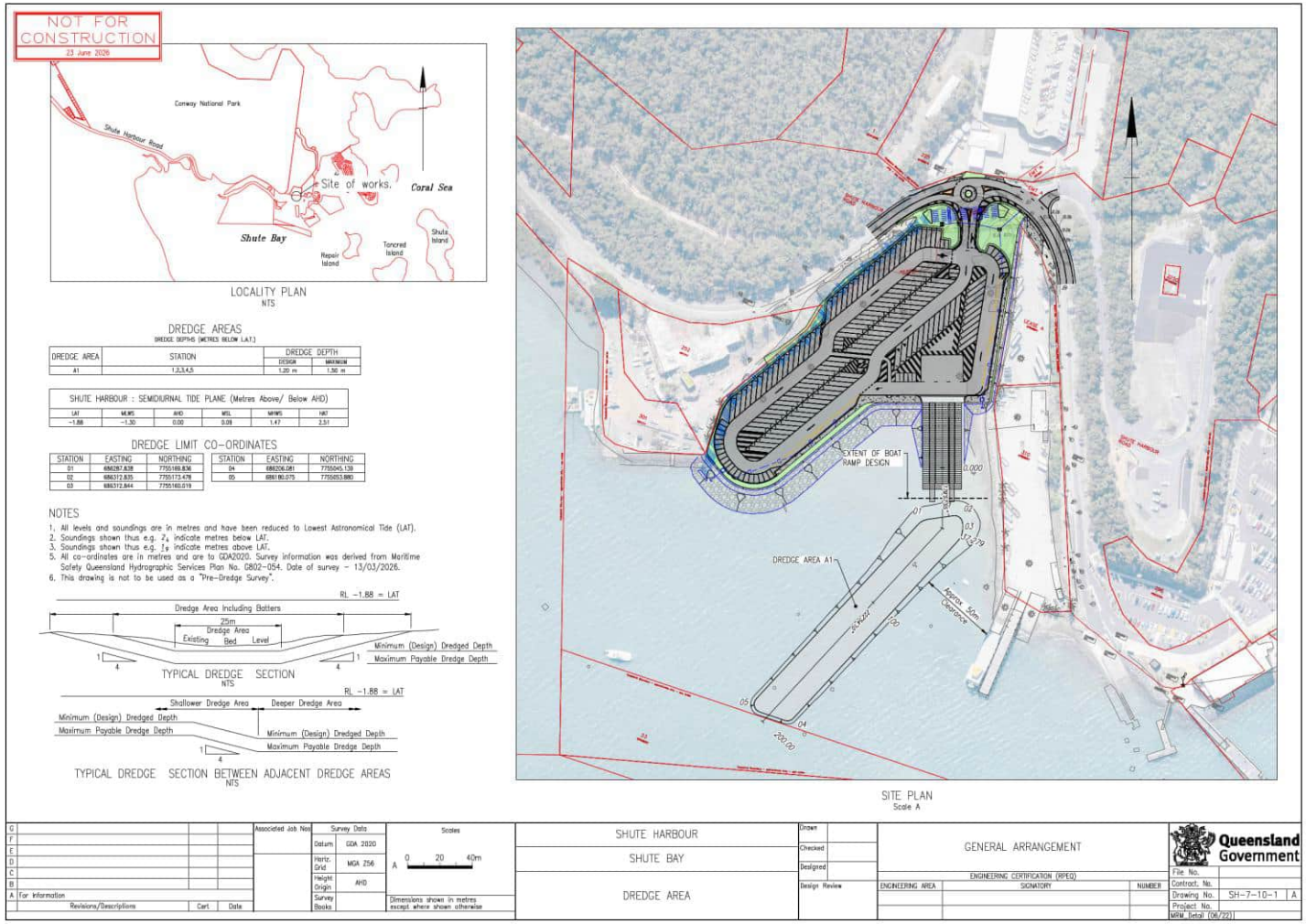

Figure 1.2 Shute Harbour Concept Design

1.4.2 Capital Dredging and Dredged Material Management

Capital dredging will be undertaken to remove soft marine sediments within the Project footprint to facilitate revetment construction and to improve navigational access to the proposed boat ramp. Dredging associated with revetment works will target areas where removal of soft sediments is required to provide foundation stability and improve the long-term performance of constructed infrastructure. Capital dredging will also be required within the navigation area to achieve suitable depths for safe vessel access to and from the boat ramp.

The extent and depth of dredging will be confirmed during detailed design; however, dredging is expected to be limited to the immediate construction and navigation footprints. Based on preliminary design information, the total volume of capital dredging associated with the Project is indicatively up to 40,000 m³, comprising:

- ~ 27,000 m³ of dredging associated with revetment construction, and
- 12,000 m³ dredging associated with the navigational access channel (+5 m offset, total area of 5,739 m^2) to the boat ramp. The proposed access channel will be dredged to a design depth of -1.5 m LAT with 1:4 batters, providing sufficient capacity to support MSQ's policy objective of maintaining a minimum navigable channel depth of -0.5 m LAT for all-tide boat ramp access.

Capital dredging will be undertaken using a barge mounted cutter suction dredger (CSD) or a backhoe dredge (excavator sitting on advancing revetment wall). Both dredging methods are the most suited for relocation of dredged materials as both will create considerably less turbidity at the dredging site than alternate options. Where a CSD is used, dredging would involve loosening of seabed sediments using a cutter head, with disturbed material captured via suction and transferred onshore as a slurry. Where backhoe dredging is used, sediments would be removed mechanically, allowing targeted excavation near permanent works.

Sediment sampling and analysis undertaken by BMT (2026a) (Annex A) within and adjacent to the Project Area found sediments to be predominantly comprised of clay and silt, with cohesive materials dominating across the majority of sampling locations. Geophysical investigations (MES 2026) indicate that these soft, fine-grained marine sediments extend to depths of approximately 8–10 m below the seabed, underlain by progressively stiffer interbedded sediments, before transitioning into residual material and weathered rock, with competent bedrock encountered at greater depths.

Chemical analysis of the sediment (BMT, 2026a) showed no analytes exceeded relevant National Assessment Guidelines for Dredging (NAGD) guidelines for ocean disposal, or *National Environment Protection (Assessment of Site Contamination) Amendment Measure 1999* (NEPM) guidelines for land disposal. Potential acid sulfate soils (PASS) were identified with net acidity values below action criteria when acid neutralising capacity (ANC) is considered. Leachate testing undertaken on all samples supported the use of the measured ANC in the assessment, with the applied laboratory limits of reporting (LORs) below the relevant Queensland Acid Sulfate Soil Technical Manual (QASSTM) action criteria. These results indicate the sampled sediments are likely to have sufficient capacity to self-neutralise. While the sampled sediments indicate sufficient acid neutralising capacity, the assessment was constrained by core refusal, preventing sampling to the full proposed dredge depth. Accordingly, an Acid Sulfate Soil Management Plan (ASSMP) will be implemented to confirm whether treatment such as liming is required following the precautionary principle.

Dredged material generated during the Project will be managed in accordance with its physical and chemical characteristics and relevant regulatory requirements. Offshore disposal is not being considered as a placement option for this Project. Depending on final design, construction sequencing

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and geotechnical suitability, dredged material may either be treated and retained within the Project Area as part of the reclamation works or transported to an approved land-based disposal facility.

Where material is retained within the Project Area, dredged sediments would be treated as required and dewatered prior to placement. Dewatering may be achieved through on-site stockpiling or proprietary containment methods, such as geobags. Where dredged material is not suitable, it would be dewatered and treated for transportation to an approved disposal facility.

To manage plume risks during dredging and placement works, a silt curtain will be established either locally containing works fronts or across the mouth of the Project Area embayment where practicable. The revetment excavation work and any dewatering from onshore geobags and stockpiles would be contained within this silt curtain, allowing for any plumes to be captured for sufficient time to allow suspended sediments to settle. As navigational dredging would be for a smaller volume and occur in parts outside the embayment, it would use either local silt curtains or a water quality monitoring strategy along with adaptive management controls associated with the specific dredge plant being used to reduce the extent of plumes. This is noted to be a proven strategy that MSQ utilises throughout the state in the maintenance of its state boat harbours. These management methods will meet the requirements of MRTS52 associated with Erosion Sediment Control management.

1.4.3 Revetment and Reclamation

As previously described, capital dredging will be undertaken removing the smallest volumes required to provide suitable foundation conditions for revetment construction. The revetment wall will be constructed using quarry-sourced materials, comprising a rock core and external armour layer, to form a robust barrier against wave action and minimise erosion along the seaward edge of the reclamation. The revetment will be located seaward of the reclaimed area to protect it. The revetment will be progressively built west to east, likely utilising marine plant for the placement of rocks. Rocks would be loaded to marine plant from an onsite stockpile which in turn would be fed by truck movements from nearby quarries. Once the revetment is enclosed, further works will be undertaken to progressively build the wall to full height, in accordance with design requirements.

Reclamation works are proposed behind the revetment to support aspects of the new boat ramp and associated car parking infrastructure. Due to the presence of deep layers of soft marine sediments beneath the reclamation area, management of long-term settlement and achievement of suitable bearing capacity are key design considerations.

Sand required for reclamation and surcharging purposes is anticipated to be sourced from either a suitable nearby quarry or a suitable sandy dredge material stockpile managed by MSQ, an example being at Bowen State Boat Harbour. Approximately 40,000 m³ of sand is expected to be required and would be transported to the site either by barge or by road, depending on final sourcing and logistics.

Where logistically feasible, sand required may be transported to the Project Area via barge from Bowen to Shute Harbour. An indicative barge route has been identified (Figure 1.3); however, the final routes would be confirmed by the appointed barge operator. Typical vessels are expected to comprise dumb barges with an approximate capacity of 600 tonnes, supported by tugboat tow. Material loading is anticipated to occur from a foreshore stockpile area via front-end loader or direct truck placement onto the barge using ramp access. Based on indicative distances, loading/unloading requirements and material volumes, the barge transport campaign would be undertaken over an estimated 12-month period, with a typical four-day operational cycle per barge.

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Figure 1.3 Indicative barging route from Bowen to Shute Harbour

The filling of the reclamation area will occur in parallel with dredging and dewatering of dredge material. The management of tailwater release will be a key component of the works methodology which will potentially involve the use of detention cells within the reclamation for dredge material management prior to release in addition to the silt curtain enclosure.

1.4.4 Boat Ramp Works

Tidal works associated with the Project comprise construction of a four-lane boat ramp, floating walkways and a revetment wall.

The four-lane boat ramp will likely be comprised of precast concrete ramp panels placed onto a support base. The ramp foundation will be designed to provide adequate load-bearing capacity and greater settlement control than the surrounding reclamation and revetment areas, which may be progressively built up or adjusted over their service life to maintain required levels. To achieve this, the ramp may be supported on piles (up to 50 piles), or alternatively by localised removal of soft sediments and replacement with engineered rock fill, or other foundation treatments to provide a stable base.

Two floating walkways will be installed in association with the boat ramp to provide safe and efficient all-tide access for vessel users. The final configuration and construction sequencing of the tidal works will be confirmed during detailed design and refined to minimise disturbance to surrounding marine areas.

1.4.5 Civil Works

Land-based works associated with the Project include road upgrades and drainage infrastructure to support safe access to the new boating facility. These works comprise construction of a new roundabout and associated road realignments, together with extension and modification of an existing stormwater culvert system to maintain conveyance of runoff from the upstream catchment to Shute Harbour.

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The stormwater works will involve extension of existing culverts beneath the road pavement to accommodate the revised road layout and reclamation footprint. Preliminary design have considered the primary waterway crossings within the Project Area, including multiple circular culverts of varying diameters, to ensure that existing drainage performance is maintained. The final configuration, dimensions and alignment of road and drainage infrastructure will be confirmed during detailed design.

Additional civil works, including pavements, line marking, lighting and surface drainage, will be undertaken once the revetment and reclamation works are complete to support operation of the car and trailer parking and boat ramp.

1.4.6 Maintenance Dredging

Sedimentation modelling undertaken (BlueCoast 2026) indicates that the Project Area is characterised by low net sedimentation, with sediment transport processes controlled primarily by episodic high-energy wave and flood events rather than continuous accumulation. Modelled infill within the proposed navigation channel is low (approximately 60–120 mm/year, equivalent to ~300–500 m³/year), with the highest localised rates occurring at the proposed boat ramp toe and decreasing offshore. Within and adjacent to the Project Area, net sedimentation is predicted to be approximately zero to marginal under both existing and developed scenarios, reflecting near-equilibrium conditions and limited regional sedimentation potential. The modelling further indicates that sedimentation associated with the Project is largely confined to the proposed navigation channel, with negligible influence on surrounding areas. In addition, vessel-induced resuspension associated with regular marine traffic is expected to partially offset sediment accumulation within the channel (BlueCoast 2026).

Future maintenance dredging may be required to maintain navigational access to the boat ramp, however, consistent with the localised nature of predicted infilling and the near-equilibrium sediment regime identified by BlueCoast (2026), dredging volumes are expected to be minor and confined to the navigation channel. Based on the predicted siltation rates and anecdotal feedback from adjacent infrastructure operators, maintenance dredging is anticipated to be infrequent, potentially occurring at decadal intervals (e.g. <5,000 m³ every 8–10 years). This feedback indicates that vessel movements at comparable facilities are sufficient to maintain navigable depths, and similar vessel activity associated with the proposed 130 CTU facility may negate the need or significantly further reduce the frequency of future maintenance dredging. Where required, maintenance dredging would be undertaken using small-scale methods (e.g. cutter suction dredge or barge-mounted excavator), with dredged material managed within the Project Area (e.g. temporary containment within the car park) or transported to an approved land-based disposal facility. The timing and frequency of maintenance dredging will be refined during detailed design.

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2 Legislative Context

2.1 Commonwealth

Under the EPBC Act, a proposed action must be referred to the DCCEEW where it has the potential to result in a significant impact on a MNES.

A significant impact is one that is important, notable or of consequence, taking into account the context in which the impact occurs and its intensity. In determining whether an action is likely to result in a significant impact, consideration is given to factors including:

- The value, sensitivity and quality of the affected environment; and
- The duration, scale, magnitude and geographic extent of the potential impacts.

The EPBC Act identifies nine MNES:

- World heritage properties
- National heritage places
- Wetlands of international importance (listed under the Ramsar Convention)
- Listed threatened species and Threatened Ecological Communities (TECs)
- Migratory species
- The Great Barrier Reef Marine Park
- Commonwealth Marine Areas
- Nuclear actions
- A water resource in relation to coal seam gas development and large coal mining development.

Where an action is considered likely to have a significant impact on MNES, it may be determined to be a controlled action and subject to further assessment and approval under the EPBC Act.

In some circumstances, actions may be determined to not be controlled actions where they are undertaken in a specified or ‘particular manner’, provided impacts to MNES are appropriately avoided or mitigated.

2.1.1 Significant Impact Guidelines

The *Significant Impact Guidelines 1.1 – Matters of National Environmental Significance* (Department of the Environment, 2013) provide a framework for assessing whether a proposed action is likely to result in a significant impact on MNES and whether referral under the EPBC Act may be required. In applying the guidelines, consideration is given to:

- The presence of MNES within, or adjacent to, the proposed action area
- The potential for direct and indirect impacts on MNES
- The extent to which proposed design measures avoid or minimise impacts
- Whether any residual impacts are significant, having regard to their context and intensity.

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The *Significant Impact Guidelines* set out impact criteria for each MNES category and provide guidance on the types of actions that may require further assessment, as well as those unlikely to result in significant impacts.

2.2 State Approvals

The Queensland Government has introduced legislative amendments to facilitate the timely planning and delivery of the 2032 Olympic and Paralympic Games infrastructure while maintaining appropriate governance, environmental assessment and risk management processes. Under amendments to the *Brisbane Olympic and Paralympic Games Arrangements Act 2021* (Qld) (BOPGA Act), the proposed Project has been identified as Games-related infrastructure to support the 2032 Olympic Sailing in the Whitsundays and is therefore "deemed to comply" with most State development approval requirements that would otherwise apply under the *Planning Act 2016* (Planning Act) (Qld) and associated legislation.

The relevant "deemed to comply" provisions are established under Chapter 3A – *Provisions for Facilitating Development for the Games*, Part 2, Section 53DC(1)(b)(ii), which applies to Games-related transport infrastructure. Schedule 4, Part 2 of the BOPGA Act specifically identifies the proposed Shute Harbour recreational boating facility and associated transport upgrades as eligible infrastructure, including:

a. New public marine transport infrastructure at Shute Harbour associated with the following-
    i. A new multi lane boat ramp
    ii. A new breakwater[1]
    iii. New floating walkways
    iv. An upgraded care car-trailer parking area
b. Upgraded State-controlled roads, local government roads and active transport infrastructure associated with the paragraph (a).

Notwithstanding the "deemed to comply" provisions under the BOPGA Act, the proposed works would otherwise be expected to trigger a range of approvals under Queensland planning and environmental legislation, including:

- Owners Consent—required under s51 under the Planning Act for works on premises that are on premises-water mark as defined under the *Coastal Protection and Management Act 1995* (Qld) (Coastal Act)
- Environmental Authority— ERA 16(1)(b) dredging more than 10,000t but not more than 100,000t per year
- Material Change of Use (MCU)—required under Schedule 10, Part 5, Division 2, s8 a material change of use is required for an activity that is a concurrence ERA including ERA 16(1)(b)
- Allocation of Quarry Material—dredging activities resulting in the removal of material from land under tidal water and disposed of above high-water mark under the Coastal Act
- Development Permit under the *Planning Regulation 2017* (Qld), for the following activities:

[1] The original development in alignment with BMT (2022) feasibility assessment, was intended to be larger and extend further offshore and subsequently included a protective breakwater for the new ramp. However geotechnical conditions significantly constrained the footprint and subsequently resulted in the ramp being located in a much more protected location. As a result the breakwater highlighted in BOPGA is not part of the proposed Project.

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- Coastal development and tidal works— Construction of boat ramp, revetment and dredging will likely be tidal works and require a development permit
- Marine plant disturbance – Permit required under s123 of the *Fisheries Act 1994* (Qld) for any disturbance to marine plants within or adjacent to Project (if triggered)

MSQ acknowledges that while formal approvals may not be required under the BOPGA Act, the environmental outcomes and mitigation measures ordinarily associated with those approvals remain relevant and will continue to inform project delivery.

MSQ operates under the key legislation instrument of the *Transport Infrastructure Act 1994* (Qld). Section 9 (a) (i) and (iii) of this Act UNDER **Obligations about Government supported transport infrastructure** states.

- "*The chief executive must ensure that -*
- *(a) the construction, maintenance and operation of all government supported transport infrastructure for which the chief executive is responsible is carried out in a way that, within the objective of this chapter –*
- *(i) takes into account best practice and national benchmarks; and*
- *(iii) reduces adverse environmental impacts*

In order to meet the above obligation regardless of BOPGA Act inclusion MSQ has completed all the necessary supporting documentation and Environmental Management Plan's (EMPs) that are required to support the development assessment under the "deemed to comply" state environmental legislation listed above. An independent assessment process will be undertaken to verify that environmental outcomes consistent with those ordinarily achieved through the relevant State approval processes have been appropriately addressed prior to construction commencing.

2.3 Marine Park Permit

A Marine Park Permit application was not deemed applicable as the Project Area is not within the Commonwealth or State Great Barrier Reef Marine Park.

The boundary of the Commonwealth Great Barrier Reef Marine Park (GBRMP) in the vicinity of Shute Harbour is not defined by a surveyed, fixed line and is instead determined by legislative and common law principles. Under the *Great Barrier Reef Marine Park Act 1975* and the *Seas and Submerged Lands Act 1973*, the Marine Park excludes waters that are considered to be within the limits of a State, including waters of bays, harbours and inlets that were within State limits on 1 January 1901.

Advice provided on 16 January 2026 from the Great Barrier Reef Marine Park Authority (GBRMPA) indicates that Shute Harbour lies within State limits and that the Project Area is located well within Shute Harbour. While the precise boundary between State waters and the Great Barrier Reef region in the broader Shute Harbour area cannot be definitively resolved without judicial determination, the GBRMPA position is that the Project Area falls within waters that are *intra fauces terrae* (within the jaws of the land) and therefore within Queensland jurisdiction. On this basis, the Project Area is not considered to form part of the Commonwealth Great Barrier Reef Marine Park.

The Great Barrier Reef Coast Marine Park (GBRCMP) is declared under the *Marine Parks (Declaration) Regulation 2006* and is legally defined by metes and bounds descriptions set out in Schedule 2 Part 3 Townsville/Whitsunday Management Area including:

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- Then generally northerly along the coastal line along the mainland to where it intersects longitude 148º46.326' east. *Note*—The intersection is on the northern bank of Shute Bay.
- Then south along longitude 148º46.326' east to where it intersects the latitude that passes through the most southern point of Repair Island
- Then east along the latitude that passes through the most southern point of Repair Island to where it intersects longitude 148º47.280' east
- Then north along longitude 148º47.280' east to where it intersects latitude 20º17.610' south
- Then easterly along a geodesic to latitude 20º17.526' south, longitude 148º47.634' east
- Then northerly along a geodesic to the most southern point of Coral Point at high water

Advice from the Department of Environment, Tourism, Science and Innovation (DETSI) on 21 January 2026 confirms that, based on these statutory boundary descriptions, the Project Area is not within the GBRCMP.

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3 Methodology

The following assessment was largely based on a desktop assessment of the existing information available for the broader Shute Harbour region. Site inspections and field surveys within and adjacent to the Project Area have been conducted for marine and terrestrial ecology, metocean and sediment components.

3.1 Key Data Sources

This assessment was based on an analysis of the following information:

- The EPBC Protected Matters Seach Tool (PMST) was used (search undertaken on the 25th February 2026), using a 500 m search buffer around the Project Area
- Biologically important areas for marine species protected under the EPBC Act
- Species Profile and Threats Database (SPRAT) for information on threatened/migratory species and ecological communities listed under the EPBC Act
- Queensland government (WildNet) database records of conservation significant flora and fauna. As these data are based on survey records, a km buffer was applied to the Project Area
- Atlas of Living Australia for records of flora and fauna within a 1 km buffer
- Shute Harbour Marina Resort Environmental Impact Statement (EIS) technical assessments (FRC Environmental 2008; Natural Solutions 2008; Place Design Group, 2008)
- MSQ Cultural Heritage Assessment—Shute Harbour Reconfiguring 3552018 (Annex F).

Several environmental assessments have been undertaken for the Project including:

- Sediment Sampling and Analysis Plan and Implementation Report (SAPIR) (BMT 2026a)
- Marine and Terrestrial Habitat Assessment (BMT 2026b)
- Coastal Investigation Report (Bluecoast 2026)
- Geotechnical investigations (MES 2026)

Table 3.1 provides an overview of each document, including key findings. Associated PMST searches and environmental assessment reports are attached in Annex A to Annex E.

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Table 3.1 Environmental Assessments

Study	Author	Purpose	Key Findings
SAPIR	BMT (2026a)	To characterise the physical and chemical properties of sediments to be dredged in Shute Harbour, including contaminant concentrations and to assess their suitability for land disposal against relevant guideline criteria	• Sediments are predominantly fine-grained sandy muds with moderate spatial variability • All metals, metalloids and organic contaminants were below relevant screening criteria under the NAGD and NEPM • Organic contaminants, hydrocarbons, PCBs and organotins were generally below laboratory limits of reporting • Sediments were identified as potential acid sulfate soils (PASS); however, high acid neutralising capacity was recorded, with net acidity values below action criteria when ANC is considered. This was corroborated through leachate testing. • Dredged material is suitable for controlled land based reuse or disposal, subject to appropriate ASS management
Marine and Terrestrial Habitat Assessment	BMT (2026b)	To characterise and map marine and terrestrial habitats within the Project Area, establish an ecological baseline and assess the potential presence of environmentally significant habitats and conservation-significant fauna	• Marine habitats comprise predominantly unvegetated sandy and muddy substrates with sparse seagrass and macroalgal cover (generally <5%) • No high-complexity benthic habitats were identified with the exception of two coral colonies (a single *Porites cylindrica* and *Goniopora*). Two colonies of the hard coral *Goniastrea* were observed in intertidal areas • Mangroves occur as narrow, fragmented fringes along intertidal margins and drainage channels including *Rhizophora stylosa, Avicenna marina, Rhizophora apiculata* and *Excoecaria agallocha* species • Terrestrial habitats are highly disturbed and dominated by modified coastal vegetation and exotic groundcover • No threatened ecological communities, conservation-significant flora, or critical habitat were recorded. • Habitat quality was considered low and subject to existing disturbance from vessels, roads and industrial land uses

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Study	Author	Purpose	Key Findings
Coastal Investigation Report	Bluecoast (2026)	To establish preliminary baseline metocean criteria, informed by existing data and modelling, to guide early coastal engineering design for the Project	• The Project Area experiences regular exposure to minimal wave energy associated with prevailing southeasterly trade winds, with higher-energy conditions during episodic storm and cyclonic events • The tidal regime is semi-diurnal, with a moderate tidal range influencing water levels, currents and nearshore hydrodynamics • Local wave climate is spatially variable, with wave propagation influenced by offshore bathymetry and shoreline orientation • Currents are primarily tidally driven, with speeds and directions varying over the tidal cycle • Baseline conditions indicate that wave and water level variability are key factors influencing nearshore conditions at the site
		To estimate sedimentation rates and inform maintenance dredging requirements for the proposed channel configuration, based on sediment characteristics, historical datasets and numerical modelling.	• Sedimentation modelling indicates low net infill within the proposed navigation channel (approximately 60–120 mm/year, equivalent to ~300–500 m³/year), with the highest localised rates at the boat ramp toe and decreasing offshore Sedimentation within and adjacent to the Project Area remains approximately zero to marginal, while vessel-induced resuspension is expected partially offset infill • Maintenance dredging is anticipated to be infrequent and low-volume, with potential for decadal-scale intervals based on modelled rates
Geophysical Survey	MES (2026)	Marine geophysical investigations, including sub-bottom profiling and continuous marine seismic refraction surveys, were undertaken to inform dredging conditions, foundation design and subsurface characterisation for the proposed Shute Harbour development.	The investigations identified a layered subsurface profile comprising: • Soft fine to very fine marine sediments (Unit A) extending from the seabed to approximately RL -10 m to -7.9 m AHD (R1 reflector) • Underlying interbedded marine sediments (Unit B) extending to approximately RL -18.1 m to -2.6 m AHD (R2a reflector) • Residual to weathered bedrock (Unit C) extending to approximately RL -23.1 m to -4.1 m AHD (R2 reflector).

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3.2 Likelihood of Occurrence

The assessment of likelihood inherently considers the likelihood of an MNES occurring within the Project Area. The categories are presented in Table 3.2.

Table 3.2 MNES likelihood of occurrence categories

Likelihood categories	Description of MNES likelihood of occurrence
Known	• The MNES is known to occur within the Project Area, with mapped extent or confirmed presence overlapping the Project Area; and/or • The Project Area contains habitat, features or attributes fundamental to the MNES (e.g. core habitat, critical habitat, important migratory pathway, heritage fabric); and A contemporary record, mapping product or authoritative dataset (<10 years old) confirms presence; or • The MNES was recorded or confirmed during field investigations.
Likely	• The Project Area contains suitable or representative features relevant to the MNES (e.g. suitable habitat, mapped area, landscape context); and • Modelled distributions, spatial mapping or predictive tools indicate overlap with the Project Area; and • The MNES is considered likely to occur based on one or more of the following: - Multiple records or mapped extents within the surrounding area (most recent 10–3 years old); or - A single contemporary record (<10 years old) within or adjacent to the Project Area.
Possible	• The MNES may occur or be relevant due to overlap with its broader known distribution, mapping extent or regional context; but • No contemporary records, listings or mapped extents confirm presence within or immediately adjacent to the Project Area; and • There is evidence reducing the likelihood of presence or relevance, such as modification or degradation of attributes, fragmentation, loss of integrity, or limited representation within the Project Area.
Unlikely	• The MNES overlaps with the broader regional extent but the Project Area does not contain attributes essential to its presence or significance; or • The MNES may only have an incidental, indirect or non-essential association with the Project Area; and • No contemporary authoritative records, listings or mapped extents indicate presence within or adjacent to the Project Area.

3.3 Impact Assessment

The impact assessment approach is consistent with the guidelines detailed in the *Significant Impact Guidelines 1.1 – Matters of National Environmental Significance* (Department of the Environment, 2013). Specifically, it considers both direct and indirect effects, as well as on-site and off-site impacts. The guidelines set out the 'significant impact criteria' for each broad MNES category, e.g. listed threatened species and ecological communities. These significance criteria have been used to determine whether the project is likely to have a significant impact.

Based on the guidelines direct impacts are defined for having immediate onsite consequence, for example physical disturbance of the seabed from piling activities or potential changes to coastal processes (i.e. wave dynamics) as a result of revetment construction.

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Indirect impacts are third party impacts or consequential effects that results but are separated from it in space, time or causation and for instance are comprised of:

a. ‘Downstream Impacts’ may be related to turbidity impacts from capital dredging and reclamation works dispersing beyond the disturbance footprint effecting on the broader Whitsundays area.

b. ‘Upstream Impacts’ are the environmental consequences associated with extracting, producing or transporting the raw materials needed to carry out the action.

c. ‘Facilitated Impacts’ can be related to increase vessel traffic in Shute Harbour that can lead to introduction of marine pests, anchorage damage to benthic habitat and vessel strike to marine fauna.

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4 Matters of National Environmental Significance

The PMST search identified the following MNES as potentially occurring within the Project Area:

- Great Barrier Reef World Heritage Area (GBRWHA) and National Heritage Place (GBRNHP)
- Great Barrier Reef Marine Park (GBRMP)
- Two threatened ecological communities (TECs)
- 40 listed threatened species
- 45 listed migratory species

The relevance and occurrence of these matters to the proposed works is discussed below.

4.1 World Heritage Areas, National Heritage Place

Approximately 4,606 m² of the navigation access channel area and approximately 1,800 m² of the infrastructure area (reclamation/revetment and boat ramp), is located within the mapped boundaries of the GBRWHA and GBRNHP. Most of the Project is otherwise located adjacent to these boundaries (Figure 4.1).

The GBRWHA extends from the low water mark seaward to the outer boundary of the Great Barrier Reef Marine Park beyond the continental shelf and therefore includes the waters of Shute Harbour. Mapping of mean low water springs for the Project Area was undertaken and is considered to be generally consistent with the published GBRWHA and GBRNHP boundary mapping in Figure 4.1.

As the GBRWHA and GBRNHP cover the same areas and are listed for similar values, reflecting the natural heritage of the Great Barrier Reef region, findings of the assessment as part of this referral will apply to both. However, for consistency and clarity, the GBRWHA is considered to be the most relevant matter as all assessment findings related to it will also generally apply to the GBRNHP.

4.2 Great Barrier Reef Marine Park

Based on advice outlined in Section 2.3 the Project Area is understood to fall outside of, but adjacent to the GBRMP boundary.

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LEGEND

- Cadastral boundaries

Proposed Project Area

- Infrastructure Area
- Dredging Area (with 5 m buffer)
- GBRWHA and NHP

Title:

Great Barrier Reef World Heritage and National Heritage Place

Figure: 4.1

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4.3 Habitats

4.3.1 Marine Environment

Benthic habitats within the Project Area were mapped into five habitat classes comprising predominantly soft sediment substrates with low benthic cover (BMT 2026b) spatially illustrated in Figure 4.2. The extent of each habitat class within the Project Area is described in Table 4.1. The dominant habitat type consists of unconsolidated sand or rubble with very sparse macroalgae (<1% cover), accounting for approximately 2.33 ha. This habitat was most extensive across the northern and shoreward portions of the proposed Project Area including majority of the proposed reclamation, revetment wall and boat ramp.

Sparse and fragmented patches of 10% macroalgae and <5% of seagrass (Cy*modocea serrulata* and *Zostera muelleri* species*)* were recorded near moored vessels within the Project Area and further offshore. Within the Project Area with a limited area of higher benthic cover, comprising macroalgae and sponges at 5–30% cover, was identified in the southern portion of the Project Area.

Table 4.1 Benthic habitats area

Habitat description	Cover (%)	Total Area (ha)
Sand or rubble with very sparse macroalgae <1%; essentially unvegetated seafloor	<1%	2.33
Seagrass and macroalgae	~1%	2.16
Seagrass and macroalgae (10%) (southern and central parts of the Project Area)	<5%	2.15
Macroalgae and sponge	5–30%	0.22
Intertidal rocky seawall/hard structure features	-	0.054 ha

Complex coral reefs are absent from the Project Area. Four isolated coral colonies (*Porites cylindrica*, *Goniopora* spp. and *Goniastrea* spp.) were recorded as point observations within soft-sediment and intertidal habitats. These colonies are small, isolated and occur in areas exhibiting evidence of anthropogenic disturbance, including marine debris such as chains and tyres.

Representative photos of intertidal and subtidal habitat features are illustrated in Figure 4.3 and Figure 4.4.

Direct impacts on habitat areas associated with the Project are described in Section 5.1.

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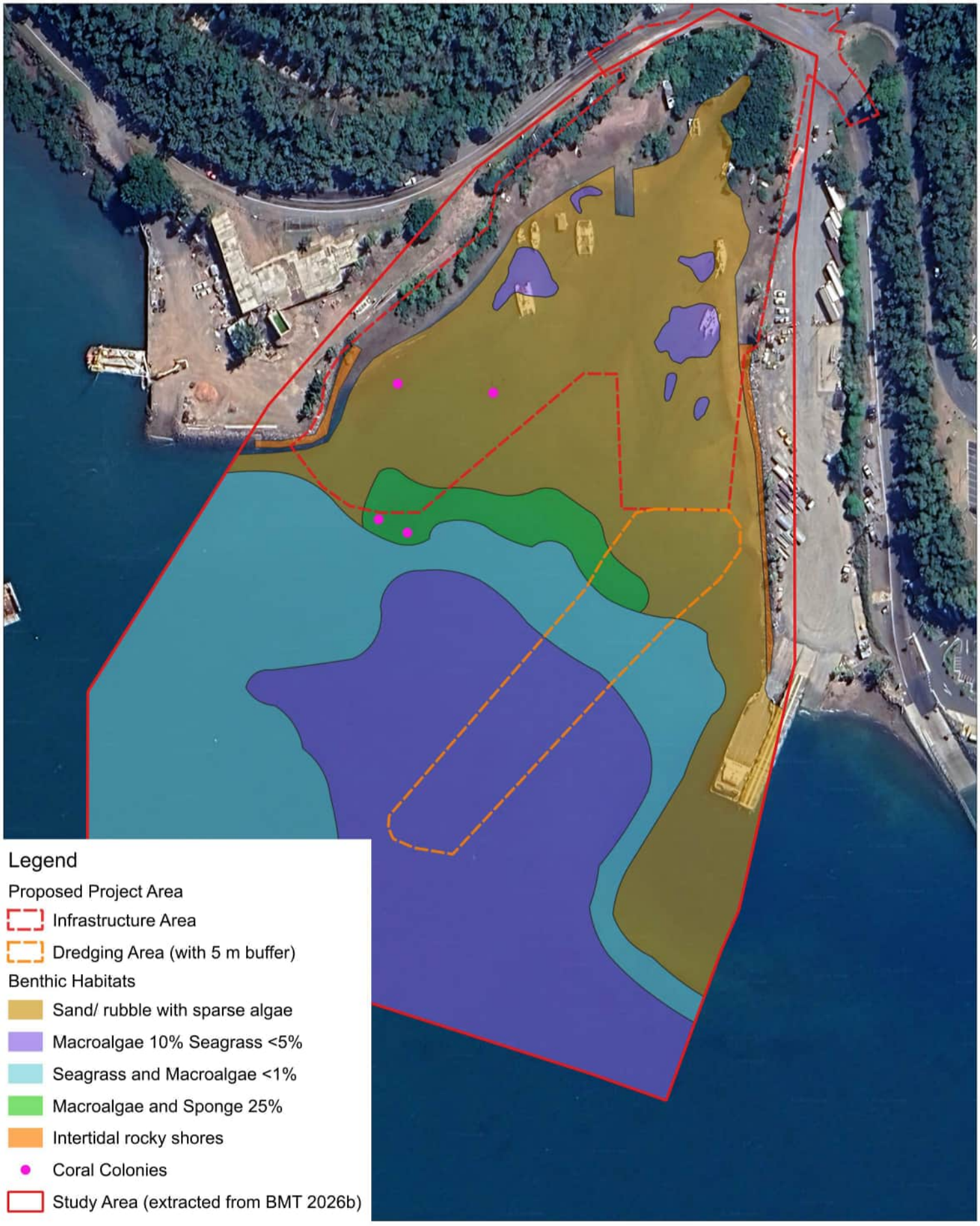

Title:

Benthic Habitats in Proposed Project Area

Figure: **4.2**

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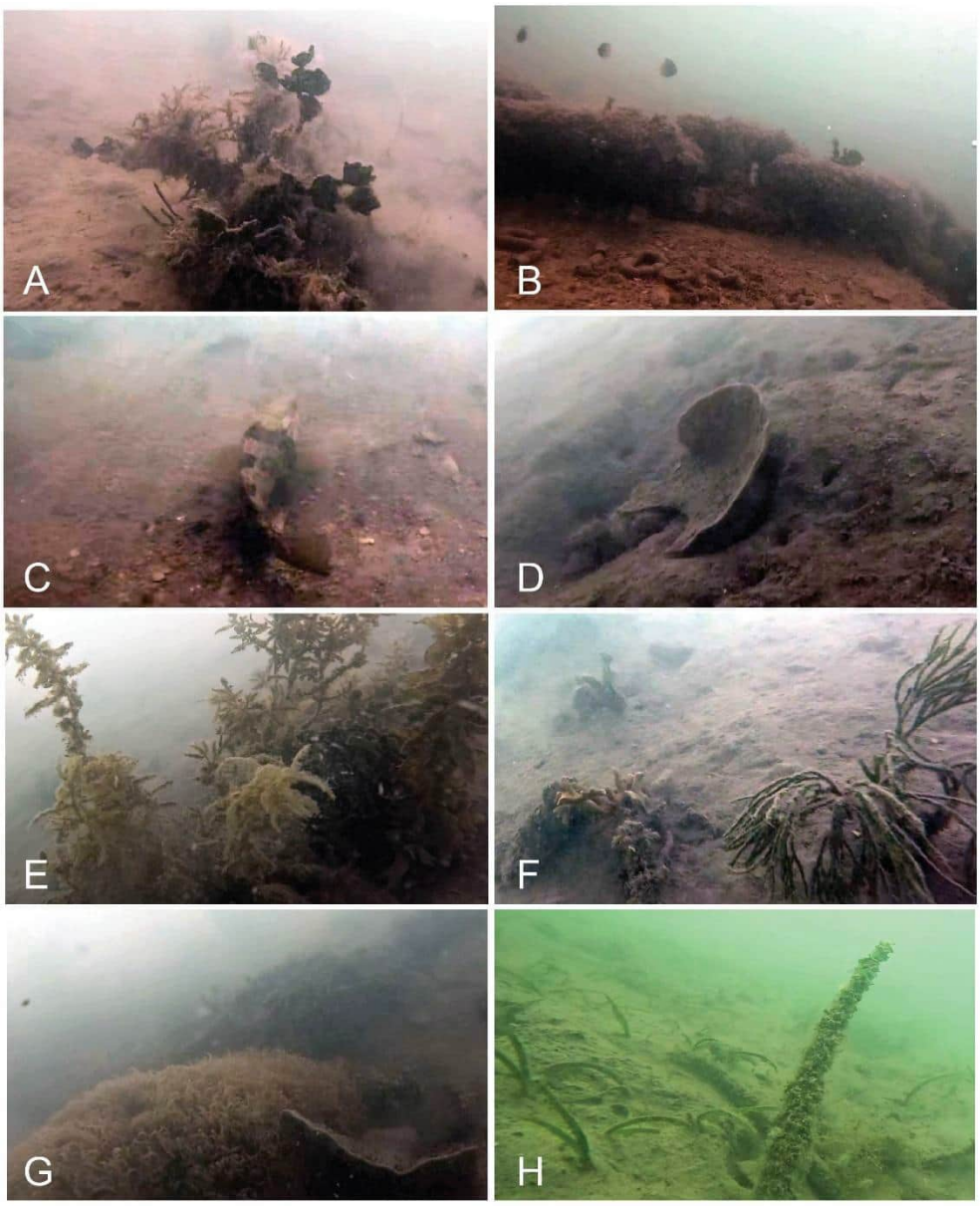

Figure 4.3 Photos of subtidal taxa (BMT, 2026a): *Halimeda opuntia* (A); large chain with damselfish (B); small cod, *Epinephelus coioides* (C); basket sponge, *Phyllospongia* sp. (D); *Sargassum* macroalgae (E); *Porites cylindrica* coral -left and *Halimeda cylindrica* - right (F); *Goniopora* coral - left, and *Phyllospongia* – right (G); seagrass, *Cymodocea serrulata* and mangrove propagules (H).

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Figure 4.4 Photos of intertidal taxa (BMT, 2026a): *Ceratodictyon spongiosum* the macroalgae symbiotic with sponge (A); hard coral *Goniastrea* sp. (B); *Sargassum* and *Halimeda* macroalgae (C); sponge (D); seagrass *Zostera muelleri* (E); and seagrass *Halophila ovalis* (F).

Benthic habitat mapping is generally consistent with findings from marine assessments conducted in the adjacent embayment for Shute Harbour Marina EIS, which similarly identified sparse and patchy distributions of seagrass and macroalgae in nearshore and offshore areas surrounding the Project Area (FRC Environmental 2008) (Figure 4.5 and Figure 4.5).

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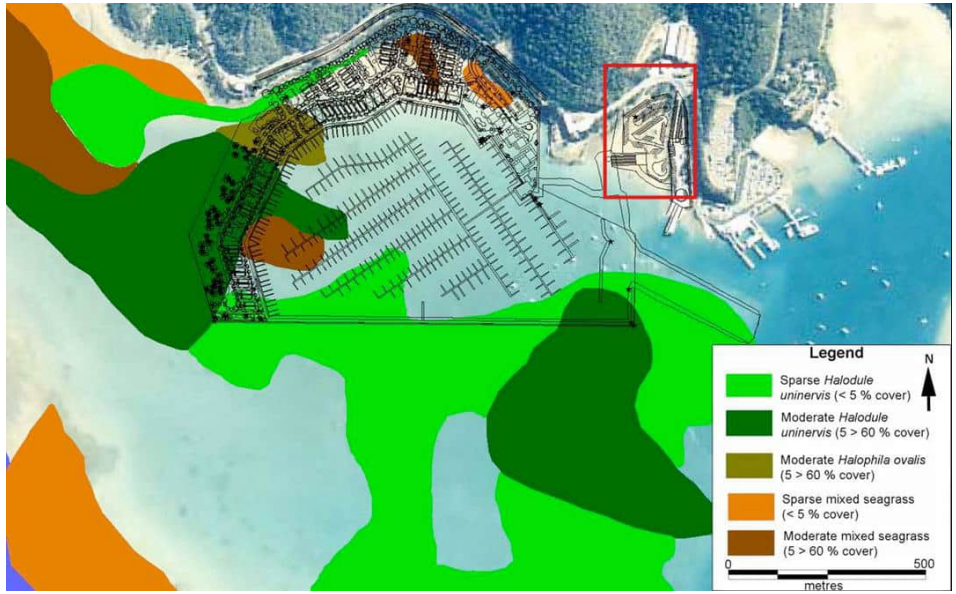

Figure 4.5 Seagrass communities of Shute Bay April 2007 (FRC Environmental 2008). Red box highlights the Project location.

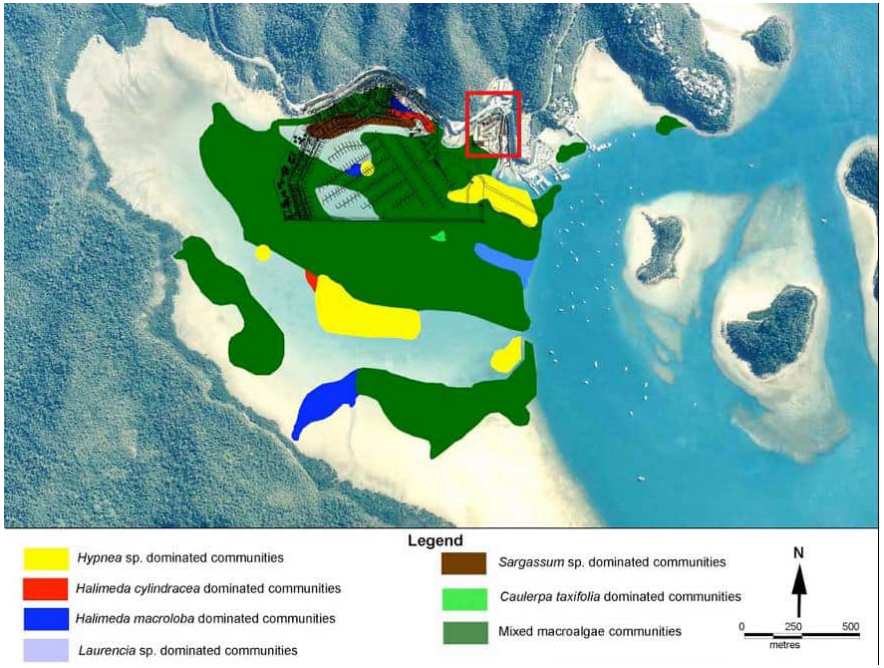

Figure 4.6 Macroalgae communities of Shute Bay April 2007 (FRC Environmental 2008). Red box highlights the Project location.

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4.3.2 Terrestrial Environment

The terrestrial and intertidal environments within the Project Area are highly modified as a result of historical clearing, reclamation, road construction and surrounding urban and industrial development. Consequently, the Project Area (Figure 4.8) is characterised by fragmented and disturbed coastal vegetation with relatively low ecological integrity compared to adjoining embayments surrounding Shute Bay, which support more extensive and contiguous mangrove communities (RE 8.1.1) (Figure 4.7).

Coastal habitats within the Project Area are spatially illustrated in Figure 4.9 and comprise a narrow and fragmented fringe of mangrove vegetation (approx. 20 m with a total area of 2,535 m^2) associated with sheltered drainage channels and embayment margins. Mangrove communities (RE 8.1.1) averaging 3-8 m in height with a canopy coverage ranging from 20-90% are dominated by *Rhizophora stylosa*, with occasional occurrences of *Avicennia marina*, *Rhizophora apiculata* and *Excoecaria agallocha*. These communities occur as isolated patches interspersed with unvegetated mudflat, gravel and granitic substrates. The mudflat habitats were generally sparsely vegetated and lacked saltmarsh communities, indicating limited habitat complexity and ecological function relative to less disturbed coastal environments.

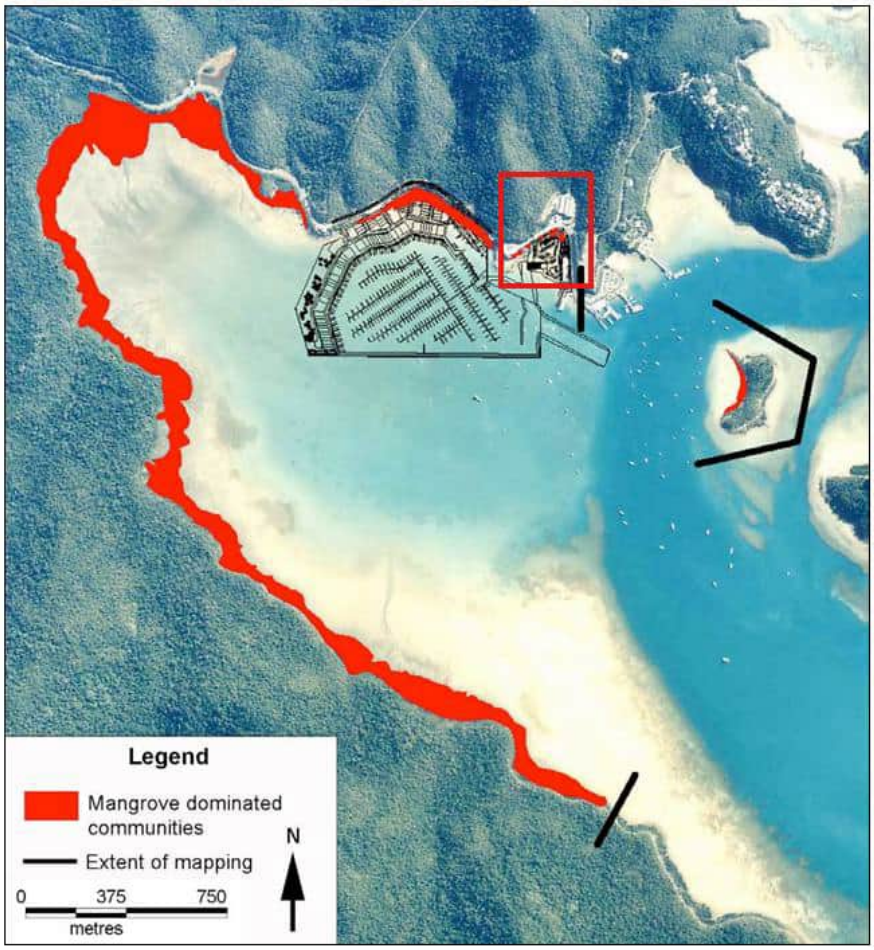

Figure 4.7 Distribution of mangroves in Shute Bay (FRC Environmental 2008). Red box highlights the Project location.

Landward areas adjacent to the intertidal zone are dominated by degraded roadside batters, access easements, fill embankments and rock revetments supporting highly disturbed coastal vegetation. Vegetation within these areas consists predominantly of exotic grasses, vines, ornamental plantings

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and invasive shrubs, with scattered native canopy species and small patches of coastal woodland and sea hibiscus (Hibiscus tiliaceus). Coconut palms (Cocos nucifera), which are non-native to the region, were widespread along the terrestrial–marine interface.

Figure 4.8 Mangroves at drainage channel (A); Rocky mudflats (B); Exotic dominated groundcover on high ground above mangroves (C); low open woodland with exotic dominated groundcover (D); *Cocos nucifera* plantings above mangroves (E); *Hibiscus tiliaceus* bordering mangroves (F).

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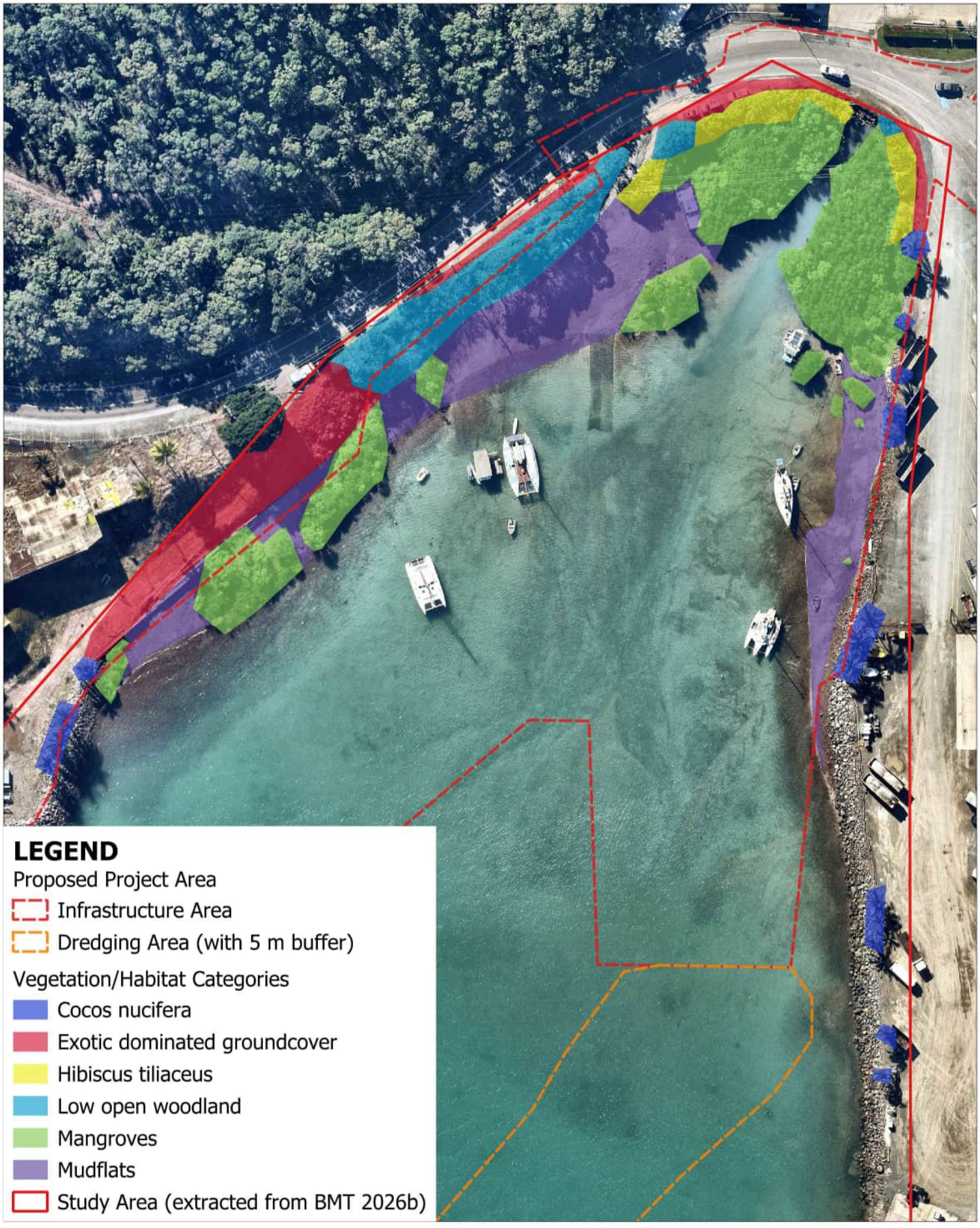

Title:

Terrestrial Vegetation in Proposed Project Area

Figure: **4.9**

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4.3.3 Threatened Ecological Communities

The PMST search identified the potential occurrence of the listed TECs Littoral Rainforest and Coastal Vine Thickets of Eastern Australia (Critically Endangered) and Broad leaf tea-tree (*Melaleuca viridiflora*) woodlands in high rainfall coastal north Queensland (Endangered) within the Project Area.

Field results and review of mapped regional ecosystems confirmed that neither TEC occurs within the Project Area or immediately adjacent. The Project Area does not contain the vegetation structure, floristic composition or habitat characteristics required to support these TECs.

4.4 Listed Threatened and Migratory Species

Table 4.2, provides a likelihood of occurrence assessment of MNES within the Project Area. Given the Project Area has been subject to historical disturbance, both coastal and marine habitats within the Project Area are fragmented and generally provide sub optimal habitat conditions for most threatened species.

Surrounding habitats, including the more intact vegetation communities associated with Conway National Park, extensive mangrove communities within the western and southern areas of Shute Bay, and mixed coral reef communities surrounding Tancred and Shute Islands, are likely to provide higher-quality habitat connectivity and ecological values for threatened species.

Migratory bird species may occasionally overfly the Project Area; however, the site is unlikely to provide important habitat or support regular utilisation due to the highly disturbed nature of the environment and the limited availability of suitable foraging or roosting habitat.

The marine environment within Shute Harbour is similarly disturbed and fragmented, with the Project Area located adjacent to an existing ferry terminal and within an active commercial and recreational boating corridor. Marine megafauna species, including dolphins and green turtles, may occur transiently within the broader area; however, the Project Area is not considered to provide important or core habitat due to the limited extent and fragmented nature of marine habitats, including only ephemeral and sparse seagrass patches. Whale species are also considered unlikely to occur within the Project Area given the shallow nearshore environment and distance from recognised migratory pathways.

Nevertheless, the species most likely to occur within the Project Area are occasionally migratory bird species such as the White-throated needletail, may fly over the site, but it is unlikely to use the area, as a result of habitat degradation and poor habitat connectivity as result of road infrastructure and suitable habitat available nearby at the Conway National Park.

It should be noted that the Project Area is adjacent to the ferry terminal and is already heavily trafficked waterway used by both commercial and recreational vessels. Some marine megafauna species such as dolphins and green turtles may be transient visitors, however unlikely to inhabit the area due to its low-quality environmental values. In addition, ephemeral patches of seagrass are found within the Project Area. This maritime habitat fragmentation deters regular presence or occupation of the area by turtles or surrounds which otherwise use abundant seagrass ecosystems for foraging habitat. Whale species are also not considered likely due to the distance of the site from migratory paths and shallow waters.

Land surrounding the Project Area is predominantly industrial, with limited regrowth vegetation.

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Table 4.2 Likelihood of occurrence of MNES within the Project Area

Scientific Name	Common Name	EPBC Status	Likelihood of Occurrence
Birds			
Anous stolidus	Common noddy	MMB	The common noddy is a pelagic species, usually occurring offshore. During the breeding season usually nest on islands in vegetation or rocky islets, precipitous cliffs, or shoals of coral or sand. **Unlikely to occur** – habitat in the Project Area is not considered optimal for MNES value and distribution of value is not expected to overlap with Project Area.
Apus pacificus	Fork-tailed swift	MMB	This species is almost exclusively aerial, most frequently occur over the inland plains, however there are also present over coastal cliffs and beaches as well as urban areas. They generally occur over dry open habitat such as riparian woodland and tea-tree swamps, low scrub, heathland or saltmarsh. **Could possibly occur**, but primary habitat not present – the Project Area is within the known distribution of the MNES value, but high quality habitat features not known to occur (i.e. transient visitation by a small number of individuals possible).
Ardenna carneipes	Flesh-footed shearwater	MMB	The flesh-footed shearwater is a pelagic species, usually occurring offshore in subtropics, over continental shelves and occasionally inshore waters. **Unlikely to occur** – habitat in the Project Area is not considered optimal for MNES value and distribution of value is not expected to overlap with Project Area.
Calidris acuminata	Sharp-tailed sandpiper	V, MW	This species prefers muddy, shallow fresh or brackish wetlands with inundated low vegetation such as sedge, grass or saltmarsh. They also use intertidal mudflats in sheltered bays and mangrove lined creeks. Due to the lack of observations, high level of human disturbance and limited size and of the mudflat habitat in the Project Area it is not expected to constitute a significant habitat area for the species. **Unlikely to occur** – habitat in the Project Area is not considered optimal for MNES value and distribution of value is not expected to overlap with Project Area.

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Scientific Name	Common Name	EPBC Status	Likelihood of Occurrence
Calidris canutus	Red knot	V, MW	Mainly inhabit intertidal mudflats, sandflats and sandy beaches of sheltered coasts. Forage near the waters edge on intertidal sand or mudflats and roost on sandy beaches, sand spits or mudflats. **Could possibly occur**, but primary habitat not present – the Project Area is within the known distribution of the MNES value, but high quality habitat features not known to occur (i.e. transient visitation by a small number of individuals possible).
Calidris ferruginea	Curlew sandpiper	CR, MW	This species mainly occur on intertidal mudflats in sheltered coastal areas. Forage on mudflats and nearby shallow water and roost on bare dry shingle, shell or sand beaches, sandspits and islets. There is a single record in 2022 of a curlew sandpiper within a 500 m buffer of the Project Area. Due to the lack of observations, high level of human disturbance and limited size and of the mudflat habitat in the Project Area it is not expected to constitute a significant feeding area for the species. **Could possibly occur**, however the Project Area is unlikely to represent an important feeding/foraging habitat for the species. The area may support occasional or transient feeding by a small number of individuals but is not expected to function as a primary foraging area.
Charadrius leschenaultii	Greater sand plover	V, MW	Almost entirely coastal, inhabiting littoral and estuarine habitats. Usually occur where there are sheltered sandy, shelly or muddy beaches with large intertidal sandflats or mudflats. They forage in the wet sand or mud of intertidal flats and roost on the banks of beaches or tidal lagoons. **Could possibly occur**, however the Project Area is unlikely to represent an important feeding/foraging habitat for the species. The area may support occasional or transient feeding by a small number of individuals but is not expected to function as a primary foraging area.
Erythrotriorchis radiatus	Red goshawk	E	The red goshawk occurs in tropical to warm-temperate coastal and sub-costal wooded and forested lands, including eucalypt woodland, open forest, tall open

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Scientific Name	Common Name	EPBC Status	Likelihood of Occurrence
			forest, gallery rainforest, swamp sclerophyll forest, and rainforest margins, near permanent water. **Unlikely to occur** – suitable habitat for the MNES value is not present within the Project Area and the Project Area is not expected to support the habitat features required by the species.
Falco hypoleucos	Grey falcon	V	The grey falcon occurs in semi-arid to arid areas, especially timbered lowland plains, Acacia shrublands that are crossed by tree-lines water course. **Unlikely to occur** – suitable habitat for the MNES value is not present within the Project Area and the Project Area is not expected to support the habitat features required by the species.
Fregata ariel	Lesser frigatebird	MMB	The species is mostly pelagic, breeding on remote tropical to sub-tropical islands. Unlikely to be found within the Project Area but may over fly the area. **Unlikely to occur** – habitat in the Project Area is not considered optimal for MNES value and distribution of value is not expected to overlap with Project Area.
Fregata minor	Great frigatebird	MMB	The species is mostly pelagic, breeding on remote tropical to sub-tropical islands. Unlikely to be found within the Project Area but may over fly the area. **Unlikely to occur** – habitat in the Project Area is not considered optimal for MNES value and distribution of value is not expected to overlap with Project Area.
Fregetta grallaria grallaria	White-bellied storm-petrel (Tasman Sea), white-bellied storm-petrel (Australasian)	V	The White-bellied storm petrel occurs across tropical and sub-tropical waters. Breeding occurs on offshore islets and rocks. In the non-breeding season, it forages over near-shore waters of mainland Australia. **Could possibly occur**, but primary habitat not present – the Project Area is within the known distribution of the MNES value, but high quality habitat features not known to occur (i.e. transient visitation by a small number of individuals possible).
Gallinago hardwickii	Latham's snipe	V, MW	This species inhabits open, freshwater wetlands with low, dense vegetation. Can also occur in habitats saline or brackish water (such as saltmarsh, mangroves, tidal rivers), in modified or artificial habitats.

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Scientific Name	Common Name	EPBC Status	Likelihood of Occurrence
			Could possibly occur, however habitat within the Project Area is limited and does not represent primary habitat for the species. While the Project Area is within the known distribution of the MNES value, higher quality habitat features are likely to occur within adjacent embayments and coastal wetlands. The Project Area may support occasional or transient feeding/foraging by a small number of individuals but is unlikely to function as an important foraging habitat.
Geophaps scripta scripta	Squatter Pigeon (southern)	V	Generally inhabit open forest to sparce open woodland and scrub within 3 km of water, where the dominant overstorey vegetation is Eucalyptus, Corymbia, Acacia or Callitris species. **Unlikely to occur** – suitable habitat for the MNES value is not present within the Project Area and the Project Area is not expected to support the habitat features required by the species.
Hirundapus caudacutus	White-throated needletail	V, MT	Mainly aerial from 1m to >1000m above the ground. Although they occur over most habitat, they are recorded most often over wooded areas including open forest and rainforest. **Could possibly occur**, but primary habitat not present – the Project Area is within the known distribution of the MNES value, but high quality habitat features not known to occur (i.e. transient visitation by a small number of individuals possible).
Limosa lapponica baueri	Nunivak bar-tailed godwit	E	Forage near waters edge or in shallow water of harbours and estuaries. Generally, roost on intertidal sandflats, spits and banks, and less frequently in mudflats, estuaries, coastal lagoons and bays, often near seagrass or saltmarsh. **Could possibly occur**, however habitat within the Project Area is limited and does not represent primary habitat for the species. While the Project Area is within the known distribution of the MNES value, higher quality habitat features are likely to occur within adjacent embayment's and coastal wetlands. The Project Area may support occasional or transient feeding/foraging by a small number of individuals but is unlikely to function as an important habitat.

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Scientific Name	Common Name	EPBC Status	Likelihood of Occurrence
Macronectes giganteus	Southern giant-petrel	E	Pelagic species, usually occurring offshore, nests in small colonies amongst open vegetation on Antarctic and subantarctic islands. Unlikely to be found within the Project Area but may over fly the area. **Unlikely to occur** – suitable habitat for the MNES value is not present within the Project Area and the Project Area is not expected to support the habitat features required by the species.
Neochmia ruficauda ruficauda	Star Finch (eastern), Star Finch (southern)	E	Mainly found in grasslands and grassy woodlands close to freshwater. Also occur in cleared and suburban areas. **Unlikely to occur** – suitable habitat for the MNES value is not present within the Project Area and the Project Area is not expected to support the habitat features required by the species.
Numenius madagascariensis	Eastern curlew	CR, MW	The eastern curlew is a migratory species that does not breed in Australia. Forages in sheltered intertidal sandflats and mudflats. Roosts on sandy spits and islets, especially on dry beach sand near the high-water mark, and among coastal vegetation including low saltmarsh or mangroves. **Could possibly occur**, however habitat within the Project Area is limited and does not represent primary habitat for the species. While the Project Area is within the known distribution of the MNES value, higher quality habitat features are likely to occur within adjacent embayment's and coastal wetlands. The Project Area may support occasional or transient feeding/foraging by a small number of individuals but is unlikely to function as an important habitat.
Numenius phaeopus	Whimbrel	MMB	The whimbrel requires intertidal mudflats for feeding such as along estuaries and lagoons, and sometimes sandy beaches or among rocks. They roost in mangroves or other structures during high tide, though they have been observed to roost on muddy, sandy or rocky ground as well. **Could possibly occur**, however habitat within the Project Area is limited and does not represent primary habitat for the species. While the Project Area is within the known distribution of the MNES value, higher quality habitat features are likely to occur within adjacent embayment's and coastal wetlands. The Project

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Scientific Name	Common Name	EPBC Status	Likelihood of Occurrence
			Area may support occasional or transient feeding/foraging by a small number of individuals but is unlikely to function as an important habitat.
Pandon haliaetus	Osprey	MMB	Occupies coastal environments, particularly the mouths of large rivers, lagoons and lakes, and typically feeds over open water and nest in dead trees close to the sea. The species may utilise waters within or adjacent to the Project Area for opportunistic feeding however no suitable breeding habitat present. **Could possibly occur**, however habitat within the Project Area is limited and does not represent primary habitat for the species. While the Project Area is within the known distribution of the MNES value, higher quality habitat features are likely to occur within adjacent embayment's and coastal wetlands. The Project Area may support occasional or transient feeding/foraging by a small number of individuals but is unlikely to function as an important habitat
Phaethon lepturus	White- tailed tropicbird	MMB	Pelagic species, usually occurring offshore, breeding on oceanic islands. Unlikely to be found within the Project Area but may over fly the area. **Unlikely to occur** – suitable habitat for the MNES value is not present within the Project Area and the Project Area is not expected to support the habitat features required by the species.
Phaethon rubricauda	Red-tailed tropicbird	MMB	Pelagic species, usually occurring offshore, breeding on oceanic islands. Unlikely to be found within the Project Area but may over fly the area. **Unlikely to occur** – suitable habitat for the MNES value is not present within the Project Area and the Project Area is not expected to support the habitat features required by the species.
Poephila cincta cincta	Southern Black-throated finch	E	Occurs mainly in grassy open woodlands and forests with Eucalyptus, Corymbia and Melaleuca dominated communities, often along water courses or in proximity to water. **Unlikely to occur**– suitable habitat for the MNES value is not present within the Project Area and the Project Area is not expected to support the habitat features required by the species

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Scientific Name	Common Name	EPBC Status	Likelihood of Occurrence
Pterodroma neglecta neglecta	Kermadec petrel (western)	V	Pelagic species, usually occurring offshore. Unlikely to be found within the Project Area but may over fly the area. **Unlikely to occur**– suitable habitat for the MNES value is not present within the Project Area and the Project Area is not expected to support the habitat features required by the species.
Rostratula australis	Australian painted snipe	E	Inhabits shallow terrestrial freshwater to brackish wetlands, including temporary and permanent lakes, swamps and claypans. They also utilise inundated or waterlogged grassland or saltmarsh, dams, rice crops, sewage farms and bore drains. They prefer areas of bare wet mud with canopy cover. **Unlikely to occur**– suitable habitat for the MNES value is not present within the Project Area and the Project Area is not expected to support the habitat features required by the species.
Sternula albifrons	Little tern	V, MMB	The little tern inhabits coastal areas including lakes, lagoons, estuaries, river mouths and deltas, bays, harbours and inlets, particularly if there are exposed sandbanks or on exposed ocean beaches. They nest in the sand and forage in the shallow waters. They are less often seen at sea and usually are within 50 m of the shore. **Could possibly occur**, however habitat within the Project Area is limited and does not represent primary habitat for the species. While the Project Area is within the known distribution of the MNES value, higher quality habitat features are likely to occur within adjacent embayment's and coastal wetlands.
Tyto novaehollandiae kimberli	Masked owl (northern)	V	Usually recorded in riparian forests, rainforest, open forest, Melaleuca swamps and the edges of mangroves. Requires large trees with hollows for nesting, which are absent from the Project Area. **Unlikely to occur**– suitable habitat for the MNES value is not present within the Project Area and the Project Area is not expected to support the habitat features required by the species.

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Scientific Name	Common Name	EPBC Status	Likelihood of Occurrence
Mammals			
Balaenoptera edeni	Bryde's whale	MM	Occur in tropical to temperate oceanic and inshore waters where there is prey availability. No specific feeding or breeding areas have been identified. Habitats in the Project Area are dominated by shallow open water and estuarine wetlands (saltmarsh, mangroves, intertidal mudflats), not suitable for this species. **Unlikely to occur**– suitable habitat for the MNES value is not present within the Project Area and the Project Area is not expected to support the habitat features required by the species.
Balaenoptera musculus	Blue whale	E	Primarily open ocean dwellers, but there are significant aggregations in certain shallow water areas usually for feeding, none of which occur in the Project Area. Habitats in the Project Area are dominated by shallow open water and estuarine wetlands (saltmarsh, mangroves, intertidal mudflats), not suitable for this species. **Unlikely to occur**– suitable habitat for the MNES value is not present within the Project Area and the Project Area is not expected to support the habitat features required by the species.
Balaenoptera omurai	Omura's whale	MM	Occurs in tropical to warm temperate waters. Their habitat requirements and preferences are not well known; however they have primarily been observed in shallow continental shelf waters, at a mean depth of 31 m. Habitats in the Project Area are dominated by shallow open water and estuarine wetlands (saltmarsh, mangroves, intertidal mudflats), not suitable for this species. **Unlikely to occur**– suitable habitat for the MNES value is not present within the Project Area and the Project Area is not expected to support the habitat features required by the species.
Dasyurus hallucatus	Northern quoll	E	Can occupy a diverse range of habitats including rocky areas, eucalypt forest and woodlands, rainforests, sandy lowlands and beaches, shrubland and grasslands. They require some form of rocky area for denning and utilise tree hollows and rocky cervices for shelter.

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Scientific Name	Common Name	EPBC Status	Likelihood of Occurrence
			Unlikely to occur– suitable habitat for the MNES value is not present within the Project Area and the Project Area is not expected to support the habitat features required by the species.
Dugong dugon	Dugong	MM	Require seagrass meadows for feeding. Occur in shallow waters with seagrass available. There is a single record in 2018 of a dugong within a 500 m buffer of the Project Area (Natural Solutions 2008) but not within the Project Area itself. Benthic habitat within the Project Area is dominated by unconsolidated sand and rubble substrates with very low benthic cover, with only sparse and fragmented patches of seagrass (<5% cover of Cymodocea serrulata and Zostera muelleri) recorded. Accordingly, the Project Area is considered to provide limited feeding habitat for dugongs, with more suitable foraging habitat likely to occur further offshore or within adjacent embayment's. **Could possibly occur**, however habitat within the Project Area is limited and does not represent primary habitat for the species. While the Project Area is within the known distribution of the MNES value, higher quality habitat features are likely to occur within adjacent embayment's and coastal wetlands.
Macroderma gigas	Ghost bat	V	Can be found in a range of habitats including rainforest and vine scrub to open woodlands and arid areas. They roost in caves, rock crevices and old mines. **Unlikely to occur**– suitable habitat for the MNES value is not present within the Project Area and the Project Area is not expected to support the habitat features required by the species.
Megaptera novaeangliae	Humpback whale	MM	The Great Barrier Reef region is recognised as a Biologically Important Area for humpback whale breeding and migration. While the species is likely to occur within the broader Whitsunday region (Natural Solutions 2008) humpback whales are unlikely to occur Shute Bay due to shallow waters. It is possible they could pass outside the adjacent islands of Repair and Tancred (Natural Solutions, 2008). Habitats within the Project Area are dominated by shallow open waters and estuarine habitats, including saltmarsh, mangroves and intertidal mudflats,

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Scientific Name	Common Name	EPBC Status	Likelihood of Occurrence
			which are not considered suitable habitat for the species. Accordingly, humpback whales are unlikely to occur within the Project Area itself. **Unlikely to occur**– suitable habitat for the MNES value is not present within the Project Area and the Project Area is not expected to support the habitat features required by the species.
Orcaella heinsohni	Australian snubfin dolphin	V, MM	The Australian snubfin dolphin occurs in shallow, sheltered coastal and estuarine waters across northern Australia, typically in waters less than 15 m deep and within close proximity to river mouths and the coastline. Small subpopulations are known from the Gladstone region, including the Fitzroy River, Port Alma and Keppel Bay, although there are limited records within the Whitsunday region and none within the immediate vicinity of the Project Area. Habitats within the Project Area are dominated by shallow open waters with sparse seagrass and estuarine habitats, which is generally considered preferred habitat for the species. **Could possibly occur**, however habitat within the Project Area is limited and does not represent primary habitat for the species. While the Project Area is within the known distribution of the MNES value, higher quality habitat features are likely to occur within adjacent embayment's and coastal wetlands. The species may occur within the Project Area on an occasional or transient basis.
Orcinus orca	Killer whale, orca	MM	Occur in both warm and cold, deep and shallow marine waters. In Australia they are often seen on the continental shelf near seal colonies. **Unlikely to occur**– suitable habitat for the MNES value is not present within the Project Area and the Project Area is not expected to support the habitat features required by the species.
Petauroides volans	Greater glider (southern and central)	E	They occur in eucalypt forests and taller woodlands habitats. These species are arboreal and rarely are spotted in fragmented ecosystems. **Unlikely to occur**– suitable habitat for the MNES value is not present within the Project Area and the Project Area is not expected to support the habitat features required by the species.

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Scientific Name	Common Name	EPBC Status	Likelihood of Occurrence
Petrogale persephone	Proserpine rock-wallaby	E	Lives in the rainforest at sites with large boulders, crevices, tunnels and overhang. There is no suitable habitat within the Project Area, however habitat adjacent to the Project Area is suitable and could occur as a vagrant. **Unlikely to occur**– suitable habitat for the MNES value is not present within the Project Area and the Project Area is not expected to support the habitat features required by the species.
Phascolarctos cinereus (combined populations of Qld, NSW and the ACT)	Koala (combined populations of Queensland, New South Wales and the Australian Capital Territory)	E	Inhabit eucalypt woodlands and forests. Arboreal species, spending the majority of their time in trees. There were a small patch of eucalypts within the Project Area that koalas could utilise in transit however they were too limited to be utilised as core habitat and there are much larger patches of habitat adjacent. **Unlikely to occur**– suitable habitat for the MNES value is not present within the Project Area and the Project Area is not expected to support the habitat features required by the species.
Sousa sahulensis	Australian humpback dolphin	MM	Usually occurs in shallow coastal and estuarine waters, in Queensland typically within 10 km of the coast. Small subpopulations are known from the Townsville region, including the Cleveland and Halifax Bays, the Capricorn coast, Gladstone area, Great Sandy Strait and Moreton Bay. No records within the immediate vicinity of the Project Area. Habitats within the Project Area are dominated by shallow open waters with sparse seagrass and estuarine habitats, which is generally considered preferred habitat for the species. **Could possibly occur**, however habitat within the Project Area is limited and does not represent primary habitat for the species. While the Project Area is within the known distribution of the MNES value, higher quality habitat features are likely to occur within adjacent embayment's and coastal wetlands. The species may occur within the Project Area on an occasional or transient basis.
Taphozous australis	Coastal sheath tail bat		Occurs along a narrow coastal zone, preferring to roost in sea caves and rocky clefts, but also known to roost in disused mines, boulder piles, rock fissures, bunkers and occasionally within buildings. They forage above the canopy in

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Scientific Name	Common Name	EPBC Status	Likelihood of Occurrence
			habitats such as melaleuca swamps, open eucalypt forest, coastal dunes and heathlands, monsoon forests and mangroves. **Unlikely to occur**– suitable habitat for the MNES value is not present within the Project Area and the Project Area is not expected to support the habitat features required by the species.
Xeromys myoides	Water mouse	V	Intertidal and supratidal areas, brackish to freshwater wetlands and floodplains. Water mouse records occur locally at Cannonvale, approximately 10 km west of the Project Area. Mangrove communities and adjacent intertidal mudflats within the Project Area may provide marginal foraging and occasional nesting habitat, with mudflats potentially supporting prey resources. **Could possibly occur**, however habitat within the Project Area is limited and does not represent primary habitat for the species. While the Project Area is within the known distribution of the MNES value, higher quality habitat features are likely to occur within adjacent embayment's and coastal wetlands
Reptiles			
Caretta caretta	Loggerhead turtle	E, M	Occur in waters with hard or soft substrates, including rocky or coral reefs, muddy bays, sandflats, estuaries and seagrass meadows. Adults feed primarily on benthic invertebrates foraging in habitat from nearshore up to 55 m from shore. **Could possibly occur,** however habitat within the Project Area is limited and does not represent primary habitat for the species. While the Project Area is within the known distribution of the MNES value, higher quality habitat features are likely to occur within adjacent embayment's. The species may occur within the Project Area on an occasional or transient basis.
Chelonia mydas	Green turtle	V, MM	Subtropical and tropical waters, usually occupy shallow waters. Bays, rocky or coral reefs and seagrass meadows. The Project Area lacks substantial reef or seagrass habitat. There is a single record in 2020 of a green turtle within a 500 m buffer of the Project Area but not within the Project Area itself. Green turtles could transit through the Project Area but it would not constitute core habitat due to the low cover of seagrass.

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Scientific Name	Common Name	EPBC Status	Likelihood of Occurrence
			Could possibly occur, however habitat within the Project Area is limited and does not represent primary habitat for the species. While the Project Area is within the known distribution of the MNES value, higher quality habitat features are likely to occur within adjacent embayment's. The species may occur within the Project Area on an occasional or transient basis.
Crocodylus porosus	Salt-water Crocodile, Estuarine Crocodile	MM	Inhabit estuaries, and coastal marine waters. Crocodiles in Queensland occur between Gladstone and Cape York Peninsula with the closest crocodile population to Shute Harbour is the Proserpine River approximately 40 km to the south-west (Natural Solutions2008). **Could possibly occur,** however habitat within the Project Area is limited and does not represent primary habitat for the species. While the Project Area is within the known distribution of the MNES value, this may be on a transient basis.
Dermochelys coriacea	Leatherback turtle	E, MM	The leatherback turtle is primarily a pelagic species that forage in temperature waters and utilising tropicasl/subtropical environments for breeding. Scattered nesting has been reported along the south Queensland coast from Bundaberg to Round Hill Head. The species could utilise the Project Area in transit but would not constitute core habitat. **Could possibly occur**, however habitat within the Project Area is limited and does not represent primary habitat for the species. While the Project Area is within the known distribution of the MNES value, this may be on a transient basis.
Egernia rugosa	Yakka skink	V	Requires areas of stable soils, termite mounds, hollow logs, and ground-layer cover for shelter and colony formation. **Unlikely to occur**– suitable habitat for the MNES value is not present within the Project Area and the Project Area is not expected to support the habitat features required by the species.
Eretmochelys imbricata	Hawksbill turtle	V, MM	Typically occurs in tidal and sub-tidal rocky and coral reefs in tropical to temperate waters. Along the Great Barrier Reef, hawksbill turtles' nest in low numbers from just north of Princess Charlotte Bay to Torres Strait. Nearby reefs and intertidal

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Scientific Name	Common Name	EPBC Status	Likelihood of Occurrence
			habitats surrounding the Project Area may provide suitable foraging and resting habitat for the species. **Could possibly occur**, however habitat within the Project Area is limited and does not represent primary habitat for the species. While the Project Area is within the known distribution of the MNES value, this may be on a transient basis.
Lepidochelys olivacea	Olive Ridley turtle	E, MM	Juveniles occur on surface waters of open ocean, while adults occur in shallow soft-bottomed habitats in shallow protected waters. There are no known breeding/nesting sites within the Great Barrier Reef Marine Park. **Could possibly occur**, however habitat within the Project Area is limited and does not represent primary habitat for the species. While the Project Area is within the known distribution of the MNES value, this may be on a transient basis.
Natator depressus	Flatback turtle	V, MM	Unlike other sea turtles they do not have a wide dispersal phase as juveniles. Inhabit soft bottomed habitat over the continental shelf. Likely feed in inshore shallow turbid waters. **Could possibly occur**, however habitat within the Project Area is limited and does not represent primary habitat for the species. While the Project Area is within the known distribution of the MNES value, this may be on a transient basis.
Sharks and Rays			
Anoxypristis cuspidata	Narrow sawfish, knifetooth sawfish	MM	Narrow sawfish is a bentho-pelagic species, occupying habitats including shallow open water and estuarine wetlands, with sandy or muddy substrates. Can utilise saline, brackish and freshwater. No records of either species in the Project Area. **Could possibly occur**, the Project Area is within the known distribution of the MNES value, but high-quality habitat features not known to occur (i.e. transient visitation by a small number of individuals possible).
Carcharhinus longimanus	Oceanic whitetip shark	MM	This species occurs in deep oceanic water, only occasionally coming close to shore.

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Scientific Name	Common Name	EPBC Status	Likelihood of Occurrence
			Unlikely to occur– suitable habitat for the MNES value is not present within the Project Area and the Project Area is not expected to support the habitat features required by the species.
Carcharias taurus	Grey nurse shark	MM	Primarily occurs in subtropical to cool temperate waters from shallow bays to the edge of the continental shelf. They have not been recorded in far north Queensland waters. **Unlikely to occur**– suitable habitat for the MNES value is not present within the Project Area and the Project Area is not expected to support the habitat features required by the species.
Carcharodon carcharias	Great white shark	V, MM	Inhabit temperate and subtropical waters. Commonly inhabit continental and insular shelf waters, often close inshore, but also occur in the open ocean. **Unlikely to occur**– suitable habitat for the MNES value is not present within the Project Area and the Project Area is not expected to support the habitat features required by the species.
Lamna nasus	Porbeagle, mackerel shark	MM	Inhabit cold to temperate inshore to offshore waters and occasionally open ocean. **Unlikely to occur**– suitable habitat for the MNES value is not present within the Project Area and the Project Area is not expected to support the habitat features required by the species.
Mobula alfredi as Manta alfredi	Reef manta ray, coastal manta ray	MM	Commonly utilise rock and coral reefs. They frequent shallow water including coastal areas, bays and lagoons close to land masses and islands. **Could possibly occur**, the Project Area is within the known distribution of the MNES value, but high-quality habitat features not known to occur (i.e. transient visitation by a small number of individuals possible).
Mobula birostris as Manta birostris	Giant manta ray	MM	Commonly utilise rock and coral reefs. They frequent shallow water including coastal areas, muddy bays and near river mouths, though they are sometimes found in deep waters.

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Scientific Name	Common Name	EPBC Status	Likelihood of Occurrence
			Unlikely to occur– suitable habitat for the MNES value is not present within the Project Area and the Project Area is not expected to support the habitat features required by the species.
Pristis zijsron	Green sawfish, dindagubba, narrowsnout sawfish	V, MM	Habitat includes inshore marine waters, estuaries, and sandy or muddy beaches. No records of either species in the Project Area. **Could possibly occur**, the Project Area is within the known distribution of the MNES value, but high-quality habitat features not known to occur (i.e. transient visitation by a small number of individuals possible).
Sphyrna lewini	Scalloped hammerhead	CD	Utilise coastal, estuarine and offshore pelagic waters of Queensland, with juveniles occupying shallow nursery habitats in bays and estuaries. No records of either species in the Project Area. **Could possibly occur,** the Project Area is within the known distribution of the MNES value, but high-quality habitat features not known to occur (i.e. transient visitation by a small number of individuals possible).
Rhincodon typus	Whale shark	V, MM	Pelagic species which inhabits offshore deep waters from tropical to warm temperate oceans but can also be found in inshore waters. **Unlikely to occur**– suitable habitat for the MNES value is not present within the Project Area and the Project Area is not expected to support the habitat features required by the species.
Plants			
Brachychiton compactus	-		Occur on steep lower slopes near sea level. The species is a component of semi-evergreen notophyll-microphyll vine thickets or low vine forests **Unlikely to occur**– suitable habitat for the MNES value is not present within the Project Area and the Project Area is not expected to support the habitat features required by the species.
Lastreopsis tenera	Broad shield fern		Occurs in terrestrial rainforest, wet sclerophyll forest and open forests over a wide altitudinal range.

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Scientific Name	Common Name	EPBC Status	Likelihood of Occurrence
			Unlikely to occur– suitable habitat for the MNES value is not present within the Project Area and the Project Area is not expected to support the habitat features required by the species.
-	Square tassel fern	V	Typically occurs in upland notophyll vine forest, where it grows as an epiphyte on rainforest trees. **Unlikely to occur**– suitable habitat for the MNES value is not present within the Project Area and the Project Area is not expected to support the habitat features required by the species.

Status Key: CR = Critically Endangered, E = Endangered, V = Vulnerable, NT = Near Threatened, CD = Conservation Dependant, SL = Special Least Concern, MM = Migratory Marine, MMB = Migratory Marine Bird, Migratory Terrestrial = MT, Migratory Wetlands = MW.

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4.5 Key Fauna Values

4.5.1 Marine Turtles

Six marine turtles' species are known to occur throughout the Whitsunday region and may periodically occur within marine waters in and adjacent to the Project Area. These species include the green turtle, loggerhead turtle, flatback turtle, olive ridley turtle, hawksbill turtle and leatherback turtle. These species utilise nearshore and offshore marine environments at different stages of their life cycles, including foraging, resting and movement between feeding and breeding areas.

Marine turtles typically forage within benthic habitats such as seagrass meadows, soft-sediment substrates and reef-associated environments. Green turtles primarily consume seagrass, while loggerhead, flatback and olive ridley turtles are predominantly carnivorous, foraging on benthic invertebrates within shallow coastal and continental shelf habitats. Flatback turtles are known to utilise turbid, shallow inshore waters over soft substrates.

As described in Section 4.3.1, benthic habitats within the Project Area are dominated by unconsolidated sand and rubble with very sparse benthic cover. Seagrass and macroalgae occur only as fragmented patches at low densities (generally 1–5% combined cover), with no complex reef habitats or extensive seagrass meadows present within or immediately adjacent to the Project Area. While these habitat types may be traversed by marine turtles moving through Shute Harbour, they do not provide the extent, density or structural complexity typically associated with important foraging areas for any marine turtle species.

The Project Area does not contain beaches or coastal landforms suitable for marine turtle nesting. Shorelines in the Project Area are highly modified and comprise rock revetments, mudflats and disturbed coastal vegetation associated with existing infrastructure. No nests, tracks or other evidence of marine turtle nesting activity were observed during field surveys. Mapping associated with the *Recovery Plan for Marine Turtles in Australia* (Commonwealth of Australia, 2017) confirms that no habitat critical to the survival of marine turtles, inter-nesting habitat occur within or near the Project Area. The nearest mapped critical habitat and significant nesting beaches are located well outside the Whitsunday region (Figure 4.10).

Accordingly, marine turtles, if present, are expected to utilise the Project Area only incidentally or in transit, as the Project Area does not support breeding, nesting, inter-nesting or important foraging habitat for marine turtles.

Marine turtles are subject to a range of natural and anthropogenic threats as described under the *Recovery Plan for Marine Turtles in Australia* including loss and degradation of important habitats such as seagrass beds and coral reefs, artificial light pollution, noise and interference from vessels and coastal development.

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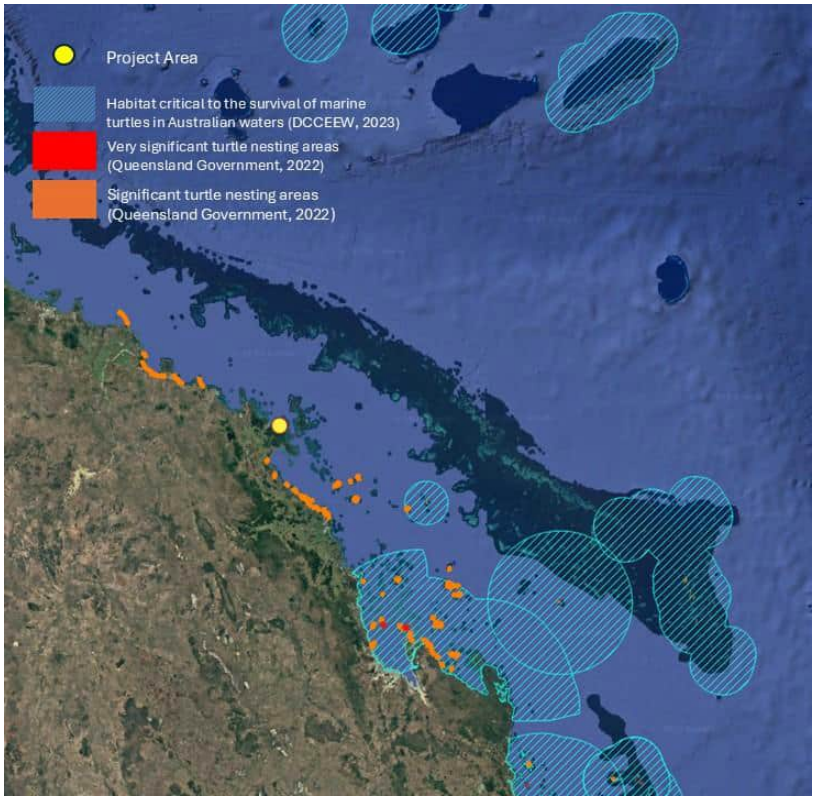

Figure 4.10 Critical Habitat and Significant Nesting Beaches for Marine Turtles (Source: DCCEEW 2023; Qld Government 2022)

4.5.2 Dugong

The dugong is listed as a migratory marine species under the EPBC Act and occurs in tropical and subtropical coastal waters of Queensland, including the broader Whitsunday region. Dugongs are highly dependent on shallow, sheltered coastal environments that support extensive and persistent seagrass meadows, which are required to meet their foraging needs.

Seagrass communities occur within the Project Area only as small, fragmented patches at very low densities, typically less than 1% cover, with limited localised areas supporting up to 5% cover. While seagrass species preferred by dugongs (*Cymodocea serrulate* and *Zostera muelleri;* Tol et al. 2016) are present, the extent, continuity and cover of seagrass within and adjacent to the Project Area are insufficient to provide a regionally significant feeding resource for dugongs

A review of available records identified a single dugong observation within the wider vicinity of Shute Harbour; however, no records occur within the Project Area itself.

The extent and continuity of seagrass within the Project Area are insufficient to function as a foraging area for dugongs; accordingly, any dugongs present would be expected to occur only transiently.

Seagrass availability is a key influence on dugong populations, and loss of seagrass habitat has been linked to dugong strandings at a regional scale. Additionally, vessel strike remains a recognised threat in nearshore waters with high boating activity.

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4.5.3 Whales and Dolphins

A range of cetacean species listed under the EPBC Act may occur within the broader Whitsunday region. Large migratory whales, including the humpback whale are considered unlikely to occur within the shallow and sheltered waters of Shute Harbour. Dolphin species, including the Indo-Pacific humpback dolphin and Australian snubfin dolphin may utilise shallow and protected coastal environments and could occur within Shute Harbour area on a transient basis.

Accordingly, whales and dolphins, if present, are expected to occur within or adjacent to the Project Area only incidentally or in transit. Whales and dolphins are recognised as being vulnerable to underwater noise, vessel strike and disturbance associated with vessel traffic, particularly within nearshore and coastal environments. Dolphins may be sensitive to repeated disturbance in shallow waters where recreational vessel movement is concentrated.

4.5.4 Migratory Shorebirds

Several wader species are possibly to occur in the estuarine wetlands of the Project Area. Waders share similar habitat including intertidal mudflats, sandflats and sandy beaches of sheltered coasts, in estuaries, bays, inlets, lagoons and harbours. The marine component of the project site is not known as an important site for these wader birds however it does provide potential habitat that could be used for feeding purposes.

With the exception of bar-tailed godwit and one observation in 2022 of the curlew sandpiper 1 1 km east of the Project Area, there are no records for migratory shorebirds within the Project Area. Based on the species records for the region and habitat assessments within and adjacent to the Project Area, all intertidal and estuarine wetland habitat within the Project Area provide potential marginal habitat for sharp-tailed sandpiper, red knot, curlew sandpiper, greater sand plover, lathmans snipe, bar-tailed godwit and eastern curlew.

Under the EPBC Act, the concept of ‘important habitat’ is used to identify sites that are necessary for the ongoing survival of migratory species. Following the EPBC Act criteria for identifying important habitat for migratory shorebirds (excluding Latham’s snipe), it is considered that the Project Area does not support important habitat on the basis that:

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- The Project Area is not identified as an internationally important shorebird site (e.g. Ramsar wetland);
- The limited extent of potential shorebird habitat within the Project Area is unlikely to support at least 0.1% of the flyway population of any listed species, at least 2,000 migratory shorebirds, or at least 15 migratory shorebird species; and
- There are no records of Latham's snipe within the Project Area or its immediate surrounds, and the limited extent of suitable habitat is unlikely to support at least 18 individuals of this species.

Human disturbance can cause shorebirds to interrupt their feeding and may influence the area of otherwise suitable feeding habitat that is used.

4.5.5 Sharks and Rays

Sawfish species the green sawfish and narrow sawfish share similar habitat preferences, utilising inshore marine waters, estuaries, river mouths and shallow coastal environments with sandy and muddy substrates. There are no records of these species within the Project Area, however it can provide marginal habitat for these species. Key threats to sawfish include incidental capture in fishing gear and habitat modification associated with coastal development, particularly disturbance to inshore soft-sediment habitats.

Other shark and ray species listed under the EPBC Act, are typically associated with offshore or oceanic waters and are considered unlikely to occur within the shallow and sheltered waters of Shute Harbour with the exception of the reef manta ray that frequent shallow near shore water. While this aligns with the Project Area location, reef manta rays prefer rock and coral reefs which are absent from the Project Area.

Accordingly, sharks and rays, if present, are expected to occur within or adjacent to the Project Area only incidentally or in transit.

4.5.6 Terrestrial Species

The Project is located in a highly disturbed environment with fragmented woodlands lacking canopy connectivity. It does not provide suitable habitat for arboreal mammals (e.g. gliders and koalas), hollow dependent fauna (e.g. masked owl) and species like bats that require rocky refuges.

The Project Area also lacks suitable habitat attributes for northern quoll, Proserpine rock-wallaby and yakka skink, with simplified ground structure, limited refuges, artificial lighting, traffic exposure and industrial disturbance further reducing habitat suitability and movement potential.

The structural simplicity and fragmented nature of vegetation within the Project Area also limit its suitability for large raptors such as the red goshawk and grey falcon, which require extensive tracts of intact woodland or forest for foraging and nesting. Similarly, granivorous finches (e.g. star finch and southern black-throated finch) and squatter pigeon (southern), which depend on open woodland and native grasslands with a diverse and reliable ground layer, are unlikely to utilise the Project Area due to the absence of these habitat features.

Highly mobile aerial species such as the white-throated needletail may occasionally pass over the Project Area; however, no roosting, nesting or foraging habitat of value is present, and the area does not constitute important habitat under the EPBC Act. The Australian painted snipe is also unlikely to occur due to the absence of suitable freshwater or densely vegetated wetland habitats, while the Project Area provides only marginal habitat for little tern, with high levels of disturbance further reducing its suitability.

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Although the Project Area lies adjacent to larger tracts of intact remnant woodland, ecological connectivity is significantly constrained by Proserpine–Shute Harbour Road and surrounding industrial development. Consequently, the Project Area provides only limited supplementary habitat and has low functional connectivity for MNES listed terrestrial fauna.

Water Mouse

The water mouse has been recorded locally at Cannonvale, approximately 10 km west of the Project Area; however, no individuals, tracks, scats, middens or nesting structures were observed during field surveys. Mangrove communities and associated intertidal mudflats within the Project Area may provide limited, marginal foraging habitat, with potential prey including small crustaceans and molluscs. Elevated supralittoral features such as consolidated sediment banks or fallen timber may offer occasional opportunities for burrow placement above the high-tide mark.

Despite this, the mangrove habitat within the Project Area is narrow, fragmented and subject to a high level of disturbance. Limited structural complexity, reduced prey availability and ongoing anthropogenic disturbance mean that the mangroves and intertidal zones within the Project Area are unlikely to represent functionally important habitat for this species. Accordingly, water mouse, if present, would be expected to occur only incidentally or opportunistically, with the Project Area not supporting important habitat under the EPBC Act.

Flora

PMST searches indicated the square tassel-fern could potentially occur within the Project Area and surrounds. This species is typically associated with upland notophyll vine forest, where it grows as an epiphyte on mature rainforest trees.

No individuals of the square tassel-fern were recorded during field surveys, and the species is considered unlikely to occur within the Project Area due to the absence of suitable rainforest habitat and host vegetation. The Project Area is highly disturbed and modified and does not contain the structural or floristic characteristics required to support threatened flora species.

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5 Potential Impacts and Mitigation

This section outlines the potential impacts of the proposed Project on MNES, including a summary of the impact assessment, proposed mitigation measures, and residual impacts following implementation of those mitigation measures.

5.1 Direct Impacts

5.1.1 Marine and Terrestrial Habitats Disturbance

Reclamation works and onshore civil works associated with the road connection will result in the permanent loss of approximately 2,535 m^2(0.2535 ha) of mangroves, 981 m^2 (0.0981 ha) of sparse seagrass and macroalgae (1–5%) and ~361 m^2 (0.0361 ha) of macroalgae and sponge (5-30%) within the Project Area. Portions of the existing intertidal revetment on the eastern side of the Project Area will be removed and integrated into the new revetment structure.

The dredging footprint has been defined based on the access requirements for trailerable recreational vessels and comprises an area incorporating a +5 m offset, totalling approximately 5,739 m² (0.57 ha). This footprint represents the minimum area required to establish safe navigational access to the boat ramp.

Accordingly, there is potential for localised disturbance to seagrass/macroalgae and soft sediment habitats within the navigational corridor, including up to approximately 293 m² (0.029 ha) of macroalgae and sponge habitat (5–30% cover) and 3,937 m² (0.394 ha) of sparse seagrass and macroalgae habitat (1–5% cover).

Up to three small, isolated coral colonies occurring within soft sediment and intertidal environments will be permanently removed as a result of reclamation and revetment works. These colonies are isolated, non-reef forming, and occur within areas that show clear evidence of ongoing anthropogenic disturbance. No coral reef habitat or complex reef assemblages occur within the Project Area.

As described in Section 4.3, mangrove, intertidal and benthic habitats within the Project Area are highly fragmented, disturbed and of low structural complexity. These habitats are influenced by multiple existing stressors, including regular maritime traffic, proximity to the ferry terminal and boat ramp, adjacent road infrastructure and stormwater discharges. While these environments may be used opportunistically by some fauna, they do not constitute important habitat for threatened species.

In particular, the affected habitats do not provide important nesting, breeding, nursery or high-quality foraging habitat for threatened or migratory species discussed in Section 4.5. Species known or predicted to occur within the broader Shute Harbour area utilise the Project Area only incidentally or in transit, with extensive areas of higher-quality habitat available elsewhere in the region. The loss of habitat in this area, therefore, does not represent a loss of habitat otherwise critical or important to any threatened or migratory species due to its low value and the availability of other habitat in the local area.

Based on disturbance calculations and the nature of habitats affected, capital dredging and reclamation activities will result in the removal of small, already degraded areas of seagrass and intertidal habitat that are sparse, patchy and subject to ongoing disturbance under existing conditions. As a result, potential impacts will be minor in scale and will not introduce intrusive elements with substantial or lasting effects on the values of the GBRWHA, GBRNP or adjacent GBRMP.

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5.2 Indirect Impacts

5.2.1 Water Quality Impacts

The Project has the potential to result in short-term and localised changes to water quality, primarily associated with sediment disturbance during reclamation works, piling for the boat ramp and capital dredging for the revetment construction and navigational access. The potential for a reduction in water quality is associated with:

- Turbidity and suspended sediment plumes generated during dredging and piling
- Disturbance and handling of material potentially affected by PASS
- Release of seawater during dewatering of dredged material retained within the Project Area
- Surface contamination from accidental spills of hydrocarbons or chemicals during construction

Sand required for reclamation and surcharging will likely be sourced from an existing quarry or sand stockpile. However, as this material is anticipated to be clean/uncontaminated, it is not considered a source of water quality impacts for the Project.

Each of these potential impact sources is discussed in further detail below.

Dredging for Revetment Construction and Navigational Access

Capital dredging associated with revetment construction and navigational access will disturb surficial marine sediments. Geophysical investigations (MES, 2026) indicate that surficial sediments within the Project Area are predominantly soft, fine-grained clays and silts, which are likely to generate turbidity plumes when disturbed. These marine sediments extend to depths of approximately 8-10 m below seabed, underlain by progressively stiffer interbedded sediments before transitioning into residual material and weathered rock. Analytical testing indicates that dredged sediments are uncontaminated and suitable for land-based placement, with the exception of PASS material, which would be required to be first managed in accordance with relevant guidelines and a site-specific Acid Sulfate Soil Management Plan (ASSMP).

Capital dredging within the Project Area will be undertaken using a backhoe dredge or CSD. While final equipment selection will occur at later stages, both dredging methods are appropriate for the low-energy, sheltered conditions of the Project Area. A well-operated CSD typically generates relatively small turbid plumes, with disturbed material largely hydraulically removed from the water column via the suction system. Where backhoe dredge techniques are employed, the short dredging duration, enclosed material transfer and proximity to placement areas are expected to further limit the potential for secondary sediment plumes.

Dredged material will be managed through one of two pathways, depending on its suitability for reuse:

- Material suitable for reuse will be retained within the Project Area in a self-contained on-site containment cell (e.g. geobags/bunds) as part of reclamation works.
- Material not suitable for reuse will be stockpiled, treated as required and transported to a licensed disposal facility.

Where geobag containment systems are used, they will facilitate controlled placement and dewatering, allowing suspended sediments to settle within the containment system prior to any release of water. This will minimise the potential for secondary sediment mobilisation. No dredged material will be disposed offshore.

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To ensure that any turbid plume generated by dredging from the reclamation and runoff from dewatering areas does not cause significant adverse effects, a silt curtain will be installed either to provide local containment or across the Project Area embayment. This will provide sufficient containment of any potential plumes to encourage sediments to fall out of suspension rather than being mobilised into the surrounding environment.

Where PASS material is encountered, it will be treated in accordance with the ASSMP prior to dewatering, discharge or transport. This will ensure that acidic runoff or poor-quality discharge water does not adversely affect surrounding land or marine environments.

All construction activities will be undertaken in accordance with a Construction Environmental Management Plan (CEMP), with dredging activities managed through a dedicated Dredge Management Plan (DMP). To manage dredging impacts to water quality, the CEMP will include the following management measures:

- Undertake water quality monitoring during dredging works, with contingency measures implemented if trigger levels are exceeded (e.g. change in dredging production rates and timing)
- Collect and transfer sediments from capital dredging to treat runoff prior to discharge
- Confined dredging footprints and controlled dredging methodologies appropriate for the low-energy conditions of the harbour; and
- Visual monitoring of sediment plumes to confirm plume extent remains localised.
- Implementation of vessel controls, including fuel and chemical storage, handling and refuelling procedures to prevent spills and leaks
- Train personnel in implementing spill prevention response mitigation measures

Pump Out and Discharge from Reclamation and Material Placement

Once reclamation activities are complete, residual seawater retained within reclamation or containment areas will require controlled removal prior to finalisation of the reclaimed footprint. Unlike active dredging, this phase does not involve continued sediment disturbance but presents a separate water quality pathway associated with the potential discharge of retained, sediment-affected water.

Pump-out and discharge activities will be managed through water quality-based controls, including:

- Allowing sufficient residence time for sediment settlement prior to discharge
- Undertake water quality monitoring including the application of trigger values and response measures to confirm discharge water meets appropriate water quality criteria
- Treatment of any material affected by PASS in accordance with the ASSMP prior to dewatering or release.

Discharge will only occur once water quality parameters are confirmed to be acceptable, ensuring no adverse effect on surrounding marine waters.

To manage this pathway, reclamation areas may incorporate internal containment zones or cells that function as temporary sediment basins, allowing suspended particles to settle prior to any pump-out. Where geobag or similar containment systems are used, dewatering will occur in a controlled manner to promote internal settling and prevent resuspension of fine sediments.

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Piling for Boat Ramp and Associated Structures
Piling works associated with construction of the boat ramp will result in localised sediment disturbance at pile installation locations. Where piling occurs within intertidal or shallow subtidal sediments, disturbance will be confined to the immediate pile footprint and is expected to be short-term.

Sediment disturbance from piling will be managed through standard construction controls, including appropriate work sequencing and, where required, localised sediment containment measures to minimise the dispersion of suspended sediments beyond the immediate work area.

Provided water quality is effectively managed during dredging, reclamation and material handling activities, the Project is not expected to result in lasting degradation of marine habitats or introduce intrusive elements with substantial or long-term effects on the values of the GBRWHA, GBRNP or adjacent GBRMP.

5.2.2 Noise Impacts on Terrestrial Fauna

Proposed land side civil works and marine works, including capital dredging, piling for the boat ramp and placement of fill for the revetment wall have a potential to cause noise and vibration disturbance on fauna species.

Shute Harbour is already subject to frequent disturbance from commercial and recreational users and any terrestrial fauna found within the area will be tolerant of noise and human movements to some extent. Additionally, based on field surveys, the terrestrial environment within the Project Area is unlikely to support key roosting and nesting activities for fauna and does not provide high value foraging habitat. As such, the likelihood of noise impacts to terrestrial fauna from the proposed works is Project is low. The following mitigation measures will be implemented (where applicable) to minimise any potential noise disturbance on terrestrial fauna in adjacent environments:

- All dredging operations will be managed under the CEMP, with appropriate noise monitoring to ensure compliance with relevant environmental thresholds.
- High-risk activities such as piling will be restricted to daylight hours. Other lower risk works including dredging, may occur at night, subject to appropriate noise monitoring and management to ensure that disruption during nocturnal roosting and foraging periods is minimised. Dredging is not currently proposed to occur outside of daylight hours, however may be undertaken at night to make best use of the tides, subject to environmental management measures.
- All machinery and equipment will be operated and maintained in accordance with manufacturer specifications to minimise noise emissions.
- Opportunistic or transient fauna will be further protected through best-practice noise minimisation protocols applied during all construction activities.

Given the temporary nature of construction, the industrial nature and limited ecological value of the site, and the mitigation measures outlined above, the residual impact is not considered significant, and the risk to MNES is low.

5.2.3 Noise Impacts on Marine Fauna

Proposed marine works, including capital dredging and piling will have a potential to cause noise and vibration disturbance on fauna species. Underwater noise has the potential to cause behavioural disturbance to marine fauna, particularly species that utilise sound for communication, navigation or foraging.

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Dredging activities generate low-frequency, continuous underwater sound, primarily from excavation equipment, pumps and vessel movements. Published literature indicates that dredging-related underwater noise is unlikely to result in direct injury or mortality to marine fauna, with potential effects generally limited to temporary behavioural responses, such as short-range avoidance of the immediate works area (Suedel *et al.*, 2019; McQueen *et al.*, 2020).

Piling activities can generate higher-intensity, impulsive underwater noise, which may elicit startle responses or temporary avoidance behaviour in marine fauna. However, piling for the Project will be undertaken using installation methods appropriate for the low-energy, sheltered conditions in the Project Area, with disturbance confined to the localised pile installation zone. Piling activities will be short-duration and intermittent, further limiting the potential for extended exposure.

As described in Section 4.5, cetaceans (including dolphins and whales), dugongs and marine turtles are unlikely to occupy the Project Area for extended periods and, if present, are expected to occur only incidentally or in transit. Large migratory whales are considered unlikely to occur within the shallow, sheltered waters of Shute Harbour, while dolphins, dugongs and marine turtles may traverse the area opportunistically but do not rely on the Project Area as important foraging, breeding, nesting or nursery habitat. In this context, any avoidance or displacement resulting from underwater noise would be temporary and of negligible ecological consequence, with extensive alternative habitat available elsewhere in the region.

Although the likelihood of significant noise-related impacts is low given the transient use of the Project Area by MNES species, a suite of conservative and precautionary mitigation measures will be implemented to further minimise potential disturbance. These measures will include:

- Piling activities will be restricted to daylight hours to maximise visibility for marine fauna observers. While dredging is typically more efficient when conducted continuously, any night-time dredging will be subject to appropriate monitoring measures to ensure adequate protection of marine fauna
- A soft-start (gradual ramp-up) procedure will be applied for at least 10 minutes prior to full-power operations
- A trained and qualified marine fauna observer will conduct a 30-minute pre-start visual monitoring period prior to works commencing
- Where practicable, scheduling of piling and dredging activities to avoid peak periods of sensitive fauna presence based on regional knowledge
- Continuous visual monitoring will be conducted during piling and dredging operations
- If marine megafauna are sighted, establish a marine fauna exclusion zone of approximately 300 m. The exclusion zones will be monitored by trained observers. Activities will be paused if marine fauna enter the exclusion zone.
- Ensure construction works is also conducted in accordance with controls for addressing noise impacts on terrestrial fauna listed in Section 5.2.2

These mitigation measures are consistent with the *Underwater Piling and Dredging Noise Guidelines* (DIT 2023) and reflect standard best-practice approaches adopted for marine construction projects in Australia. All underwater noise controls will be formalised within the Project's CEMP through a dedicated Marine Fauna Observation and Response Procedure.

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Given the short duration of works, the localised propagation of underwater noise within a sheltered environment, and the absence of habitat critical to the survival of MNES species within the Project Area, underwater noise impacts are expected to be minor, localised and reversible, and will not result in long-term behavioural changes, population-level effects, or lasting impacts on the values of the GBRWHA, GBRNP or adjacent GBRMP.

5.2.4 Accidental Spills and Marine Debris

Construction Activities
In the absence of appropriate management, dredging and construction works associated with the Project could lead to increased pollutant loads derived from the construction plant and equipment. This may include, for example, discharges of fuel and lubricants from the plant whilst at the Project Area or during transit. Litter entering the marine environment can entangle marine megafauna, birds and fish, resulting in injuries and possible drownings.

Given the temporary nature of construction works, it is unlikely after management measures such as standard housekeeping and clean up measures will need to be incorporated in the CEMP.

Barge Movement
If sand surcharging requires barge movements to and from a source location, there is a potential risk of accidental material loss or release of associated pollutant loads during vessel loading, transit or unloading. Such risks are not unique to the Project and would occur within the context of existing commercial and recreational vessel traffic in the broader Whitsunday region.

While the likelihood of accidental spills or debris generation is low, appropriate mitigation and management measures will be implemented to minimise the risk of material loss, fuel or hydraulic spills, and the introduction of marine debris during barge operations.

Barge movements associated with sand transport will be managed in the CEMP and could include:

- Use of well-maintained barges with secure containment to prevent loss of material during loading, transport and unloading
- Inspection of barges prior to transit to ensure materials are properly secured
- Implementation of standard fuel, refuelling and spill management procedures, with spill response equipment available
- Avoidance of barge movements during unsuitable weather or sea conditions, where practicable
- Immediate clean-up and reporting of any accidental spills or debris in accordance with the CEMP

5.2.5 Lighting Impacts

The Project Area is located within a highly modified harbour environment that is already subject to elevated levels of artificial lighting from existing maritime facilities, road networks and vessel movement. The Project will involve temporary construction lighting, plant lighting (including flashing beacons) and emergency lighting during construction activities.

Artificial lighting is recognised as a potential impact pathway for marine turtles primarily during nesting and hatchling emergence on sandy beaches, where artificial light may disrupt orientation cues. However, the Project Area does not contain suitable nesting habitat. Additionally, artificial lighting does not represent a key impact pathway for marine turtle foraging behaviour, which is primarily determined by habitat availability and seagrass extent (Witherington & Martin 2000).

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As the Project Area supports only sparse, fragmented seagrass and lacks extensive or persistent foraging habitat, marine turtles are not expected to utilise the area for feeding and, if present, would occur only transiently. Dolphins similarly rely on prey availability and acoustic cues rather than visual light cues and are expected to traverse the Project Area only incidentally. Accordingly, lighting associated with the Project is unlikely to result in adverse effects.

Potential lighting impacts will be managed in accordance with the principles of the *National Light Pollution Guidelines for Wildlife* (DCCEEW, 2020), including minimising unnecessary lighting, limiting light spill beyond the immediate work area, applying directional and temporary lighting where practicable and avoiding unnecessary lighting during periods of inactivity.

5.2.6 Air Impacts

Construction activities associated with the Project will generate temporary and localised air emissions, primarily from exhaust emissions from construction plant, generators and support vehicles, and minor dust generation. These emissions will be short-term and confined to the construction period.

Terrestrial fauna occurring in the vicinity of the Project Area are limited to species already adapted to a highly modified harbour environment that is subject to existing background emissions from vehicles, vessels and maritime infrastructure. Any incremental change in air quality during construction would be minor relative to existing conditions and would not persist beyond the construction phase.

Air quality impacts will be managed through standard best-practice measures implemented under the CEMP including maintenance of construction plant, minimisation of unnecessary idling, and suppression of dust generation where required. These measures will ensure that emissions are minimised and remain within acceptable limits.

5.2.7 Vessel Interaction with Marine Fauna

Marine fauna that occur within the upper water column, including marine turtles, dolphins and whales, have the potential to interact with vessels and marine construction plant associated with the Project. Potential interaction pathways are discussed separately below for construction activities within the Project Area and for potential barge movements associated with sand transport.

Construction Activities

Marine construction plant associated with capital dredging and piling has the potential to interact with marine fauna through vessel strike or, in limited circumstances, entrainment. Where a CSD is used, dredge plant would comprise a slow-moving or largely stationary vessel. Where a backhoe dredge is used, excavation is expected to occur predominantly from shore or a fixed platform. The low operating speeds and stationary nature of these plant types provide marine fauna with ample opportunity to detect and avoid construction equipment, thereby reducing the likelihood of direct interaction or vessel strike.

Support vessels associated with dredging and construction activities (if required) may pose a relatively higher potential risk of interaction due to higher manoeuvrability and speed. However, such vessels will represent a small proportion of total vessel movements within and adjacent to the Project Area when considered alongside regular recreational and commercial vessel traffic already occurring in the area. The risk of vessel strike will be further reduced through the application of speed restrictions and operational controls for construction support vessels.

Entrainment of marine fauna is considered unlikely for both proposed dredging methodologies given the localised nature of CSD suction close to the seabed and the absence of suction-based excavation where a backhoe dredge is used.

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As the Project Area does not support important habitat for marine turtles, dolphins or whales, these species are expected to occur only transiently, reducing the likelihood of prolonged exposure or repeated interaction with dredging plant and resulting in a low overall risk. Appropriate mitigation and management measures for vessel strike and entrainment will be implemented within the CEMP.

Barge Movement
If sand surcharging requires barge movements to and from a source location, there is a potential risk of interaction between barges and marine fauna during transit, particularly through vessel strike. Barges used for material transport are typically slow-moving and operate along defined navigation routes, which reduces the likelihood of sudden or unpredictable interaction with marine megafauna.

Potential risks associated with barge movements will be managed through the CEMP, with controls aligned with the *National Strategy for Reducing Vessel Strike on Cetaceans and other Marine Megafauna* (DCCEEW, 2023). These measures may include speed management, vessel operator awareness, and avoidance of barge movements during periods of poor visibility or unsuitable conditions where practicable.

5.2.8 Introduced Pests

Construction works including dredging, vessel movement and fill importation will further modify the existing environmental conditions and potentially introduce and/or spread biosecurity matters into the area. Introduction and spread of biosecurity flora and fauna have the potential to impact the habitats of local species and conservation significant species within the broader Shute Harbour and Whitsunday region.

The overall risk of introduced pest establishment associated with the Project is considered low. Construction vessels, equipment and plant will be sourced from within Queensland or elsewhere in Australia, where existing biosecurity controls apply. No international vessels, equipment or imported fill materials are anticipated.

To minimise the risk of introducing or spreading marine or terrestrial pests during construction activities, the following mitigation measures will be implemented through the CEMP:

- Contractors will remain informed of marine and terrestrial pest species known or suspected to occur within the region, including any identified outbreaks within the Whitsunday area and pest presence/outbreaks at vessel source locations (e.g. Bowen) prior to mobilisation
- All vessels and marine plant will be managed in accordance with relevant Commonwealth and Queensland biosecurity requirements, including antifouling maintenance appropriate to deployment duration.
- All terrestrial construction equipment, vehicles and plant will be cleaned prior to mobilisation to remove soil, organic matter, vegetation and visible pests, and cleaned again following demobilisation.
- Imported rock and sand material used for reclamation, revetment construction or surcharging will be sourced from approved Australian suppliers or existing stockpiles and will be free of marine pests, terrestrial pests, excess fines and organic material prior to transport and placement.
- Any equipment, vessels or materials sourced from outside the local area will be inspected and cleaned in accordance with applicable biosecurity protocols before entering the Project Area.

These measures are expected to effectively eliminate the risk of marine pest introduction. Therefore, following the implementation of these measures, the residual impact is assessed as not significant, and the risk to MNES is low.

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5.2.9 Land Traffic Impacts

Construction of the Project will result in a temporary increase in vehicle movements along Shute Harbour Road associated with the transport of construction equipment, materials and dredge material disposal (if required). Shute Harbour Road is an established sealed transport corridor servicing existing tourism, residential and marina-related land uses and does not traverse or adjoin habitat critical to the survival of any EPBC Act-listed threatened species or ecological communities.

No clearing of vegetation or modification of habitat associated with MNES is required to accommodate construction traffic. Vehicle movements will remain within the existing road pavement and disturbed roadside verges. Potential indirect impacts such as noise, dust and vehicle strike risk are expected to be temporary, localised and comparable to existing traffic experienced along the route.

To minimise the risk of traffic related impacts during construction activities, standard construction traffic management measures (i.e. peak periods, dust suppression measures, fauna awareness training) will be implemented through the CEMP:

5.2.10 Operational Impacts

During operation, the proposed boat ramp facility will primarily support recreational boating activities, resulting in an increase in vessel movements and ongoing use of marine infrastructure. Based on sedimentation modelling and anecdotal observations from adjacent boating facilities, maintenance dredging is expected to be required infrequently, with dredging events anticipated approximately every 8–10 years. The extent and timing of any future maintenance dredging would be confirmed through operational monitoring and managed in accordance with a DMP. The new carpark will have solar powered lighting to mirror the specifications of the existing adjacent Shute Harbour development. Given the limited scale of operational works, the application of existing management frameworks, and the low ecological sensitivity of the Project Area, the residual impact from operational activities is considered not significant, and the risk to MNES remains low.

5.3 Cumulative Impacts

Direct habitat disturbance associated with the proposed Project is spatially limited and confined to a small, already modified portion of the Shute Harbour embayment. Based on detailed habitat mapping and total disturbance calculations, the Project will result in the permanent removal of habitat within the infrastructure area and dredging area, with the total area summarised in Table 5.1.

Table 5.1 Direct impact disturbance footprint

Habitat	Infrastructure Area (reclamation, revetment wall and boat ramp)	Dredging Area (with 5 m buffer)	Total
Mangrove	2,535 m² (0.2535 ha)	None	2,535 m² (0.2535 ha)
Sparse seagrass and macroalgae (1–5% cover)	981 m² (0.0981 ha)	3,937 m² (0.394 ha)	4,918 m² (0.4918 ha)
Macroalgae and sponge habitat (5–30% cover)	361 m² (0.0361 ha)	293 m² (0.0293 ha)	654 m² (0.0654 ha)
Isolated coral colonies	Three small coral colonies	None	Three small coral colonies

When considered alongside the approved Shute Harbour Marina EIS within the adjacent embayment, which involves disturbance of approximately 14.59 ha of sparse seagrass, 34 ha of macroalgae-dominated seabed, 1.84 ha of mangrove and 10 small coral colonies. the benthic habitat loss

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(seagrass, macroalgae and sponge) associated within the Project Area (~0.5572 ha total) represents less than 2% of the total combined disturbance footprint from both projects. The Project would also result in the removal of approximately 0.2535 ha of mangroves, increasing the cumulative mangrove disturbance footprint within the embayment from 1.84 ha to approximately 2.09 ha.

Importantly, benthic and intertidal habitats within the Project Area are characterised by low structural complexity, existing disturbance and fragmented distribution, and do not constitute important or high-value habitat for threatened or migratory species. When considered in the context of the approved marina development, the Project contributes a small additional reduction in mangroves, seagrass/macroalgae and isolated coral colonies at a local scale, without materially altering habitat availability, connectivity or ecological function at the scale of the broader Shute Harbour embayment.

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6 Significant Impact Assessment

This referral has been prepared to assess whether the Project works is likely to have a significant impact on MNES under the EPBC Act. An assessment of potential impacts against *the Significant Impact Guidelines 1.1 – Matters of National Environmental Significance.*

6.1 World Heritage and National Heritage Properties

An assessment against the EPBC Significant Impact Criteria for GBRWHA and GBRNHP for the construction and barging activities is provided in Table 6.1 and 0.

The World Heritage Area holds the following values (DCCEEW, 2014):

- Criterion (vii) - contain superlative natural phenomena or areas of exceptional natural beauty and aesthetic importance
- Criterion (viii) - be outstanding examples representing major stages of earth's history, including the record of life, significant on-going geological processes in the development of landforms, or significant geomorphic or physiographic features;
- Criterion (ix) - be outstanding examples representing significant on-going ecological and biological processes in the evolution and development of terrestrial, fresh water, coastal and marine ecosystems and communities of plants and animals;
- Criterion (x) - contain the most important and significant natural habitats for in-situ conservation of biological diversity, including those containing threatened species of outstanding universal value from the point of view of science or conservation.

According to the Australian Heritage Database (DCCEEW, 2024b), the Great Barrier Reef holds the following national heritage values:

- Criterion A - the place has outstanding heritage value to the nation because of the place's importance in the course, or pattern, of Australia's natural or cultural history
- Criterion B - the place has outstanding heritage value to the nation because of the place's possession of uncommon, rare or endangered aspects of Australia's natural or cultural history
- Criterion C - the place has outstanding heritage value to the nation because of the place's potential to yield information that will contribute to an understanding of Australia's natural or cultural history
- Criterion D - the place has outstanding heritage value to the nation because of the place's importance in demonstrating the principal characteristics of:
  - a class of Australia's natural or cultural places; or
  - a class of Australia's natural or cultural environments;
- Criterion E - the place has outstanding heritage value to the nation because of the place's importance in exhibiting particular aesthetic characteristics valued by a community or cultural group

While the Project Area is not within the boundaries of the GBRMP, it is adjacent. However, potential barging activities would occur through the GBRMP. On this basis Table 6.5 presents an assessment against the EPBC Significant Impact Criteria for both potential impacts originating from the Project Area and those associated with barging.

Overall, the assessment demonstrates that the Project is not likely to have a significant impact on the World Heritage or National Heritage values of the GBRWHA or GBRNHP.

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Table 6.1 EPBC Significant Impact Criteria for GBRWHA and GBRNHP (Construction Activities)

Significant impact criteria	Assessment
An action is likely to have a significant impact on the World Heritage/ National Heritage values of a declared World Heritage property/ National Heritage place if there is a real chance or possibility that it will cause:	
One or more of the World Heritage/ National Heritage values to be lost	**No significant impact** The Project will see reclamation and capital dredging works partially occurring within the GBRWHA and GBRNHP. Based on the values held by the GBRWHA, no loss of these values will occur due to the highly localised and temporary nature of the Project. Sediment mobilisation will occur temporarily; however this would be expected to settle quickly after works finish and therefore no long-term impacts to water quality are expected. Sediment testing indicates that dredge material does not contain any contamination above NAGD guidelines with the exception of PASS. Capital dredging material will be handled in accordance with a CEMP to ensure that any discharge required for dewatering purposes will be seawater. With regard to noise disturbance, due to the Project Area and the existing vessel traffic that occurs in the area, large presence of fauna that contribute to the Great Barrier Reef's heritage values are not considered likely and, hence, disturbance to the point of values being lost is not expected. Upon completion of the Project, the area will continue to be used as a recreational boating facility and therefore no change to risk impact to the heritage values will occur. Through implementation of control measures listed in Section 5, significant impacts from water quality changes, noise or seabed disturbance in the GBRWHA or GBRNHP are not expected.
One or more of the World Heritage/ National Heritage values to be degraded or damaged, or	**No significant impact** The Project will have temporary and localised impacts to the GBRWHA and GBRNHP in the form of water quality changes and noise disturbance during the construction phase. Disturbance of the seabed within a small area of the GBRWHA is not expected to damage any heritage values of the heritage places. Capital dredging works make up a relatively small portion of material to be dredged (maximum of 40,000m^3) and will be undertaken as quickly as possible to minimise disturbance to vessel traffic, therefore any degradation of values would be expected to be temporary and highly localised during construction works only. As per above, dredge material will be managed in accordance with its physical and chemical characteristics and within DMP and CEMP to prevent contaminant release during treatment and retainment (if required) to the world and national heritage area. Noise disturbance will also be temporary during construction works. The Shute Harbour area already utilised as a recreational and ferry operations area. The works, once operational, will see some re-direction and concentration of vessel traffic to the boat ramp facility, however marine fauna presence in the Project Area is expected to be low , therefore increased disturbance to fauna as a result of this concentration of vessel traffic would not be expected. Through implementation of control measures listed in Section 5, significant impacts from water quality changes, noise or seabed disturbance in the GBRWHA or GBRNHP are not expected.
One or more of the World Heritage/ National Heritage values to be notably altered, modified, obscured or diminished.	**No significant impact** The Project will see alteration of the seabed of a small portion of the GBRWHA and GBRNHP mapped area (Figure 4.1). This alteration is considered to be minor in nature and impacts from the construction aspect of the works will be highly localised and temporary only during construction. With appropriate mitigation measures in place as per Section 5. notable changes to water quality and quality of habitat provided to marine species of the heritage area are not expected in the long-term. Further, due to the Shute Harbours current use as a recreational boating facility and ferry operation, the Project is not expected to cause a notable difference in disturbance profile, especially considering the lack of habitat values for marine megafauna provided in the Project Area. As such, no significant impacts to be notably altered, modified, obscured or diminished to GBRWHA or GBRNHP values are expected.

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Table 6.2 EPBC Significant Impact Criteria for GBRWHA and GBRNHP (Barging Activities)

Significant impact criteria	Assessment
An action is likely to have a significant impact on the World Heritage/ National Heritage values of a declared World Heritage property/ National Heritage place if there is a real chance or possibility that it will cause:	
One or more of the World Heritage/ National Heritage values to be lost	**No significant impact** The Project may involve barge movements associated with the transport of sand for reclamation and surcharging. These activities would occur within the context of existing commercial and recreational vessel traffic within the broader Shute Harbour and Whitsunday region and would not represent a new or unique impact pathway within the GBRWHA or GBRNHP. Potential impact pathways associated with barging, including accidental material loss, marine pollution and vessel interaction with fauna that will be managed appropriately through a CEMP. As such barging activities are not expected to result in loss, degradation or notable alteration of the World Heritage or National Heritage values of the GBRWHA or GBRNHP.
One or more of the World Heritage/ National Heritage values to be degraded or damaged, or	**No significant impact** The Project may involve barge movements associated with the transport of sand for reclamation and surcharging. These activities would occur within the context of existing commercial and recreational vessel traffic within the broader Shute Harbour and Whitsunday region and would not represent a new or unique impact pathway within the GBRWHA or GBRNHP. Potential impact pathways associated with barging, including accidental material loss, marine pollution and vessel interaction with fauna that will be managed appropriately through a CEMP. As such barging activities are not expected to result in the degradation or damage to the World Heritage or National Heritage values.
One or more of the World Heritage/ National Heritage values to be notably altered, modified, obscured or diminished.	**No significant impact** The Project may involve barge movements associated with the transport of sand for reclamation and surcharging. These activities would occur within the context of existing commercial and recreational vessel traffic within the broader Shute Harbour and Whitsunday region and would not represent a new or unique impact pathway within the GBRWHA or GBRNHP. Potential impact pathways associated with barging, including accidental material loss, marine pollution and vessel interaction with fauna that will be managed appropriately through a CEMP. As such barging activities are not expected to result in one or more of the World Heritage/ National Heritage values to be notably altered, modified, obscured or diminished.

6.2 Great Barrier Reef Marine Park

While the Project Area is not within the boundaries of the GBRMP, it is adjacent. However, potential barging activities would occur through the GBRMP. On this basis Table 6.5 presents an assessment against the EPBC Significant Impact Criteria for both potential impacts originating from the Project Area and those associated with barging. Overall, the assessment demonstrates that the Project is not likely to have a significant impact on GBRMP.

Table 6.3 EPBC Significant Impact Criteria for GBRMP (Construction Activities)

Significant impact criteria	Assessment
An action is likely to have a significant impact on the environment of the Great Barrier Reef Marine Park if there is a real chance or possibility that the action will:	
Modify, destroy, fragment, isolate or disturb an important, substantial, sensitive or vulnerable area of habitat or ecosystem component such that an adverse impact on marine ecosystem health, functioning or integrity in the Great Barrier Reef Marine Park results	**No significant impact** The proposed works, including reclamation and capital dredging adjacent to the GBRMP, will result in temporary and localised disturbances during the construction phase. While reclamation and capital dredging will occur adjacent to the GBRMP, the implementation of specific management measures during dredging operations will limit the potential for downstream impacts on receiving environments within the GBRMP. Dredging activities will be undertaken in accordance with a CEMP, incorporating controls to minimise sediment mobilisation, turbidity and the extent of sediment dispersion beyond the immediate works area.

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Significant impact criteria	Assessment
	Water quality management measures, including staged dredging, operational controls and real-time monitoring (where required), will be considered as part of the CEMP to ensure that any increases in turbidity or suspended sediments are temporary, localised and maintained within acceptable limits. These measures are intended to prevent sustained or widespread degradation of water quality within the GBRMP and to avoid impacts to ecological processes, habitats or species beyond the immediate footprint of the works. Any changes to water quality within downstream receiving environments of the GBRMP are expected to be short-term and not of a magnitude or duration that would modify, destroy, fragment or disturb important or sensitive ecosystem components. Accordingly, the proposed works are not expected to adversely affect marine ecosystem health, functioning or integrity of the GBRMP.
Have a substantial adverse effect on a population of a species or cetacean including its life cycle (for example, breeding, feeding, migration behaviour, life expectancy) and spatial distribution	**No significant impact** Habitats within the Project Area are not considered capable of supporting an important population of any critically endangered, endangered or vulnerable marine or terrestrial species, nor does the Project Area constitute habitat critical to the survival of such species. The Project Area comprises marginal, low ecological value habitats that are highly modified and do not represent important habitat for migratory species within the region. The proposed works will result in temporary and localised disturbances during the construction phase, primarily in the form of short-term changes to water quality and underwater noise within and adjacent to the GBRMP. These effects will be confined to a small spatial area, occur over short durations, and are not expected to fundamentally alter habitat availability, ecological function or connectivity at a scale relevant to population processes. Disturbance of the seabed will be limited to a discrete footprint adjacent to the GBRMP and will not affect habitats required for key life-cycle processes such as breeding, nesting, calving, or the maintenance of important foraging grounds. Species known or predicted to occur in the broader area, including cetaceans and other mobile marine fauna, are expected to utilise the Project Area only opportunistically or in transit and are not reliant on the area to support critical behaviours such as feeding aggregation, reproduction or migration staging. As such the works are unlikely to have a substantial adverse effect on a population of a species or cetacean including its life cycle and spatial distribution)
Result in a substantial change in air quality or water quality (including temperature) which may adversely impact on biodiversity, ecological health or integrity or social amenity or human health	**No significant impact** While reclamation and capital dredging will occur adjacent to the GBRMP, the implementation of specific management measures during dredging operations will limit the potential for downstream impacts on receiving environments within the GBRMP. Dredging activities will be undertaken in accordance with a CEMP, incorporating controls to minimise sediment mobilisation, turbidity and the extent of sediment dispersion beyond the immediate works area. Water quality management measures, including staged dredging, operational controls and real-time monitoring (where required), will be considered as part of the CEMP to ensure that any increases in turbidity or suspended sediments are temporary, localised and maintained within acceptable limits. These measures are intended to prevent sustained or widespread degradation of water quality within the GBRMP and to avoid impacts to ecological processes, habitats or species beyond the immediate footprint of the works. The Project is not expected to result in measurable or sustained changes to marine water temperature, as works will not involve thermal discharges or activities capable of significantly altering ambient water temperatures. Any changes to water quality within downstream receiving environments of the GBRMP are expected to be short-term and not of a magnitude or duration that would result in a substantial change in water quality (including temperature) which may adversely impact on biodiversity, ecological health or integrity or social amenity or human health. Construction-related air emissions will be short-term and localised and are not considered a relevant impact pathway for marine fauna. Given the highly modified setting, absence of sensitive terrestrial fauna receptors, and implementation of standard CEMP controls, air quality impacts are not expected to substantially change air quality which may adversely impact on biodiversity, ecological health or integrity or social amenity or human health.
Result in a known or potential pest species being introduced or becoming established in the Great Barrier Reef Marine Park	**No significant impact** The Project is not expected to result in the introduction or establishment of any known or potential pest species within the GBRMP. Construction vessels, equipment and plant will be sourced from within Queensland or elsewhere in Australia, where existing Commonwealth and Queensland biosecurity controls apply. No international vessels, equipment or imported fill materials are anticipated. Management measures have been stipulated in Section 5 for works to further reduce the risk of pest species. As such, the Project is not expected to

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Significant impact criteria	Assessment
	result in a known or potential pest species being introduced or becoming established in the GBRMP.
Result in persistent organic chemicals, heavy metals, or other potentially harmful chemicals accumulating in the marine environment such that biodiversity, ecological integrity, or social amenity or human health may be adversely affected	**No significant impact** Sediment testing undertaken for the Project indicates that dredged material does not contain persistent organic chemicals, heavy metals or other contaminants at concentrations exceeding the NAGD, with the exception of PASS. PASS material does not represent a source of persistent contaminants and will be managed in accordance with relevant guidelines and an ASSMP. Given the absence of contaminants in the dredged material, capital dredging and reclamation activities will not introduce or mobilise persistent organic chemicals, heavy metals or other harmful substances into the marine environment. Dredged material handling and dewatering, where required, will occur under a CEMP to ensure that only clean seawater is released, further preventing any degradation of marine water quality. In addition, sand required for reclamation and surcharging will be sourced from an existing clean and uncontaminated stockpile, avoiding the introduction of external materials that could contain pollutants. Construction-related sources of potential contamination (e.g. fuels or chemicals) will be managed through standard spill prevention, storage and handling controls implemented under the CEMP. Given the absence of contaminant sources, the Project is not expected to result in any impacts resulting in the accumulation of persistent organic chemicals, heavy metals or other harmful substances that would adversely affect biodiversity, ecological integrity, social amenity or human health.
Have a substantial adverse impact on heritage values of the Great Barrier Reef Marine Park, including damage or destruction of an historic shipwreck	**No significant impact** The Project is located adjacent to, but not within the GBRMP) Accordingly, potential impacts on heritage values are relevant to World Heritage criteria (ix) and (x), relating to ecological processes and biodiversity conservation. Construction activities adjacent to the GBRMP, will result in temporary and localised disturbances only and will be managed to avoid changes to water quality or habitat condition at a scale relevant to ecological processes within the GBRMP. The Project will not disrupt ongoing ecological or biological processes that underpin the OUV of the GBRMP. The Project will also not adversely affect habitats important for the in-situ conservation of biological diversity within the GBRMP. Habitats within and adjacent to the works area are of low ecological value and do not constitute habitat critical to the survival of threatened species. No known historic shipwrecks or maritime heritage places occur within the Project Area. Accordingly, the Project is not expected to have a substantial adverse impact on the heritage values of the Great Barrier Reef Marine Park.

Table 6.4 EPBC Significant Impact Criteria for GBRMP (Barging Activities)

Significant impact criteria	Assessment
An action is likely to have a significant impact on the environment of the Great Barrier Reef Marine Park if there is a real chance or possibility that the action will:	
Modify, destroy, fragment, isolate or disturb an important, substantial, sensitive or vulnerable area of habitat or ecosystem component such that an adverse impact on marine ecosystem health, functioning or integrity in the Great Barrier Reef Marine Park results	**No significant impact** The Project may involve barge movements associated with the transport of sand for reclamation and surcharging. These activities would occur within the context of existing commercial and recreational vessel traffic within the broader Great Barrier Reef Region and would not represent a new or unique impact pathway within the GBRMP. Potential impact pathways associated with barging, including accidental material loss, marine pollution and vessel interaction with fauna that will be managed appropriately through a CEMP. As such barging activities are not expected to modify, destroy, fragment, isolate or disturb an important, substantial, sensitive or vulnerable area of habitat or ecosystem component such that an adverse impact on marine ecosystem health, functioning or integrity in the Great Barrier Reef Marine Park results
Have a substantial adverse effect on a population of a species or cetacean including its life cycle (for example, breeding, feeding, migration behaviour, life expectancy) and spatial distribution	**No significant impact** The Project may involve barge movements associated with the transport of sand for reclamation and surcharging. These activities would occur within the context of existing commercial and recreational vessel traffic within the broader Great Barrer Reef region and would not represent a new or unique impact pathway within the GBRMP. Potential impact pathways associated with barge transit include vessel strike and disturbance to marine fauna including cetaceans. However, barges are typically

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Significant impact criteria	Assessment
	slow-moving and operate along defined navigation routes, allowing marine fauna to detect and avoid vessels. These characteristics substantially reduce the likelihood of interaction and any associated risk to individuals. In addition, barge movements are temporary and intermittent, and will not occur at a frequency, duration or spatial extent capable of affecting key life-cycle processes such as breeding, feeding or migration behaviour. Marine fauna within the GBRMP are already exposed to existing vessel traffic, and the incremental increase associated with the Project is not expected to result in measurable changes to population dynamics or spatial distribution. Additional potential impacting pathways associated with barging, also include accidental material loss and marine pollution. These alongside vessel movement will be managed through a CEMP and as such are not expected to have a substantial adverse effect on a population of a species or cetacean including its life cycle (for example, breeding, feeding, migration behaviour, life expectancy) and spatial distribution.
Result in a substantial change in air quality or water quality (including temperature) which may adversely impact on biodiversity, ecological health or integrity or social amenity or human health	**No significant impact** The Project may involve barge movements associated with the transport of sand for reclamation and surcharging. These activities would occur within the context of existing commercial and recreational vessel traffic within the broader Great Barrer Reef region and would not represent a new or unique impact pathway within the GBRMP. Potential impact pathways associated with barge transit include accidental release of material, fuel or other contaminants, as well as minor emissions associated with vessel operation. However, these risks are low and will be managed through an appropriate CEMP. As such barging associated with the Project is not expected to result in measurable or sustained changes to marine water temperature, as works will not involve thermal discharges or activities capable of significantly altering ambient water temperatures.
Result in a known or potential pest species being introduced or becoming established in the Great Barrier Reef Marine Park	**No significant impact** Barging activities for the Project is not expected to result in the introduction or establishment of any known or potential pest species within the GBRMP. Barging and support vessels will be sourced from within Queensland or elsewhere in Australia, where existing Commonwealth and Queensland biosecurity controls apply. No international vessels, are anticipated. Management measures have been stipulated in Section 5 for works to further reduce the risk of pest species. As such, the Project is not expected to result in a known or potential pest species being introduced or becoming established in the GBRMP.
Result in persistent organic chemicals, heavy metals, or other potentially harmful chemicals accumulating in the marine environment such that biodiversity, ecological integrity, or social amenity or human health may be adversely affected	**No significant impact** The Project may involve barge movements associated with the transport of sand for reclamation and surcharging. These activities would occur within the context of existing commercial and recreational vessel traffic within the broader Great Barrer Reef region and would not represent a new or unique impact pathway within the GBRMP. Potential impact pathways associated with barge transit include accidental release of material, fuel or other contaminants. However, these risks are low and will be managed through an appropriate CEMP. As such, barging activities associated with the Project is not expected to result in any impacts resulting in the accumulation of persistent organic chemicals, heavy metals or other harmful substances that would adversely affect biodiversity, ecological integrity, social amenity or human health.
Have a substantial adverse impact on heritage values of the Great Barrier Reef Marine Park, including damage or destruction of an historic shipwreck	**No significant impact** The Project may involve barge movements associated with the transport of sand for reclamation and surcharging. These activities would occur within the context of existing commercial and recreational vessel traffic within the broader Great Barrer Reef region and would not represent a new or unique impact pathway within the GBRMP. Construction activities adjacent to the GBRMP, will result in temporary and localised disturbances only and will be managed to avoid changes to water quality or habitat condition at a scale relevant to ecological processes within the GBRMP. The Project will not disrupt ongoing ecological or biological processes that underpin the OUV of the GBRMP. The Project will also not adversely affect habitats important for the in-situ conservation of biological diversity within the GBRMP. Habitats within and adjacent to the works area are of low ecological value and do not constitute habitat critical to the survival of threatened species.

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Significant impact criteria	Assessment
	No known historic shipwrecks or maritime heritage places occur within the Project Area. Accordingly, the Project is not expected to have a substantial adverse impact on the heritage values of the Great Barrier Reef Marine Park.

6.3 Threatened Ecological Communities

As per Section 4.3, no TECs are known to or expected to occur at the site and therefore no significant impact will occur.

6.4 Listed Threatened Species

Table 6.5 through to Table 6.11 presents an assessment against the EPBC Significant Impact Criteria for critically endangered/endangered species and vulnerable species respectively (separated into bird species, marine megafauna species, and plant species). Note that no critically endangered/endangered birds, terrestrial species or marine megafauna species were identified as being likely or possible to occur in the Project Area.

Overall, the assessment demonstrates that the Project is not likely to have a significant impact on threatened species.

Table 6.5 EPBC Significant Impact Criteria for Critically Endangered and Endangered Bird Species

Significant impact criteria	Relevant species	Assessment
An action is likely to have a significant impact on the on a critically endangered or endangered species if there is a real chance or probability that it will:		
Lead to a long-term decrease in the size of a population	Could possibly occur • Curlew sandpiper • Eastern curlew • Nunivak bar-tailed godwit	**No significant impact** Habitats within the Project Area are not considered capable of supporting an important population of any critically endangered or endangered bird species, nor does the Project Area constitute habitat critical to the survival of any critically endangered or endangered bird species, therefore works are not expected to lead to a long-term decrease in population size.
Reduce the area of occupancy of the species		**No significant impact** Habitats within the Project Area are not considered capable of supporting an important population of any critically endangered or endangered bird species, nor does the Study Area constitute habitat critical to the survival of any critically endangered or endangered bird species, therefore works are not expected to lead to a reduction of area of occupancy for the species.
Fragment an existing population into two or more populations		**No significant impact** No aspect of the works for the Project will involve erection of barriers between populations of critically endangered or endangered bird species. Habitats within the Project Area are not considered capable of supporting an important population of any critically endangered or endangered bird species, nor does the Study Area constitute habitat critical to the survival of any critically endangered or endangered bird species As such, no fragmentation of populations would be expected.
Adversely affect habitat critical to the survival of a species		**No significant impact** Habitats within the Project Area are not considered capable of supporting an important population of any critically endangered or endangered bird species, nor does the Study Area constitute habitat critical to the survival of any critically endangered or endangered bird species, therefore works are not expected to lead to adverse affects to habitat critical to the survival of a species
Disrupt the breeding cycle of a population		**No significant impact**

Significant impact criteria	Relevant species	Assessment
		Habitats within the Project Area are not considered capable of supporting an important population of any critically endangered or endangered bird species, nor does the Project Area constitute habitat critical to the survival (including breeding) of any critically endangered or endangered bird species, therefore works are not expected to lead to a disruption to breeding cycles of any populations.
Modify, destroy, remove, isolate or decrease the availability or quality of habitat to the extent that the species is likely to decline		**No significant impact** Existing habitats within the Project Area are considered low, therefore works are not expected to modify, destroy, remove, isolate or decrease the availability or quality of habitat to the extent that the species is likely to decline.
Result in invasive species that are harmful to a critically endangered or endangered species becoming established in the endangered or critically endangered species' habitat		**No significant impact** The overall risk of introduced pest establishment associated with the Project is considered low. Construction vessels, equipment and plant will be sourced from within Queensland or elsewhere in Australia, where existing biosecurity controls apply. No international vessels, equipment or imported fill materials are anticipated. Therefore, a result in invasive species that are harmful to a critically endangered or endangered species becoming established in the endangered or critically endangered species' habitat is negligible.
Introduce disease that may cause the species to decline, or		**No significant impact** No disease introduction is expected to occur. Construction vessels, equipment and plant will be sourced from within Queensland or elsewhere in Australia, where existing biosecurity controls apply. No international vessels, equipment or imported fill materials are anticipated. Management measures have been stipulated in Section 5 for works to further reduce the risk of disease introduction.
Interfere with the recovery of the species		**No significant impact** None of the relevant species have recovery plans in place. Nevertheless, the area of vegetation to be cleared is relatively small in comparison. Habitats within the Project Area are not considered capable of supporting an important population of any critically endangered or endangered bird species, nor does the Study Area constitute habitat critical to the survival of any critically endangered or endangered bird species. As such, clearing of vegetation required for these works is not expected to interfere with the recovery of any bird species.

Table 6.6 EPBC Significant Impact Criteria for Vulnerable Bird Species

Significant impact criteria	Relevant species	Assessment
An action is likely to have a significant impact on the on a vulnerable species if there is a real chance or probability that it will:		
Lead to a long-term decrease in the size of an important population of a species	Could possibly occur • Sharp-tailed sandpiper • Red knot • Greater sand plover • Latham's snipe • Little Tern	**No significant impact** Habitats within the Project Area are not considered capable of supporting an important population of any vulnerable bird species, nor does the Project Area constitute habitat critical to the survival of any vulnerable bird species, therefore works are not expected to lead to a long-term decrease in population size.
Reduce the area of occupancy of an important population		**No significant impact** Habitats within the Project Area are not considered capable of supporting an important population of any vulnerable bird species, nor does the Project Area constitute habitat critical to the survival of any vulnerable bird species, therefore works are not expected to impact area of occupancy for such populations.
Fragment an existing important population into two or more population		**No significant impact** Habitats within the Project Area are not considered capable of supporting an important population of any vulnerable bird species,

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Significant impact criteria	Relevant species	Assessment
		nor does the Project Area constitute habitat critical to the survival of any vulnerable bird species, therefore works are not expected to fragment an existing important population into two or more population.
Adversely affect habitat critical to the survival of a species		**No significant impact** Habitats within the Project Area are not considered capable of supporting an important population of any vulnerable bird species, nor does the Project Area constitute habitat critical to the survival of any vulnerable bird species, therefore works are not expected to adversely affect habitat critical to the survival of a species.
Disrupt the breeding cycle of an important population		**No significant impact** The Project Area is not considered capable of supporting an important population of any vulnerable bird species, nor does the Project Area constitute habitat critical to the survival of any vulnerable bird species, therefore works are not expected disrupt the breeding cycle of an important population.
Modify, destroy, remove, isolate or decrease the availability or quality of habitat to the extent that the species is likely to decline		**No significant impact** Existing habitats within the Project Area are considered low in ecological value, therefore works are not expected to modify, destroy, remove, isolate or decrease the availability or quality of habitat to the extent that the species is likely to decline.
Result in invasive species that are harmful to a vulnerable species becoming established in the vulnerable species' habitat		**No significant impact** The overall risk of introduced pest establishment associated with the Project is considered low. Construction vessels, equipment and plant will be sourced from within Queensland or elsewhere in Australia, where existing biosecurity controls apply. No international vessels, equipment or imported fill materials are anticipated. Therefore, a result in invasive species that are harmful to a vulnerable species becoming established in the vulnerable species' habitat is negligible.
Introduce disease that may cause the species to decline, or		**No significant impact** No disease introduction is expected to occur. Construction vessels, equipment and plant will be sourced from within Queensland or elsewhere in Australia, where existing biosecurity controls apply. No international vessels, equipment or imported fill materials are anticipated. Management measures have been stipulated in Section 5 for works to further reduce the risk of disease introduction.
Interfere substantially with the recovery of the species		**No significant impact** None of the relevant vulnerable species have recovery plans in place. Nevertheless, the area of vegetation to be cleared is relatively small in comparison. Habitats within the Project Area are not considered capable of supporting an important population of any vulnerable bird species, nor does the Study Area constitute habitat critical to the survival of any vulnerable bird species. As such, clearing of vegetation required for these works is not expected to interfere with the recovery of any bird species.

Table 6.7 EPBC Significant Impact Criteria for Critically Endangered or Endangered Marine Turtles

Significant impact criteria	Relevant species	Assessment
An action is likely to have a significant impact on the on a critically endangered or endangered species if there is a real chance or probability that it will:		
Lead to a long-term decrease in the size of a population	Could possibly occur • Loggerhead turtle • Leatherback turtle • Olive ridley turtle	**No significant impact** The Project Area does not contain beaches or coastal landforms suitable for marine turtle nesting. Shorelines are highly modified and comprise rock revetments, mudflats and disturbed coastal vegetation associated with existing infrastructure, and no evidence of turtle nesting (e.g. nests or

Significant impact criteria	Relevant species	Assessment
		tracks) was recorded during field surveys. Mapping associated with the Recovery Plan for Marine Turtles in Australia (Commonwealth of Australia, 2017) confirms that no habitat critical to the survival of marine turtles, including nesting or inter-nesting habitat, occurs within or near the Project Area. Accordingly, marine turtles, if present, are expected to occur only incidentally or in transit, as the Project Area does not support breeding, nesting, inter-nesting or important foraging habitat. Therefore, the works are not expected to lead to a long-term decrease in population size.
Reduce the area of occupancy of the species		**No significant impact** No suitable marine turtle nesting or inter-nesting habitat occurs within or near the Project Area; turtles are therefore expected to occur only transiently, therefore works are not expected to lead to a reduction of area of occupancy for the species.
Fragment an existing population into two or more populations		**No significant impact** No suitable marine turtle nesting or inter-nesting habitat occurs within or near the Project Area; turtles are therefore expected to occur only transiently, therefore works are not expected to lead to a reduction of area of occupancy for the species. As such, no fragmentation of populations would be expected.
Adversely affect habitat critical to the survival of a species		**No significant impact** No suitable marine turtle nesting or inter-nesting habitat occurs within or near the Project Area; turtles are therefore expected to occur only transiently, therefore works are not expected to lead to a reduction of area of occupancy for the species, therefore works are not expected to lead to adverse affects to habitat critical to the survival of a species
Disrupt the breeding cycle of a population		**No significant impact** No suitable marine turtle nesting or inter-nesting habitat occurs within or near the Project Area; turtles are therefore expected to occur only transiently, therefore works are not expected to lead to a disruption to breeding cycles of any populations.
Modify, destroy, remove, isolate or decrease the availability or quality of habitat to the extent that the species is likely to decline		**No significant impact** Existing habitats within the Project Area are considered to be low in ecological value, therefore works are not expected to modify, destroy, remove, isolate or decrease the availability or quality of habitat to the extent that the species is likely to decline.
Result in invasive species that are harmful to a critically endangered or endangered species becoming established in the endangered or critically endangered species' habitat		**No significant impact** The overall risk of introduced pest establishment associated with the Project is considered low. Construction vessels, equipment and plant will be sourced from within Queensland or elsewhere in Australia, where existing biosecurity controls apply. No international vessels, equipment or imported fill materials are anticipated. Therefore, a result in invasive species that are harmful to marine turtles or marine turtles' habitat is negligible.
Introduce disease that may cause the species to decline, or		**No significant impact** No disease introduction is expected to occur. Construction vessels, equipment and plant will be sourced from within Queensland or elsewhere in Australia, where existing biosecurity controls apply. No international vessels, equipment or imported fill materials are anticipated. Management measures have been stipulated in Section 5 for works to further reduce the risk of disease introduction.
Interfere with the recovery of the species		**No significant impact** Recovery Plan for Marine Turtles in Australia (Commonwealth of Australia, 2017) confirms that no habitat critical to the survival of marine turtles, including nesting or inter-nesting habitat, occurs within or near the Project Area. Therefore the

Significant impact criteria	Relevant species	Assessment
		works are not expected to interfere with the recovery of the species.

Table 6.8 EPBC Significant Impact Criteria for Vulnerable Marine Turtles

Significant impact criteria	Relevant species	Assessment
An action is likely to have a significant impact on the on a vulnerable species if there is a real chance or probability that it will:		
Lead to a long-term decrease in the size of an important population of a species	Could possibly occur • Green turtle • Hawksbill turtle • Flatback turtle	**No significant impact** The Project Area does not contain habitat of high ecological value for marine turtles. Marine turtles may traverse the Project Area opportunistically; however, the highly modified nature of the harbour and absence of important foraging, breeding or resting habitat indicate the area is not of high ecological value for this species. As such, the proposed works are not expected to result in a long-term decrease in the population size of any listed species
Reduce the area of occupancy of an important population		**No significant impact** The Project Area is not known to house an important population of marine turtles, therefore works are not expected to impact area of occupancy for such populations.
Fragment an existing important population into two or more population		**No significant impact** The Project Area is not known to house an important population of marine turtles. Regardless, no aspect of the Project will see barriers erected that preclude movement of species to and from the area, therefore no fragmentation of populations is expected.
Adversely affect habitat critical to the survival of a species		**No significant impact** The Project Area are not considered capable of supporting an important population of these species, nor does the Project Area constitute habitat critical to the survival of these vulnerable species, therefore works are not expected to adversely affect habitat critical to the survival of a species.
Disrupt the breeding cycle of an important population		**No significant impact** The Project Area is not known to house an important population of marine turtles. As such, the works is not expected to see disruption of breeding cycles.
Modify, destroy, remove, isolate or decrease the availability or quality of habitat to the extent that the species is likely to decline		**No significant impact** The Project Area is not known to house an important population of these marine turtles. As such, dredging works are not expected to impact on habitat to the point of seeing species decline. Therefore, the works is not expected to modify, destroy, remove, isolate or decrease the availability or quality of habitat to the extent that the species is likely to decline.
Result in invasive species that are harmful to a vulnerable species becoming established in the vulnerable species' habitat		**No significant impact** The overall risk of introduced pest establishment associated with the Project is considered low. Construction vessels, equipment and plant will be sourced from within Queensland or elsewhere in Australia, where existing biosecurity controls apply. No international vessels, equipment or imported fill materials are anticipated. Therefore, a result in invasive species that are harmful to vulnerable species or vulnerable species' habitat is negligible.
Introduce disease that may cause the species to decline, or		**No significant impact** No disease introduction is expected to occur. Construction vessels, equipment and plant will be sourced from within Queensland or elsewhere in Australia, where existing biosecurity controls apply. No international vessels, equipment or imported fill materials are anticipated. Management measures have been stipulated in Section 5 for works to further reduce the risk of disease introduction.
Interfere substantially with the recovery of the species		**No significant impact**

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Significant impact criteria	Relevant species	Assessment
		Recovery Plan for Marine Turtles in Australia (Commonwealth of Australia, 2017) confirms that no habitat critical to the survival of marine turtles, including nesting or inter-nesting habitat, occurs within or near the Project Area. Therefore the works are not expected to interfere with the recovery of the species.

Table 6.9 EPBC Significant Impact Criteria for Australian snubfin dolphin

Significant impact criteria	Relevant species	Assessment
An action is likely to have a significant impact on the on a vulnerable species if there is a real chance or probability that it will:		
Lead to a long-term decrease in the size of an important population of a species	Could possibly occur • Australian snubfin dolphin	**No significant impact** The Project Area does not contain habitat of high ecological value for the Australian snubfin dolphin. The Australian snubfin dolphin may traverse the Project Area opportunistically; however, the highly modified nature of the harbour and absence of important foraging, breeding or resting habitat indicate the area is not of high ecological value for this species. As such, the proposed works are not expected to result in a long-term decrease in the population size of any listed species
Reduce the area of occupancy of an important population		**No significant impact** The Project Area is not known to house an important population of these vulnerable species, therefore works are not expected to impact area of occupancy for such populations.
Fragment an existing important population into two or more population		**No significant impact** The Project Area is not known to house an important population of these vulnerable species. Regardless, no aspect of the Project will see barriers erected that preclude movement of species to and from the area, therefore no fragmentation of populations is expected.
Adversely affect habitat critical to the survival of a species		**No significant impact** The Project Area are not considered capable of supporting an important population of these species, nor does the Project Area constitute habitat critical to the survival of these vulnerable species, therefore works are not expected to adversely affect habitat critical to the survival of a species.
Disrupt the breeding cycle of an important population		**No significant impact** The Project Area is not known to house an important population of these vulnerable species. As such, the works is not expected to see disruption of breeding cycles.
Modify, destroy, remove, isolate or decrease the availability or quality of habitat to the extent that the species is likely to decline		**No significant impact** The Project Area is not known to house an important population of these dolphins. Therefore the works is not expected to modify, destroy, remove, isolate or decrease the availability or quality of habitat to the extent that the species is likely to decline.
Result in invasive species that are harmful to a vulnerable species becoming established in the vulnerable species' habitat		**No significant impact** The overall risk of introduced pest establishment associated with the Project is considered low. Construction vessels, equipment and plant will be sourced from within Queensland or elsewhere in Australia, where existing biosecurity controls apply. No international vessels, equipment or imported fill materials are anticipated. Therefore, a result in invasive species that are harmful to vulnerable species or vulnerable species' habitat is negligible.
Introduce disease that may cause the species to decline, or		**No significant impact** No disease introduction is expected to occur. Construction vessels, equipment and plant will be sourced from within Queensland or elsewhere in Australia, where existing biosecurity controls apply. No international vessels, equipment or imported fill materials are anticipated. Management measures have been stipulated in

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Significant impact criteria	Relevant species	Assessment
		Section 5 for works to further reduce the risk of disease introduction.
Interfere substantially with the recovery of the species		**No significant impact** No EPBC recovery plans for this dolphin. The Australian snubfin dolphin may traverse the Project Area opportunistically; however, the highly modified nature of the harbour and absence of important foraging, breeding or resting habitat indicate the area is not of high ecological value for this species. Therefore works are also unlikely to interfere substantially with species recovery.

Table 6.10 EPBC Significant Impact Criteria for water mouse

Significant impact criteria	Relevant species	Assessment
An action is likely to have a significant impact on the on a vulnerable species if there is a real chance or probability that it will:		
Lead to a long-term decrease in the size of an important population of a species	Could possibly occur • Water mouse	**No significant impact** Water mouse has been recorded locally within the wider region; however, no individuals, burrows, middens or other signs were observed during surveys. While mangroves within the Project Area may provide marginal foraging habitat, their fragmented, narrow and disturbed condition substantially limits habitat quality, and the area is unlikely to represent functionally important habitat for this species. As such, the proposed works are not expected to result in a long-term decrease in the population size of any listed species
Reduce the area of occupancy of an important population		**No significant impact** The Project Area is not known to house an important population of these vulnerable species, therefore works are not expected to impact area of occupancy for such populations.
Fragment an existing important population into two or more population		**No significant impact** The Project Area is not known to house an important population of these vulnerable species. Regardless, no aspect of the Project will see barriers erected that preclude movement of species to and from the area, therefore no fragmentation of populations is expected.
Adversely affect habitat critical to the survival of a species		**No significant impact** The Project Area are not considered capable of supporting an important population of these species, nor does the Project Area constitute habitat critical to the survival of these vulnerable species, therefore works are not expected to adversely affect habitat critical to the survival of a species.
Disrupt the breeding cycle of an important population		**No significant impact** The proposed site is not known to house an important population of these vulnerable species. As such, the works is not expected to see disruption of breeding cycles.
Modify, destroy, remove, isolate or decrease the availability or quality of habitat to the extent that the species is likely to decline		**No significant impact** Regarding vegetation clearing, the water mouse is unlikely to reside in as the ecological value of the vegetation is low. Additionally, no individuals, burrows, middens or other signs of water mouse were observed during surveys. Therefore, the works is not expected to modify, destroy, remove, isolate or decrease the availability or quality of habitat to the extent that the species is likely to decline.
Result in invasive species that are harmful to a vulnerable species becoming established in the vulnerable species' habitat		**No significant impact** The overall risk of introduced pest establishment associated with the Project is considered low. Construction vessels, equipment and plant will be sourced from within Queensland or elsewhere in Australia, where existing biosecurity controls apply. No international vessels, equipment or imported fill materials are anticipated.

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Significant impact criteria	Relevant species	Assessment
		Therefore, a result in invasive species that are harmful to vulnerable species or vulnerable species' habitat is negligible.
Introduce disease that may cause the species to decline, or		**No significant impact** No disease introduction is expected to occur. Construction vessels, equipment and plant will be sourced from within Queensland or elsewhere in Australia, where existing biosecurity controls apply. No international vessels, equipment or imported fill materials are anticipated. Management measures have been stipulated in Section 5 for works to further reduce the risk of disease introduction.
Interfere substantially with the recovery of the species		**No significant impact** The water mouse species has a EPBC Recovery Plan. With regard to vegetation clearing, the water mouse is unlikely to reside in the Project Area vegetation due to its ecological low value. Therefore, works are also unlikely to interfere substantially with species recovery.

Table 6.11 EPBC Significant Impact Criteria for green sawfish

Significant impact criteria	Relevant species	Assessment
An action is likely to have a significant impact on the on a vulnerable species if there is a real chance or probability that it will:		
Lead to a long-term decrease in the size of an important population of a species	Could possibly occur • Green sawfish	**No significant impact** Green sawfish typically inhabit shallow, sheltered waters such as bays and estuaries; however, there are no records of sawfish within or near the Project Area and available habitat is considered marginal As such, the proposed works are not expected to result in a long-term decrease in the population size of any listed species
Reduce the area of occupancy of an important population		**No significant impact** The Project Area is not known to house an important population of these vulnerable species, therefore works are not expected to impact area of occupancy for such populations.
Fragment an existing important population into two or more population		**No significant impact** The Project Area is not known to house an important population of these vulnerable species. Regardless, no aspect of the Project will see barriers erected that preclude movement of species to and from the area, therefore no fragmentation of populations is expected.
Adversely affect habitat critical to the survival of a species		**No significant impact** The Project Area are not considered capable of supporting an important population of these species, nor does the Project Area constitute habitat critical to the survival of these vulnerable species, therefore works are not expected to adversely affect habitat critical to the survival of a species.
Disrupt the breeding cycle of an important population		**No significant impact** The proposed site is not known to house an important population of these vulnerable species. As such, the works is not expected to see disruption of breeding cycles.
Modify, destroy, remove, isolate or decrease the availability or quality of habitat to the extent that the species is likely to decline		**No significant impact** The Project Area considered unlikely to be inhabited by the green sawfish on a continuous basis with marginal habitat presence and the vessel traffic disturbance already present. As such, dredging works are not expected to impact on habitat to the point of seeing species decline. With regard to vegetation clearing, the water mouse is unlikely to reside in as the ecological value of the vegetation is low. Therefore, the works is not expected to modify, destroy, remove, isolate or decrease the availability or quality of habitat to the extent that the species is likely to decline.

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Significant impact criteria	Relevant species	Assessment
Result in invasive species that are harmful to a vulnerable species becoming established in the vulnerable species' habitat		**No significant impact** The overall risk of introduced pest establishment associated with the Project is considered low. Construction vessels, equipment and plant will be sourced from within Queensland or elsewhere in Australia, where existing biosecurity controls apply. No international vessels, equipment or imported fill materials are anticipated. Therefore, a result in invasive species that are harmful to vulnerable species or vulnerable species' habitat is negligible.
Introduce disease that may cause the species to decline, or		**No significant impact** No disease introduction is expected to occur. Construction vessels, equipment and plant will be sourced from within Queensland or elsewhere in Australia, where existing biosecurity controls apply. No international vessels, equipment or imported fill materials are anticipated. Management measures have been stipulated in Section 5 for works to further reduce the risk of disease introduction.
Interfere substantially with the recovery of the species		**No significant impact** The green sawfish which is a vulnerable species have a EPBC Recovery Plan. The Project Area and immediately adjacent areas are considered unlikely to be inhabited by the green sawfish on a continuous basis due to the industrial nature of the area, marginal habitat present and the vessel traffic disturbance already present. As such, dredging works are not expected to impact on recovery of this species. Therefore works are also unlikely to interfere substantially with species recovery.

6.5 Listed Migratory Species

Table 6.12 and Table 6.13 present an assessment against the EPBC Significant Impact Criteria for listed migratory species. Note, this relates only to the species that are listed as migratory species only as species listed as both threatened and migratory have been considered above. In accordance with the Significant Impact Guidelines, the criteria for threatened species are more stringent than those for migratory species.

Overall, the assessment demonstrates that the Project is not likely to have a significant impact on threatened species.

Table 6.12 EPBC Significant Impact Criteria for Migratory Bird Species

Significant Impact Criteria	Relevant species	Assessment
An action is likely to have a significant impact on the on a migratory species if there is a real chance or probability that it will:		
Substantially modify (including by fragmenting, altering fire regimes, altering nutrient cycles or altering hydrological cycles), destroy or isolate an area of important habitat for a migratory species	Could possibly occur • Fork-tailed swift • Whimbrel • Osprey	**No significant impact** While habitat within the Project Area is broadly consistent with that utilised by some migratory species, the limited spatial extent of the Project Area, high levels of human disturbance, and the availability of more extensive and less disturbed habitat in the surrounding region indicate that it does not constitute important habitat for migratory birds. Records of Beach stone-curlew in the vicinity suggest the Project Area may be used intermittently as a temporary stopover or resting area while moving between higher-value habitats, rather than as a key foraging, roosting or breeding site. Accordingly, removal or modification of vegetation associated with the works would not result in substantial modification, destruction or isolation of important habitat for a migratory species.

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Significant Impact Criteria	Relevant species	Assessment
Result in an invasive species that is harmful to the migratory species becoming established in an area of important habitat for the migratory species, or		**No significant impact** The overall risk of introduced pest or disease establishment associated with the Project is considered low. Construction vessels, equipment and plant will be sourced from within Queensland or elsewhere in Australia, where existing biosecurity controls apply. No international vessels, equipment or imported fill materials are anticipated. Therefore, a result in that is harmful to the migratory species becoming established in an area of important habitat for the migratory species is negligible.
Seriously disrupt the lifecycle (breeding, feeding, migration or resting behaviour) of an ecologically significant proportion of the population of a migratory species.		**No significant impact** The Project Area does not constitute important habitat for migratory birds with more extensive and less disturbed habitat in the surrounding region. As such the works is unlikely to seriously disrupt the lifecycle (breeding, feeding, migration or resting behaviour) of an ecologically significant proportion of the population of these migratory species.

Table 6.13 EPBC Significant Impact Criteria for Migratory Marine Megafauna Species

Significant impact criteria	Relevant species	Assessment
An action is likely to have a significant impact on the on a migratory species if there is a real chance or probability that it will:		
Substantially modify (including by fragmenting, altering fire regimes, altering nutrient cycles or altering hydrological cycles), destroy or isolate an area of important habitat for a migratory species	Could possibly occur • Dugong • Narrow sawfish • Salt-water Crocodile • Australian Humpback Dolphin • Reef Manta ray	**No significant impact** The Project Area is not known to provide important habitat for any migratory species. With the exception of a single record of dugong within a 500 m buffer of the Project Area, the area itself is dominated by unconsolidated sand and rubble substrates with very low and highly fragmented seagrass cover. As such, the Project Area is considered to provide limited habitat value for dugong, Australian humpback dolphin and reef manta ray. The Project Area may also provide marginal habitat for salt-water crocodile and narrow sawfish; however, these species are expected to occur only opportunistically or in transit and no records are known from within the Project Area. Accordingly, the proposed works are unlikely to substantially modify, destroy or isolate important habitat for any migratory species, including through fragmentation, alteration of nutrient or hydrological regimes, or other key ecological processes.
Result in an invasive species that is harmful to the migratory species becoming established in an area of important habitat for the migratory species, or		**No significant impact** The overall risk of introduced pest or disease establishment associated with the Project is considered low. Construction vessels, equipment and plant will be sourced from within Queensland or elsewhere in Australia, where existing biosecurity controls apply. No international vessels, equipment or imported fill materials are anticipated. Therefore, a result in that is harmful to the migratory species
Seriously disrupt the lifecycle (breeding, feeding, migration or resting behaviour) of an ecologically significant proportion of the population of a migratory species.		**No significant impact** The Project Area does not constitute important habitat for these species with more extensive and less disturbed habitat in the surrounding region. As such the works is unlikely to seriously disrupt the lifecycle (breeding, feeding, migration or resting behaviour) of an ecologically significant proportion of the population of these migratory species.

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7 Conclusion

7.1 Summary

This referral has been prepared to assess whether the Project is likely to have a significant impact on MNES under the EPBC Act.

An assessment of potential impacts in accordance with *the Significant Impact Guidelines 1.1 – Matters of National Environmental Significance* has determined that the Project is not likely to have a significant impact on any MNES, based on the evidence presented in this report.

The Project is within a highly modified coastal environment that has been subject to long-standing maritime infrastructure, vessel traffic and associated disturbance. Marine and terrestrial habitats within the Project Area are fragmented and generally of low ecological value, with no threatened ecological communities or habitat critical to the survival of threatened species were identified within the Project Area. While the Project will result in localised permanent disturbance to marine plants and benthic habitats, and temporary impacts associated with dredging, reclamation and piling works, these impacts are confined to a small, defined footprint and do not affect important or high-value habitats outside the Project Area.

The Project is located within the GBRWHA and GBRNP and adjacent to the GBRMP. The assessment demonstrates that the nature, scale and duration of the Project will not result in a loss, degradation or notable alteration of the Outstanding Universal Value or heritage values of these places. Potential impact pathways, including changes to water quality, underwater noise, seabed disturbance and vessel movements, are expected to be temporary and localised, and will not disrupt ecological or biological processes that underpin these MNES.

Ecological assessments confirm a low likelihood of occurrence of listed threatened and migratory species within the Project Area, and the absence of habitat critical to their survival. Species that may occasionally occur in the broader area have been considered in the assessment, with appropriate avoidance and mitigation measures proposed where relevant. More ecologically intact habitats in the surrounding region occur outside the Project footprint and will not be impacted.

Mitigation and management measures outlined in this report, including controls on water quality, marine works, underwater noise, vessel movements, lighting and biosecurity, will be implemented through a CEMP and associated sub-plans. These measures ensure that potential impacts are avoided or minimised to the extent practicable and that no significant residual impacts are anticipated.

A summary of the assessment outcomes and the mitigation and management measures that will be implemented is provided in Table 7.1. These mitigations form proponent commitments to environmental management that will be implemented should the referral be deemed by the DCCEEW to not be a controlled action or otherwise not a controlled action if undertaken in a particular manner.

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Table 7.1 Summary of mitigation and management measures

Potential sources of impacts	Mitigation commitments	Residual impact significance rating
Terrestrial habitat disturbance – excavation works and vegetation clearing	Implement CEMP to control site disturbance	Not significant; low risk of impact to MNES
Marine Habitat Disturbance – Tidal Works and Dredging	Implement a CEMP to control site disturbance and DMP to limit works to the defined dredge footprint; schedule dredging outside sensitive periods in the region where possible	Not significant; Low Risk of Impact to MNES
Water Quality Impacts – Marine	Implement sediment containment measures (e.g. silt curtains) during dredging and piling works to reduce turbidity; monitor water quality during dredging and apply corrective actions if thresholds are exceeded; manage dredge material transfer to minimise loss and spills.	Not significant; Localised; Low Risk of Impact to MNES
Land-Based Water Quality Impacts	Install erosion and sediment control under a CEMP; manage PASS under an ASSMP; implement construction plant controls, including fuel and chemical storage, handling and refuelling procedures to prevent spills and leaks	Not significant; Low Risk of Offsite Impact
Underwater and Construction Noise Impacts	Use marine fauna observers to monitor for protected species during piling; apply soft-start procedures for pile driving; implement shutdown protocols if fauna are detected near works; restrict noisy activities to daylight hours.	Not significant; Low Risk of Impact to MNES
Vessel Movements and Safe Navigation during Construction	Apply vessel speed restrictions in sensitive areas; conduct pre-start marine fauna observations; suspend operations if protected fauna are sighted near vessels.	Negligible; Very Low Risk
Light impacts	Minimising the extent, intensity and duration of construction lighting; directing lighting away from the water where practicable; avoid unnecessary lighting during periods of inactivity	Not significant; Low Risk of Impact to MNES
Introduction of marine pests	Inspect construction vessels for marine pests before arrival; ensure vessels have current antifoul treatment certificates in alignment with biosecurity regulation; inspect imported material or equipment sourced outside the local area	Risk effectively eliminated; No significant impact
Traffic impacts (Onshore and Offshore)	Implement standard traffic mitigation measures within the CEMP; monitor vibration impacts near sensitive receptors.	Not significant; low risk of impact to MNES
Operational Phase Impacts	Ongoing compliance with DMP for maintenance dredging requirements	Minor; No significant residual impact

On the basis of the assessments presented, the application of the mitigation hierarchy, and the implementation of the proposed management measures, it is concluded that the Project is not a controlled action under the EPBC Act and is not expected to require approval from the Commonwealth.

Species that could occasionally be present within the Project Area include some wader and migratory bird species, eastern curlew, sharp-tailed sandpiper, saltwater crocodile, and water mouse. While these species were not recorded during site surveys, their potential presence has been considered. In addition, seven ant plant individuals previously identified within the disturbance footprint have been

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successfully translocated. Migratory dolphins were also considered; however, no ecologically significant habitat occurs within or near the dredging footprint, limiting potential impacts. The habitats within the project footprint, particularly along Smiths Creek and adjacent to the Fearnley Street drain are already industrialised and provide only marginal or non-critical habitat. More ecologically valuable areas, such as the mangroves on Admiralty Island, are outside the disturbance footprint and will not be impacted.

The Project is located within the GBRWHA and GBRNP and dredging works will happen adjacent to the Great Barrier Reef Marine Park. As there are no impacting processes to, no significant impact to the survival of this MNES is expected. Based on terrestrial mapping, there are no TECs identified within the Project area. The proposal is not assessed as constituting habitat critical to the survival of any EPBC listed threatened or migratory species, and no significant residual impact will occur from the capital dredging works. Note clean material will be imported from a local quarry or sand stockpile area (ie., Bowen Boat Harbour) to be used for the reclaimed car park given this material possesses the geotechnical properties needed for the reclamation process.

Several listed threatened species are likely or possible to occur within the project footprint based on PMST search and a review of their likelihood by a qualified ecologist. These include both threatened and migratory wader/shorebirds, marine turtles, dolphins and sawfish which typically inhabit inshore marine waters, estuaries, embankments and along sandy and muddy beaches.

Management measures are proposed as part of the EMP for those activities that have the potential to have a significant impact on MNES. The works will be assessed against Queensland environmental protection legislation prior to commencement which will put strict construction and operational controls in place for the Project. After mitigation measures are applied and offsets implement to cover associated Matters of State Environmental Significance, it is concluded that the dredging and construction works are unlikely to have a significant impact on any MNES and are therefore not a controlled action.

7.2 EPBC Offset Considerations

The Australian Government's *EPBC Act Environmental Offsets Policy 2012* applies where a proposed action results in a residual significant impact on a matter of national environmental significance after all reasonable avoidance and mitigation measures have been implemented.

As outlined in this referral, the Project is not considered likely to have a significant impact on any MNES and is therefore not expected to require offsets under the EPBC Act. Accordingly, an offset proposal has not been developed.

While the Project is identified as Games-related transport infrastructure under BOPGA Act,and is deemed to comply with certain State approval requirements, MSQ remains committed to achieving environmental outcomes consistent with those ordinarily required under relevant State legislation.

An independent assessment process will be undertaken to identify any environmental offset obligations that would otherwise arise under State legislation and determine the appropriate offset response.

Where the independent assessment identifies offset requirements associated with impacts to Matters of State Environmental Significance, MSQ commits to implementing appropriate offset measures, including financial settlement offsets and/or direct offset delivery.

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Annex A SAPIR

Shute Harbour Expansion - Sediment Sampling and Analysis Plan Implementation Report

Final

Customer	TMR/MSQ
Project	004043
Deliverable	002
Version	00
	15 July 2026

Document Control

Document Identification

Title	Shute Harbour Expansion - Sediment Sampling and Analysis Plan Implementation Report
Project No	004043
Deliverable No	002
Version No	1
Version Date	15 July 2026
Customer	TMR/MSQ
Classification	OFFICIAL

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Amendment Record

The Amendment Record below records the history and issue status of this document.

Version	Version Date	Distribution	Record
00	31 March 2026	TMR/MSQ	Draft
01	15 July 2026	TMR/MSQ	Final

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Executive Summary

Background

The Department of Transport and Main Roads (TMR) and Maritime Safety Queensland (MSQ) are proposing to expand and upgrade recreational boating infrastructure at Shute Harbour to meet the growing demands of the Whitsunday region.

Findings of the Queensland Recreational Boating Facilities Demand Forecasting Study (BMT 2022), identified limitations associated with the existing boating infrastructure. The Forecasting Study recommended the development of a new boating infrastructure facility to address these constraints. Two design options are currently being considered, with the preferred option to be selected before the approval package is finalised. The aim of this Sampling and Analysis Implementation Report (SAPIR) was to characterise the physico-chemical properties of dredged sediments to support the impact assessment and approval process of these two options.

Assessment

Findings confirm that dredged material remains suitable for unconfined ocean disposal under National Assessment Guidelines of Dredging (NAGD) 2009 guidelines and for land-based re-use under National Environment Protection Measures (NEPM) 2013 guidelines.

- All metals and metalloids were well below screening levels when assessed using the upper 95% confidence limit of mean concentrations.
- Organic contaminants, comprised of organotins, polychlorinated biphenyls (PCBs), total petroleum hydrocarbons (TPH), polycyclic aromatic hydrocarbons (PAHs), benzene, toluene, ethylbenzene and xylene (BTEX) and organochlorine pesticides (OCPs), were below detection limits in all samples, and therefore suitable for ocean disposal and land-based re-use.
- Acid sulfate soil testing indicated that sediments are potential acid sulfate soils (PASS), with measurable chromium-reducible sulfur but high acid neutralising capacity (ANC). Leachate testing was undertaken on all samples, supporting the utilisation of the measured ANC. Net acidity values, accounting for ANC, were reported below the laboratory limit of reporting (LOR). The applied LORs were below the relevant QASSTM action criteria, indicating that sediments are likely to have sufficient capacity to self-neutralise. However, this assessment is constrained by the depth of core refusal, which did not consistently extend to the full proposed dredge depth. As such, the ASS characterisation may not fully represent deeper sediments and will require further testing to inform any necessary ASS management measures for these deeper sediments.. .

Quality assurance and control measures were rigorously applied throughout sampling, handling, and laboratory analysis, providing confidence that the results are representative of dredged material.

Overall, available data indicate that the dredged material poses no significant contaminant risk and is suitable for unconfined ocean disposal. Subject to confirmation of ANC via incubation testing and implementation of appropriate acid sulfate soil management measures, the material is also suitable for controlled land-based re-use.

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1 Introduction

1.1 Background

The Department of Transport and Main Roads (TMR) and Maritime Safety Queensland (MSQ) are proposing to expand and upgrade recreational boating infrastructure at Shute Harbour (the 'Project') to meet the growing demands of the Whitsunday region. The Project responds directly to the findings of the Queensland Recreational Boating Facilities Demand Forecasting Study (BMT 2022), which identified limitations associated with the existing boating infrastructure, including:

- A growing proportion of visiting recreational boat users; and
- Constrained land availability and exposure to wave action, which limit the capacity of the current infrastructure to meet present and future launching demand.

The Forecasting Study recommended the development of a new boating infrastructure facility to address these constraints. In response, TMR is now progressing design and approvals for the Project.

The proposed works include construction of a four-lane boat ramp, associated floating walkways, a revetment wall, a reclaimed car park, and associated navigational access channel. This will occur adjacent to existing maritime infrastructure at Shute Harbour and will require some reclamation works for the carpark footprint. Dredging is required for the Project to establish the navigational areas as well as to excavate the foundations of the outer wall for the reclamation. The design and dredge footprint abuts Lot 23 SP208207 and is illustrated in Figure 1.1.The design and dredge footprint abuts Lot 23 SP208207 and is illustrated in Figure 1.1.

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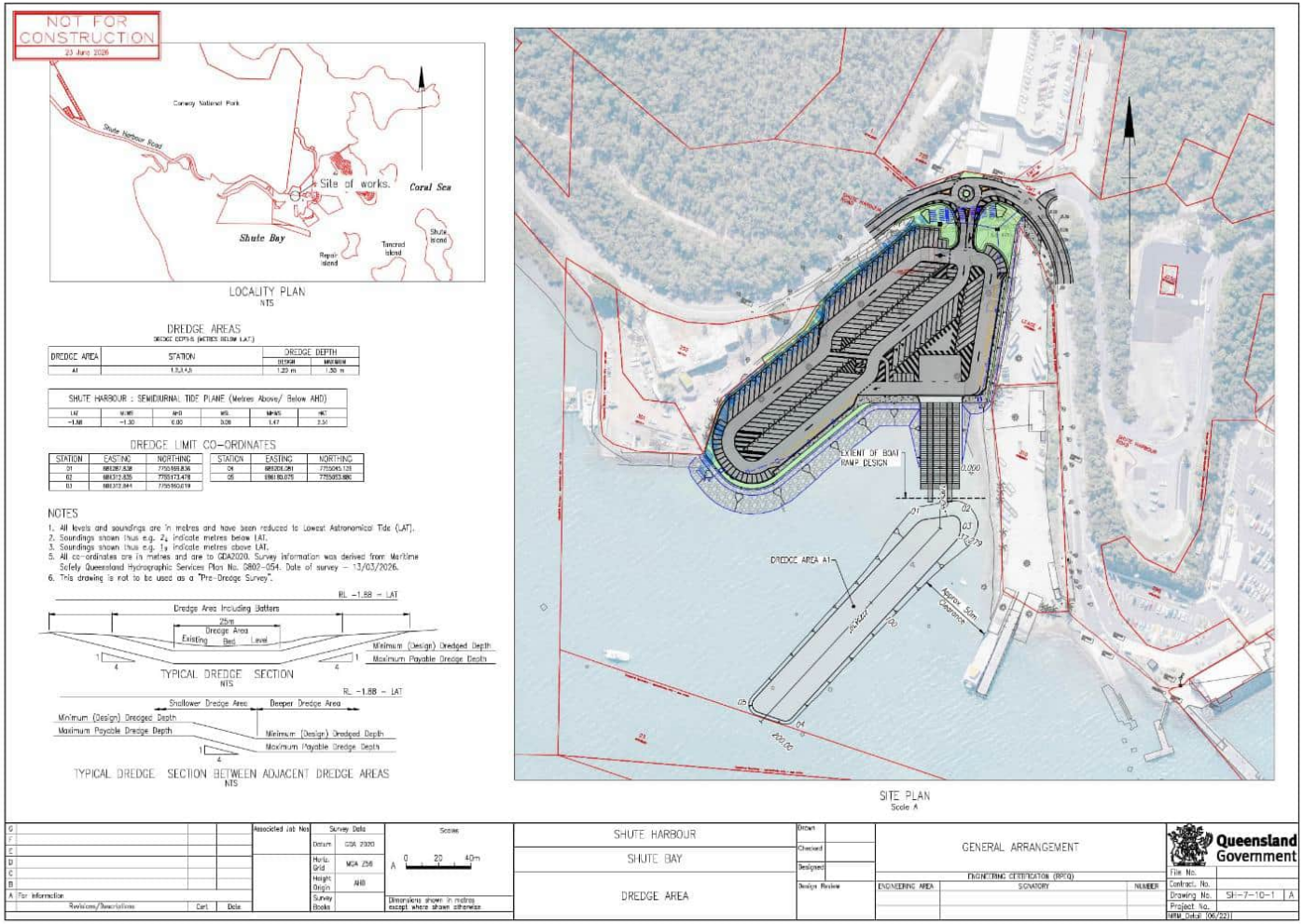

Figure 1.1 Four-lane boat ramp and 130 CTU bay

1.2 Objectives

The aim of this Sampling and Analysis Implementation Report (SAPIR) is to characterise the physico-chemical properties of dredged sediments to support the impact assessment and approval process. The physical and chemical properties of the proposed dredged sediment were characterised in accordance with the National Assessment Guidelines of Dredging (NAGD) 2009, National Environment Protection Measures (NEPM) 2013 and the approved SAP.

The specific objectives of the study were to:

- Describe and quantify the physical and physico-chemical properties of sediments to be dredged.
- Quantify concentrations of chemical parameters in sediments to be dredged.
- Compare chemical concentrations to NAGD screening levels to determine the need or otherwise for further testing.
- Assess the suitability of dredged sediments for ocean disposal, with reference to guideline values in NAGD, NEPM (NEPC 1999) and Queensland Acid Sulfate Soils Technical Manual (Dear et al., 2024).

1.3 Proposed Dredging and Disposal

Capital dredging will be undertaken to support navigational requirements and project infrastructure related to reclamation and revetment construction. This will involve exposing suitable founding material and, subject to geotechnical suitability, the potential beneficial reuse of suitable dredged sediments for land reclamation. At the time this SAP was prepared, capital dredging volumes were estimated to be up to 81,750 m³ (163,500 t) to a maximum dredge depth of -4.0 m LAT. Subsequent design refinement has reduced the anticipated capital dredging volume to approximately 40,000 m³. The investigations and assessment presented in this SAP were therefore undertaken on the basis of a larger dredging volume than the currently proposed representing a conservative basis for assessment.

Capital dredging will be undertaken using a barge mounted cutter suction dredger (CSD) or a backhoe dredge (excavator sitting on advancing revetment wall or barge). Both dredging methods are the most suited for relocation of dredged materials as both will create considerably less turbidity at the dredging site than alternate options. Where a CSD is used, dredging would involve loosening of seabed sediments using a cutter head, with disturbed material captured via suction and transferred onshore as a slurry. Where backhoe dredging is used, sediments would be removed mechanically, allowing targeted excavation near permanent works.

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2 Methods

2.1 Compliance with SAP and Guidelines

All sampling and analysis of sediments was undertaken in accordance with the NAGD (Commonwealth of Australia 2009). All sampling and analysis procedures followed the approach outlined in the sampling and analysis plan (SAP) provided in Annex A. Deviations from the SAP are as follows:

- Core SH10 was not initially attempted due to a moored catamaran obstructing the site. The coring location was relocated to a position between SH10 and SH4, where five attempts were made using the vibrocorer; however, none achieved sufficient penetration due to a hard surface layer found in the shallower areas. Due to these constraints and field program time limitations, both SH10 and its alternative location were abandoned. Further relocation was not pursued given the density of remaining sample sites. This results in a localised gap in vertical characterisation near the northern margin of the dredge footprint.

- At several sampling locations, the target depth of −4.5 m LAT was not achieved due to refusal. This refusal was not caused by lithified (rock) substrate, but rather by the interaction between the soil and the coring tool. In cohesive sediments such as clay, vibratory energy is rapidly attenuated with depth as sidewall adhesion and shaft friction increase. The clay absorbs the vibration energy, reducing or eliminating the liquefaction effect that normally allows the core barrel to penetrate. Additionally, the suction generated inside the corer becomes insufficient to retain the sediment column due to the same adhesive and frictional forces acting on the core walls. As a result, even where the vibracore achieved a penetration depth of 4–5 m, only 2–3 m of sample was recovered. These limitations are considered in the interpretation of sediment contaminant distributions and ASS risk.

2.2 Sampling Locations and Rationale

In accordance with Appendix D of the NAGD, an estimated dredge volume of approximately 81,750 m^3 requires a total of 16 sampling locations, including a minimum of four sampling locations for Phase III (elutriate/bioavailability) testing.

Sampling locations were generated by overlaying a square grid over the dredge area, ensuring at least five times the number of grid squares than the number of sampling locations. Sample locations were selected using a random number generator applied to the grid. Where selected cells fell outside the dredge footprint, the location was moved to the nearest point within the footprint. A map of the sampling locations and coordinates are shown in Figure 2.1 and Table 2.1.

Table 2.1 Sample core locations

Core ID	Longitude	Latitude
SH1	148.7825	-20.2921
SH2	148.784	-20.2936
SH3	148.784	-20.2925
SH4	148.7835	-20.2919
SH5	148.7832	-20.293
SH6	148.7829	-20.2925

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Core ID	Longitude	Latitude
SH7	148.7827	-20.2929
SH8	148.7833	-20.2933
SH9	148.7836	-20.2925
SH10	148.7834	-20.2914
SH11	148.783	-20.2921
SH12	148.7823	-20.2924
SH13	148.7832	-20.2927
SH14	148.7821	-20.293
SH15	148.7839	-20.293
SH16	148.7833	-20.2923

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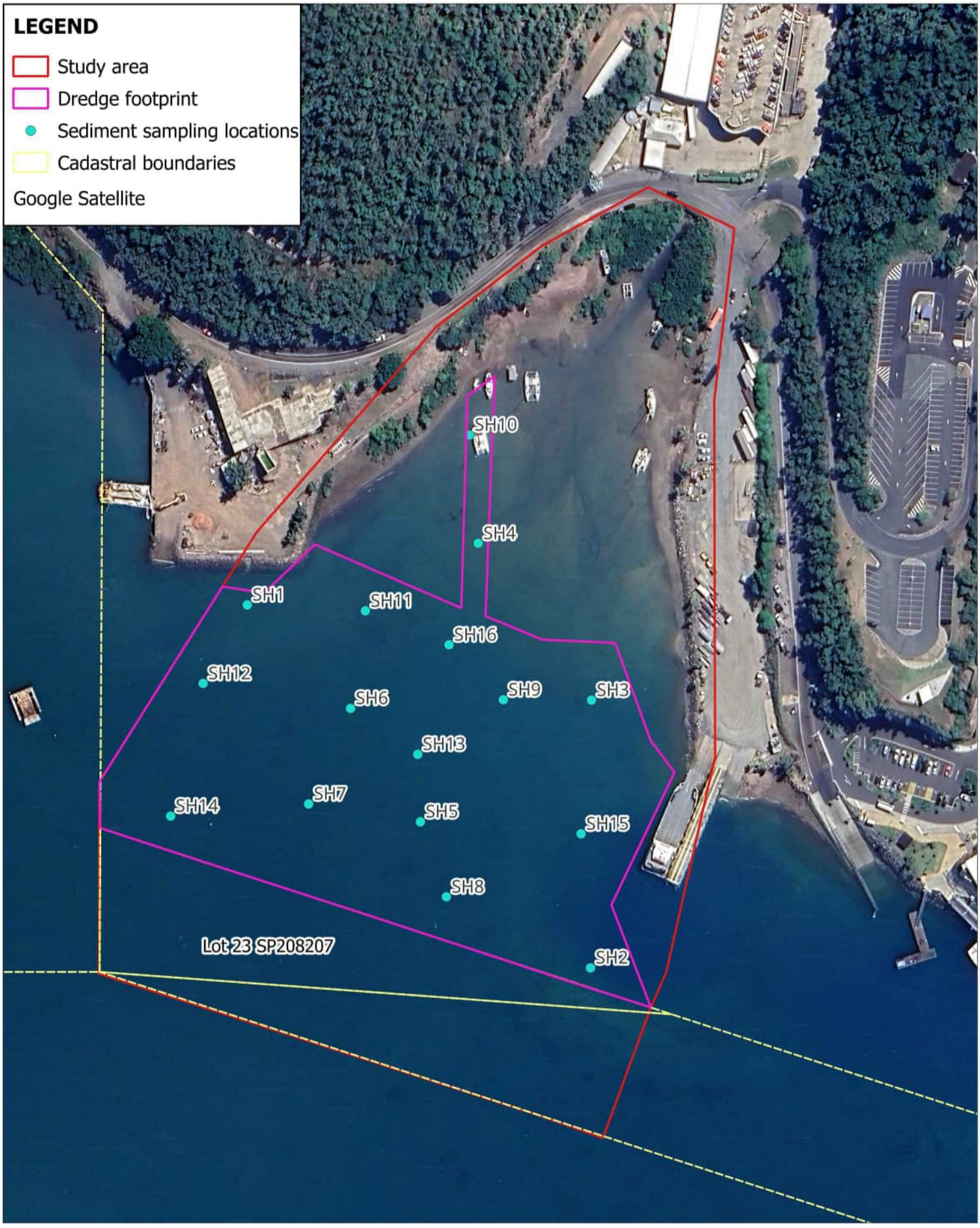

Title:

Sediment Sampling Locations

Figure: 2.1

Rev: A

BMT endeavours to ensure that the information provided in this map is correct at the time of publication. BMT does not warrant, guarantee or make representations regarding the currency and accuracy of information contained in this map.

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2.3 Field Methods

The field methodology was undertaken in accordance with the approved SAP, NAGD (Commonwealth of Australia 2009) and the quality assurance and quality control procedures outlined in Section 2.5. Table 2.2 provides a summary of the methodology employed for the sediment sampling undertaken.

Table 2.2 Summary of sediment sampling field methods

Task	Summary
Timing of Sampling	10th to 14th February 2026
Sample Collection	A commercial vessel supplied by Abyss Diving was used to undertake the sediment sampling. A handheld GPS was used on the survey vessel for position fixing and navigation to each sampling location. All sediment sampling was undertaken by a team of two qualified BMT field staff with experience in the implementation of sediment sampling and analysis programs. Abyss utilised a vessel mounted custom fabricated vibrocorer with a 6 m long 50 mm diameter stainless steel core barrel. Following recovery of the core from the seabed, the core was extruded under air pressure into a fresh plastic sleeve before being transferred onshore for processing. At certain locations multiple cores were taken to provide adequate sample volume for analysis and confirmation of refusal depths.
Core Lengths	Refusal was met on all occasions with maximum sampling depths ranging from -0.7 m LAT to -4.5 m LAT (Figure 2.2). Sampling intervals of 0.5 m were achieved for each core retrieved.
Sample Processing	Sediment samples were logged and processed onshore upon receipt from the sampling vessel. For each sample location a site description pro-forma was completed to document sample collection and sediment description (Appendix D). Samples from each sub-sample were carefully homogenized in a clean container prior to the filling of sterile sampling jars supplied from the analytical laboratory. Nitrile gloves were worn by all field personnel handling the sediment, and gloves were disposed of after processing of each sample. Sample bottles were labelled with a waterproof marker pen on the bottle label and lid. Sample bottles for organic analyses were filled with zero headspace to minimise volatilisation.
Sample Management	All samples were placed into eskies immediately after collection and stored on ice until transported to ALS Townsville at the completion of the sampling program. Acid sulfate soil (ASS) and organotin samples were frozen at the end of each sampling day to minimise oxidation and preserve holding times for laboratory analysis. All remaining samples were delivered to ALS within the specified holding times and accompanied by appropriate chain-of-custody documentation.
Decontamination	The sampling methodology ensured that sediment samples were not contaminated by cross contamination or external factors between cores. The vessel used was thoroughly inspected and washed down as necessary throughout the sampling program. All sampling equipment was decontaminated with Decon 90 between each sampling event.
QAQC Procedure	In accordance with NAGD 2009, the following field and laboratory quality control samples were taken:

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Task	Summary
	Two field triplicate samples were collected at SH14 and SH16 to determine the small scale spatial variability of the sediment physical and chemical characteristics One triplicate split sample was collected at SH11 to assess laboratory variation, with one of the three samples sent to a second (reference) laboratory for analysis Two trip blank containers filled with inert material (e.g. chromatographic sand) that were analysed concurrently with the analysis of volatile organic substances such as BTEX and TPH C6-C9
HSEQ	The sampling program was undertaken in accordance with the health and safety management systems of the subcontractor, Abyss Diving, and BMT's Job Hazard Analysis (JHA) documentation. Appropriate maritime safety flags were displayed during operations to minimise interactions with other vessel traffic. Prior to mobilisation each day, the weather forecast was reviewed to confirm that conditions were suitable and safe for sampling activities.

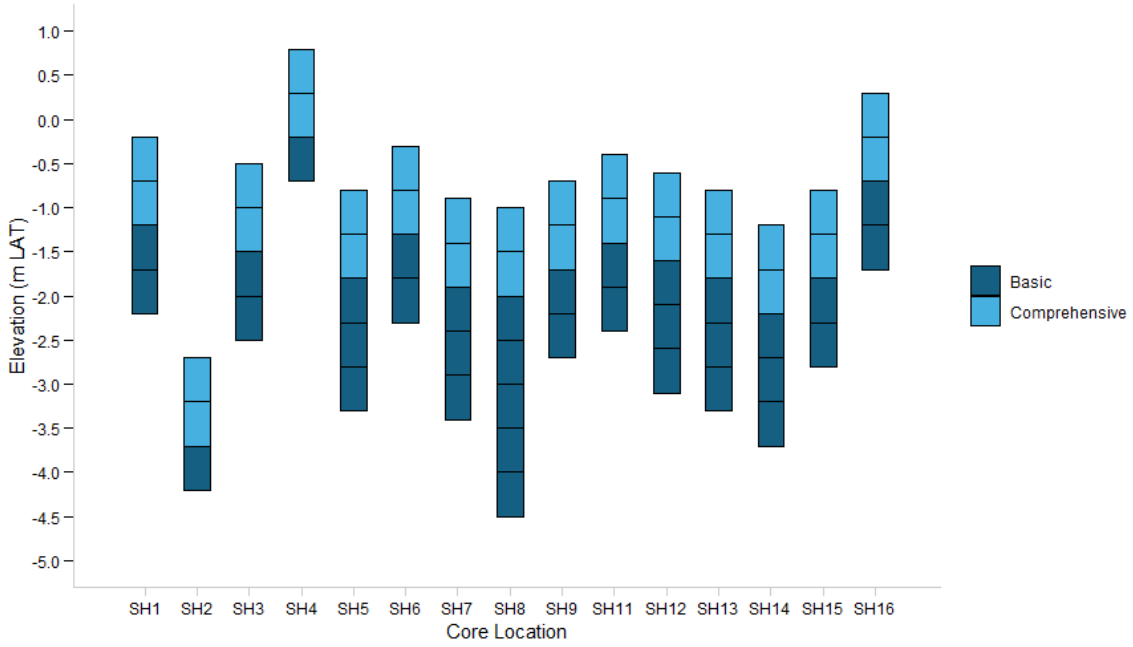

Figure 2.2 Core depths and analytical suites (depths relative to LAT; top of each core represents the seabed at the sampling location)

2.4 Laboratory Analysis Methods

2.4.1 Analytical tests

As per the SAP, it was assumed that contamination would be localised to the upper 1 m of sediment. A 'basic' suite of parameters, including PSD and ASS, was analysed at 0.5 m intervals along the full length of each core to refusal. Within the upper 1 m (split into two 0.5 m intervals), a more comprehensive suite of analyses was undertaken, comprising the parameters listed in Table 2.3. As part of a pilot study, PCBs were analysed only within the top 1 m of sediment at five locations. Furthermore, to support modelling settleability tests were conducted at three locations.

In addition, extra sediment was retained to allow for the potential undertaking of Phase III analysis under NAGD, as well as slab or tray incubation testing, to enable a more accurate assessment of ASS risk and confirmation of ANC.

Table 2.3 Contaminant list, Target Practical Quantification Limits (PQLs), Screening Levels (SLs) and NEPM Guideline Values, and Level of Investigation

Parameter	Target PQL	NAGD SLs	NEPM		Level of Investigation
			HIL-C	ESLs	
Basic Characteristics					
Particle Size Distribution	63 to 0.002 mm	-	-	-	All Sites
Moisture Content (%)	0.1	-	-	-	
Total Organic Carbon (%)	0.1	-	-	-	
Settleability (10% solids)		-	-	-	Three sites
Metals and Metalloids (mg/kg)					
Aluminium	200	-	-	-	All Sites
Antimony	0.5	2	-	-	
Arsenic	1	20	300	40	
Cadmium	0.1	1.5	90	-	
Chromium	1	80	300	-	
Cobalt			300	-	
Copper	1	65	17000	-	
Iron	100	-	-	-	
Lead	1	5	600	470	
Mercury	0.01	0.15	80	-	
Manganese	10	-	19000	-	
Nickel	1	21	1200	-	
Selenium			700	-	
Silver	0.1	1	-	-	
Zinc	1	200	30000	-	

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Parameter	Target PQL	NAGD SLs	NEPM		Level of Investigation
			HIL-C	ESLs	
Organotin Compounds (µgSn/kg)					
MBT, DBT, and TBT	1 µg/kg[3]	9 µg/kg	-	-	All Sites
Organics (mg/kg)					
Total Petroleum Hydrocarbons	100	280	-	-	All Sites
TPH Fractions	10-100	-	-	125 (C_6-C_{10}) 25 (C_{10}-C_{16})	
Benzene, Toluene, Ethylbenzene, Xylene (BTEX)	0.2	-	10 (Benzene) 10 (Toluene) 1.5 (Ethylbenzene) 10 (Xylenes)		
Polycyclic Aromatic Hydrocarbons (PAHs)	0.005 (0.1 for sum)	10,000[3]	300		
Organochlorine Pesticides (DDT, DDE, DDD, aldrin and dieldrin, chlordane, endosulfan, endrin, heptachlor, HCB, methoxychlor, mirex, toxaphene)	0.5-1	1.2 (DDT) 1.4 (DDE) 3.5 (DDD) 2.8 (Dieldrin) 4.5 (Chlordane) 2.7 (Endrin)	400 (DDT+DDE +DDD) 9 (Aldrin+ Dieldrin) 70 (Chlordane) 20 (Endrin)	4 (DDT)	
Polychlorinated Biphenyls (PCBs)		23	1	-	Five sites
Acid Sulfate Potential					
Chromium Suite	2 mole H^+/tonne	Liming rate based on Table 4.2 (Dear *et al.*, 2014)	-	-	All Sites
Slab/Chip Tray Incubation test (for ANC)	0.1 pH unit	As per Slab Incubation Method NLM-8.1/ Chip Tray NLM-8.2	-	-	Undertaken on samples if initial net acidity results (less ANC) are greater than action criteria (0.03 %S / 18 mol H^+/t)

2.4.2 Laboratory Quality Control

Both laboratories followed laboratory Quality Control (QC) procedures in accordance with requirements outlined in NAGD. This included analysis of laboratory blanks, duplicates, certified surrogate materials and spiked samples.

Validation of all laboratory QC analyses was conducted in accordance with NAGD to confirm suitable data quality for undertaking a rigorous characterisation of the proposed dredge material.

Laboratory Blanks

The purpose of this assessment is to monitor potential laboratory contamination of samples due to potential cross-contamination of samples during laboratory preparation, extraction or analysis. Blank sample concentrations should be at or near the LOR of the method used.

Laboratory Duplicates

This assessment refers to a randomly selected intra-laboratory split sample, which provides information regarding the method precision and sample heterogeneity. Results are presented as Relative Percent Difference (RPD) values of two sample concentrations for a specific contaminant.

NAGD recommends that duplicates should agree within a typical RPD of the method of ±35 %. This recommended RPD is typically not adopted by analytical laboratories as it does not account for the greater uncertainty for contaminant concentrations close to the method's LOR. NAGD also notes that RPDs may not always agree within these limits where sediments are very inhomogeneous or vary greatly in grain size.

The primary laboratory ALS uses the following approach to assess duplicate RPD's:

- Result <10 times LOR – no limit to RPD; and
- Result >10 times LOR – RPD between 0% and 50%.

The secondary laboratory Eurofins follows this approach:

- Result <10 times LOR – no limit to RPD;
- Result between 10 and 20 times LOR – RPD between 0% and 50%; and
- Result >20 times LOR – RPD between 0% and 20%.

Refer to Appendices C and D for the acceptance criteria of subcontracted laboratories.

Surrogate and Matrix Spikes

Laboratory Control Samples are either certified reference materials or a blank sample spiked with known concentrations of the analytes of interest. The purpose of this measurement is to monitor method accuracy.

Matrix spikes refer to an intra-laboratory split sample spiked with a representative set of target analytes of known concentration. Matrix spikes are assessed to monitor potential sample matrix effects on analyte recoveries.

Surrogate spikes are used for organic analytes. Surrogates are known additions to samples which mimic the compounds of interested and are not normally expected to be present in the sample.

For both surrogate and matrix spikes, a calculation of the percent recovery of the spiked amount against the returned concentration is performed indicating analytical performance in terms of extraction efficiency.

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NAGD states that recovery limits of 75% - 125% are generally acceptable. Analytical laboratories typically adopt specific surrogate and matrix spike recovery limits for the various contaminant compound groups. It is also noted that ideal recovery ranges may be waived in the event of sample matrix interference.

The primary laboratory ALS adopts the following acceptable surrogate and matrix spike recovery limits:

- Trace elements: 70-130%;
- Organic analyses: 50-150%;
- SVOC & speciated phenols: 10-140%; and
- Surrogates: 10-140%.

The secondary laboratory Eurofins adopts specific recovery limits for individual compounds.

2.5 Quality Assurance and Quality Control (QA/QC) Procedures

Personnel

All sediment sampling was undertaken by a team of qualified marine scientists with experience in the implementation of sediment sampling and analysis programs.

Collection Quality Assurance

The vessel was thoroughly inspected and washed down prior to the beginning of sediment sampling each day. The workspace on the vessel was washed down regularly with ambient seawater to clean all surfaces and minimise the potential for dust contamination of samples. All sample processing was undertaken away from any potential contamination sources such as engine exhausts, fuels, oils, greases, lead weights, zinc anodes, antifouling paint etc.

Sampling equipment was thoroughly cleaned with De-con 90 solution prior to use and cleaned and rinsed with seawater between samples to prevent cross contamination between samples.

Sample Quality Assurance

In accordance with NAGD requirements and the SAP, the following field and laboratory quality control samples were taken:

- Two field triplicate samples at 10% of locations to determine the small scale (measured in metres) spatial variability of the sediment physical and chemical characteristics
- One triplicate split samples (primary sample from 5% of locations thoroughly mixed and split into three sample container sets) to assess laboratory variation, with one of the three samples sent to a second (reference) laboratory for analysis.

Three trip blank containers filled with inert material (e.g. chromatographic sand) to be analysed concurrent with the analysis of volatile organic substances such as BTEX and TPH C6-C9.

Laboratory Quality Control

Both laboratories followed laboratory Quality Control (QC) procedures in accordance with requirements outlined in NAGD. This included analysis of laboratory blanks, duplicates, certified surrogate materials and spiked samples.

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Validation of all laboratory QC analyses was conducted in accordance with NAGD to confirm suitable data quality for undertaking a rigorous characterisation of the proposed dredge material.

Laboratory Control Samples are either certified reference materials or a blank sample spiked with known concentrations of the analytes of interest. The purpose of this measurement is to monitor method accuracy.

Matrix spikes refer to an intra-laboratory split sample spiked with a representative set of target analytes of known concentration. Matrix spikes are assessed to monitor potential sample matrix effects on analyte recoveries.

Surrogate spikes are used for organic analytes. Surrogates are known additions to samples which mimic the compounds of interested and are not normally expected to be present in the sample.

For both surrogate and matrix spikes, a calculation of the percent recovery of the spiked amount against the returned concentration is performed indicating analytical performance in terms of extraction efficiency.

NAGD states that recovery limits of 75% - 125% are generally acceptable. Analytical laboratories typically adopt specific surrogate and matrix spike recovery limits for the various contaminant compound groups. It is also noted that ideal recovery ranges may be waived in the event of sample matrix interference.

2.6 Data Analysis

2.6.1 Sediment Contaminants

Concentrations of chemicals measured in sediment samples were compared to screening levels of NAGD to determine whether the material is suitable for unconfined placement at sea or if further analyses, such as elutriate, bioavailability or toxicity testing, are required.

Specifically, mean concentrations of chemical parameters at the upper 95% confidence level (95% UCL) were compared against NAGD guideline levels.

Data Pre-Treatment

Analytical values below Limit of Reporting (LOR) were set to one-half of the LOR as per NAGD recommendation to facilitate 95% UCL calculation. This was only undertaken where there was greater than 30% detections within the survey area. Any replacement technique is a source of bias (Croghan and Egeghy 2003). Only parameters with greater than 30% detections were subject to analysis due to the high probability of bias created by the replacement technique.

Organic contaminant results were normalised to 1% TOC where the measured value is within the range of 0.2-10%. If TOC values were outside of this range, the highest (10%) or lowest (0.2%) value was adopted as appropriate. Organic parameters with concentrations below LORs were not normalised to 1% TOC but were included at half their LOR.

One assumption in the calculation of the 95% UCL is that the samples are statistically independent. Therefore, field triplicate samples and laboratory split samples were averaged for each location in the 95% UCL calculation.

Selection of Appropriate 95% UCL Calculation Method

ProUCL Version 5.2.0 was used to calculate the 95% UCL (US EPA 2022). In accordance with NAGD, for normally distributed data, the arithmetic mean was calculated, and the 95% UCL was calculated using the one-tailed Student's t UCL test. For data that followed a log-normal distribution, the geometric

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mean was calculated and the 95% UCL was calculated using Chebyshev method. For data that did not follow either a normal or log-normal distribution, the 95% UCL was calculated using non-parametric techniques as per NAGD. Should 95% UCL values for all analysed parameters fall below NAGD screening levels, the sediment was considered chemically acceptable for ocean disposal.

If chemicals were found to be above the screening level, they were considered a Contaminant of Potential Concern and Phase III testing was required.

Variability in Sediment Properties and Correlation Analysis

Summary statistics, for analytical results, namely minimum, maximum, mean and relative standard deviation (RSD) values are presented and referred to throughout this report. Relative standard deviation (also known as coefficient of variation) indicates the extent of variability in a dataset in relation to the mean value, by expressing the standard deviation as a percentage of the mean. For the purposes of this report, nominal percentage ranges have been selected to aid in interpretation. Therefore, an RSD of less than 30% will be considered low variability, 30% to 70% will be considered moderate variability and more than 70% will be considered high variability. In addition, Pearson product-moment correlation analysis was performed on select parameters to measure the strength of the linear association between the chosen parameters.

2.6.2 Acid Sulfate Soils

The results of the chromium-suite acid sulfate analysis were assessed against the Australian framework for Acid Sulfate Soil management in coastal systems (Ahern *et al*. 1998). The risk of acidification was determined by the acid-base accounting approach (Ahern *et al*. 2004). Net acidity was calculated from the results as a measure of the acid producing capacity of the sampled sediment upon complete oxidation.

The calculated net acidity was then compared to the QASSIT action criteria of 0.03% S or 18 mol H+/t to assess the need for acid sulfate soil management if the dredged sediments were to be placed on land. Department of Environment and Science advises that acid neutralising capacity (ANC) values should be verified by further leachate testing (slab/tray incubation) to allow its use in the net acidity calculation. The liming rate indicates the amount of lime that needs to be added to the soil to manage its acid generating capacity.

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3 Results

3.1 Physical Characteristics

3.1.1 Particle Size Distribution (PSD)

Sediments displayed moderate variability in composition, relaying a degree of spatial variation. Generally, sediments were dominated by the fines fraction, ranging from 6 to 97 %, with a mean of 79.7 % and low variability (RSD 26%). The sand content ranged from 2 to 49 %, with a mean of 15.9% and high variability (RSD 95%). Gravel was present in the majority of samples ranging from <1 to 45 %, with a mean of 5 % and high variability (RSD 150%).

Overall, sediments were broadly comparable across the site and were predominantly fine-grained. Moderate spatial variability in fines content was observed, with a general tendency for finer sediments to occur further from shore, although the pattern was not uniform. Nearshore sites, particularly SH4, contained higher sand and/or gravel fractions. Vertical variability was also evident within cores, with fines content commonly increasing with depth.

Figure 3.1 presents the sediment grain particle size distribution (PSD) results for each location across the survey area, with a summary of the PSD results provided in Table 3.1. Core logs and sediment photographs are provided in Appendix D.

Table 3.1 Summary of averaged sediment fractions per location, Shute Harbour

Sediment Description*	% PSD			
	Clay (<2 µm)	Silt (2-60 µm)	Sand (0.06-2.00 mm)	Gravel (>2mm)
Sandy mud	43.4	36.3	15.9	4.4

* = Based on the Folk and Ward (1957) Classification

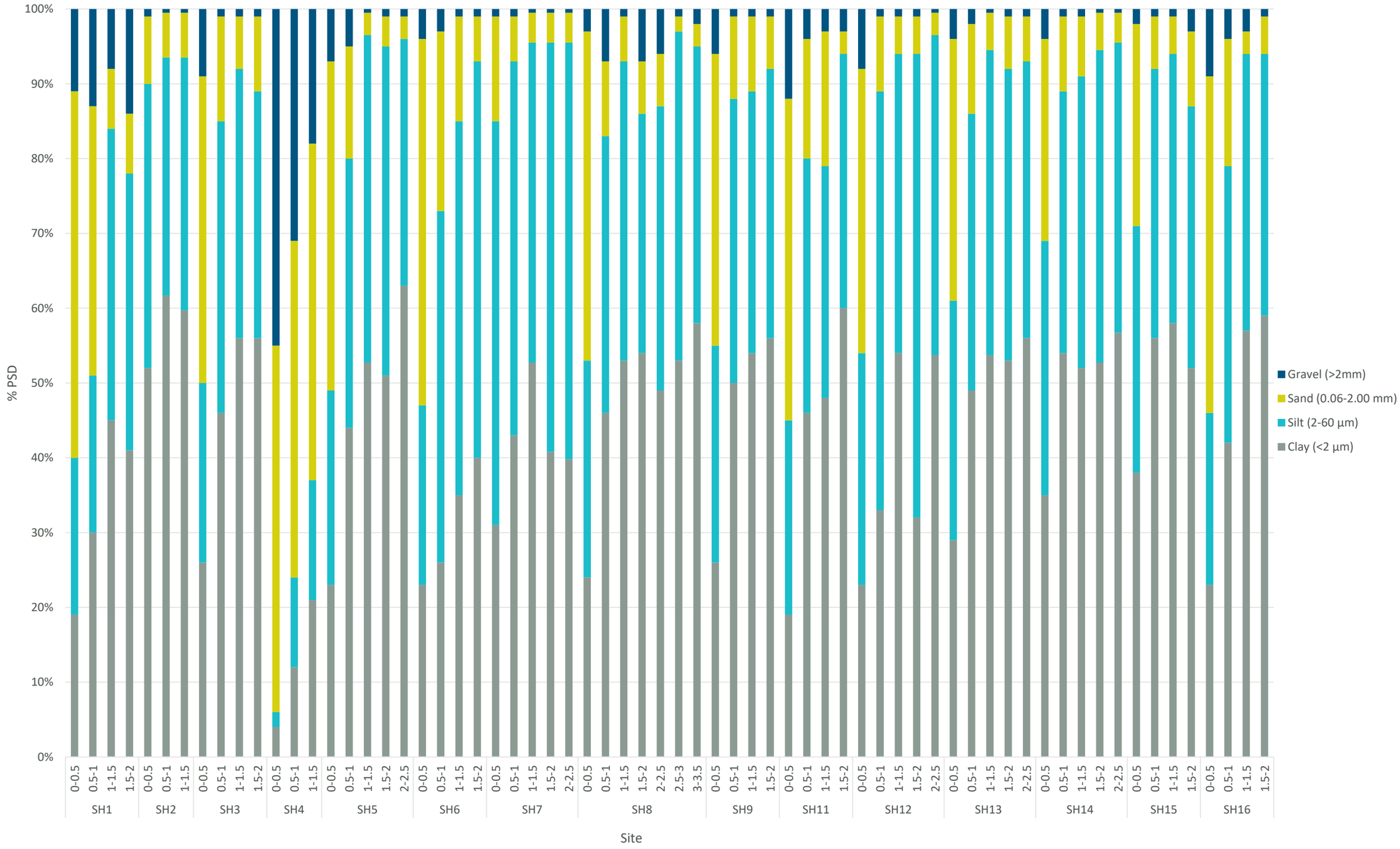

Figure 3.1 Percentage sediment particle size distribution, Shute Harbour

3.1.2 Settleability

Settleability testing was conducted at a 10% solids concentration. Settling velocities at 50% settlement ranged between 1.9 and 3.6 mm/min, and at 90% settlement of 0.1 mm/min. Settling rates were broadly comparable across the survey area.

The results indicate moderate initial settling, typical of fine to moderately cohesive marine sediments. The uniformly low settling rates at 90% settlement across all samples reflects a pronounced slowdown during the later stages of consolidation, which is characteristic of the fine fraction within this sediment type.

3.2 Chemical Analysis

3.2.1 Assessment Criteria

Contaminant concentrations in all sediment samples were compared against their respective NAGD screening levels as detailed in Table 2 of Appendix A of the NAGD (2009) and ANZG (2018). Normalisation of organic compounds (including organotins, hydrocarbons, PCBs and pesticides) to 1% total organic carbon (TOC) followed NAGD (2009) guidance, where measured TOC concentrations were within the range of 0.2% to 10%. In addition, the 95% UCL of the mean was calculated to determine compliance with applicable screening levels.

Given the potential for dredged material to be reused on land, contaminant concentrations were also assessed in accordance with the relevant requirements of the NEPM 2013. This included with health investigation levels for public open space (HIL-C) and ecological screening levels (ESLs) for areas of ecological significance.

3.2.2 Summary of Results

This section summarises the results of the chemical analyses. Annex A presents a summary of contaminant concentrations relative to the applicable NAGD screening levels. Laboratory Reports are provided in Annex B.

Metals/Metalloids

Most metals and metalloids were detected in all samples across the survey area. Antimony, cadmium, mercury and silver were not detected in any sample. All 95% UCL values for metals and metalloids were below their respective NAGD screening levels and NEPM investigation levels. Based on these results, the sediments are considered suitable for ocean disposal and land-based re-use.

Hydrocarbons

Benzene, toluene, ethylbenzene and xylene (BTEX) and total petroleum hydrocarbons were below the laboratory LOR in all samples. Polycyclic aromatic hydrocarbons (PAHs) were mostly below the laboratory LOR except SH1 0.0-0.5, recording a 1% TOC normalised value of 57.5 µg/kg, well below the NAGD screening level of 10,000 µg/kg and the NEPM HIL-C of 300,000 µg/kg. Based on these results, the sediments are considered suitable for ocean disposal and land-based re-use.

Organotin

Concentrations of organotins (monobutyltin, dibutyltin, tributyltin) were below the laboratory LOR in all samples across the survey area. Based on these results, the sediments are considered suitable for ocean disposal and land-based re-use.

Organochlorine Pesticides (OCPs)

Concentrations of OCPs were below the laboratory LOR in all samples across the survey area. Based on these results, the sediments are considered suitable for ocean disposal and land-based re-use.

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Polychlorinated Biphenyls (PCBs)
PCBs were analysed in five samples across the survey area. Concentrations were below the LOR at all locations. Based on these results, the sediments are considered suitable for ocean disposal and land-based re-use.

3.3 Acid Sulfate Soils

3.3.1 Assessment Criteria

The assessment criteria for acid sulfate soils are provided in the Queensland Acid Sulfate Soil Technical Manual (Dear *et al.* 2024) and National Guidelines for the Dredging of Acid Sulfate Soil Sediments and Associated Dredge Spoil (Simpson *et al.* 2018). Action criteria are provided based on the volume and soil type of dredge material being disturbed, in the case of the current SAP, the action criteria associated equates to a Net acidity value of 0.03 S% or 18 mole H+/t.

If the action criteria are exceeded, an acid sulfate soil management plan (ASSMP) is required where the removal/disturbance of this material is unavoidable.

3.3.2 Summary of Results

Acid sulfate soils results are presented in Annex A, Actual acidity (TAA) was below the LOR in all samples, indicating a low likelihood of actual acid sulfate Soils (AASS) presence throughout the survey area.

All samples recorded Chromium Reducible Sulphur (CRS) values above the LOR, in the range of 0.048 to 1.24 %S, indicating low to moderate presence of inorganic potential acidity in these samples.

Results of acid neutralising capacity (ANC) ranged from 7.79 to 57.9 % $CaCO_3$. The mean ANC in the current survey was 24.1 % $CaCO_3$, which indicates sediments have a high capacity to self-neutralise if exposed to oxygen. Net acidity (excluding ANC) ranged from 0.05 to 1.24%S, relating directly to potential acidity as no acidity was recorded. The inclusion of ANC significantly reduces net acidity with all samples recording a net acidity value of less than the LOR (< 0.02 %S). Leachate testing was undertaken on all samples with net acidity (exc. ANC) greater than the action criteria. The results corroborated the ANC, allowing for the net acidity (inc. ANC) to be used when comparing results against the action criteria.

Based on the QASSTM guidelines, due to the extensive volume and pH buffering capacity provided by seawater, the disposal of potential ASS containing dredged materials in the open marine environment is unlikely to significantly alter the acidity and release of metal(loids)s to the extent that WQG values are exceeded in the water column. Therefore, while sediments from the current survey are classified as PASS, the acid neutralising capacity is sufficient to neutralise acids upon oxidation.

Although analytical results indicate that the sediments possess sufficient acid neutralising capacity to mitigate potential acid generation if disturbed and placed on land, this assessment is constrained by the depth of core refusal, which did not consistently extend to the full proposed dredge depth. As such, the ASS characterisation may not fully represent deeper sediments. While the 2008 EIS (Cardno 2008) for the adjacent embayment identified sediments with potential for acid generation but significant excess neutralising capacity, and concluded that no specialised management was required for similar material proposed for land placement, confirmation sampling and testing of deeper sediments will be required prior to dredging to verify this assumption and to inform any necessary ASS management measures. .

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3.4 QA/QC Data Validation

An evaluation of QA/QC compliance with the proposed methodology is summarized in Annex C. Complete laboratory QA/QC documentation, including signed Chain of Custody (COC) forms, quality control reports, and interpretive quality control reports, is included in Annex B.

Overall, the field and laboratory QA/QC results were deemed satisfactory, indicating that the sample data are reliable and suitable for use in this interpretive assessment.

Table 3.2 Field and Laboratory QA/QC Compliance

Indicator	Criteria	Assessment
Field		
Field Triplicate	<50% RPD when >5x LOR	RPD exceedances were recorded at site SH16 for: • Net Acidity - (Excluding ANC) • Liming Rate excluding ANC • Chromium Reducible Sulphur (acidity units) • Chromium Reducible Sulfur In accordance with NAGD, these results should be considered estimates rather than precise values.
Split Triplicate	<50% RPD when >5x LOR	Analysis of split triplicate samples (location SH11) were within the 50% NAGD criterion for all parameters except TOC, reporting an RPD of 125% (Annex C)
Laboratory		
Holding Times & Storage Conditions	Samples analysed within specified holding time	All samples were received by the laboratories in appropriately pre-treated and preserved containers. Samples were chilled with ice whilst in the field and during delivery. All analyses were undertaken by the laboratories within recommended holding times.
Duplicates	RPD ≤35% when concentration >5× LOR	Results indicate that the laboratory duplicate assessment was generally within the acceptable criteria.
Blanks	Analyte concentrations < LOR; no significant contamination detected	The laboratory blank assessment was satisfactory. Measurements of laboratory blanks for the chemical analyses were always below the LOR of the specific analysis method in the primary and secondary laboratories. This indicates that samples were not contaminated during laboratory analysis.
Limits of Reporting	Below relevant guideline, investigation, or screening criteria	LORs used by the primary laboratory (ALS) were below relevant PQLs for most parameters (as per NAGD).
Surrogate Recovery	Recovery within laboratory control limits (typically 70–130% unless otherwise specified by the laboratory	The assessment of surrogate recovery was satisfactory for most samples. The exceptions were: • TRH Volatile/BTEX in Sediments: Sample 'SH16C 0.5-1' (EB2605255-069) shows poor surrogate recovery due to matrix interference (high moisture content)
Matrix Spikes	Recovery within method acceptance limits (typically 70–130% unless otherwise specified); RPD within laboratory limits where applicable	The assessment of matrix spike recovery was satisfactory for most samples. The exceptions were: • Volatile TRH/BTEX: Samples 'SH14A 0.5-1' and 'SH7 0.5-1' show poor matrix spike recovery due to matrix interference (high moisture content) • Organotin Analysis: Sample 'SH14A 0.5-1' (EB2605255-002) and 'SH3 0.5-1' (EB2605255-048) shows poor matrix spike recovery due to matrix interference

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Annex A Collated Results

BMT Pty Ltd
Shute Harbour SAP

			Acid Sulphate Soils					Acid Sulphate Soils - Acid Base Accounting	Acid Sulphate Soils - Acidity Trail		Acid Sulphate Soils - ANC			Acid Sulphate Soils - Liming Rate		Acid Sulphate Soils - Potential Acidity	
			Net Acidity - (Excluding ANC)	Net Acidity (Acidity Units) - CRS Suite	Net Acidity (Sulfur Units) - CRS Suite	s-CRS Suite - Net Acidity - NASSG (Excluding ANC)	pH (KCl)	ANC Fineness Factor	Titratable Actual Acidity (sulfur units)	Titratable Actual Acidity	Acid Neutralising Capacity (acidity units)	Acid Neutralising Capacity	Acid Neutralising Capacity (sulfur units)	Liming Rate	Liming Rate excluding ANC	Chromium Reducible Sulphur (acidity units)	Chromium Reducible Sulfur
			MOL H+/T	MOL H+/T	% S	% S	-	-	%S	mole H+/t	mole H+/t	%CaCO3	%S	kg CaCO3/t	kg CaCO3/t	mole H+/t	%S
EQL			10	10	0.02	0.02	0.1	0.5	0.02	2	10	0.01	0.01	1	1	10	0.005
QASSTM Action Criteria			18			0.03											
Lab Report Number	**Field ID**	**Date**															
EB2605255	**SH1 0-0.5**	**09 Feb 2026**	110	<10	<0.02	0.18	9.3	1.5	<0.02	<2	9,680	48.5	15.5	<1	8	110	0.177
EB2605255	**SH1 0.5-1**	**09 Feb 2026**	238	<10	<0.02	0.38	9.1	1.5	<0.02	<2	7,920	39.6	12.7	<1	18	238	0.381
EB2605255	**SH1 1-1.5**	**09 Feb 2026**	609	<10	<0.02	0.98	8.7	1.5	<0.02	<2	3,750	18.8	6.02	<1	46	609	0.977
EB2605255	**SH1 1.5-2**	**09 Feb 2026**	498	<10	<0.02	0.8	8.7	1.5	<0.02	<2	3,780	18.9	6.06	<1	37	498	0.798
EB2605255	**SH11A 0-0.5**	**09 Feb 2026**	151	<10	<0.02	0.24	9.3	1.5	<0.02	<2	11,500	57.6	18.5	<1	11	151	0.242
EB2605255	**SH11C 0-0.5**	**09 Feb 2026**	202	<10	<0.02	0.32	9.2	1.5	<0.02	<2	10,800	54.1	17.3	<1	15	202	0.325
EB2605255	**SH14A 0-0.5**	**08 Feb 2026**	189	<10	<0.02	0.3	9	1.5	<0.02	<2	8,040	40.3	12.9	<1	14	189	0.303
EB2605255	**SH14A 0.5-1**	**08 Feb 2026**	411	<10	<0.02	0.66	8.8	1.5	<0.02	<2	4,120	20.6	6.6	<1	31	411	0.659
EB2605255	**SH14A 1-1.5**	**08 Feb 2026**	595	<10	<0.02	0.95	8.8	1.5	<0.02	<2	3,320	16.6	5.32	<1	45	595	0.954
EB2605255	**SH14A 1.5-2**	**08 Feb 2026**	499	<10	<0.02	0.8	8.7	1.5	<0.02	<2	2,470	12.3	3.95	<1	37	499	0.8
EB2605255	**SH14A 2-2.5**	**08 Feb 2026**	549	<10	<0.02	0.88	8.6	1.5	<0.02	<2	2,150	10.8	3.45	<1	41	549	0.881
EB2605255	**SH14B 0-0.5**	**08 Feb 2026**	178	<10	<0.02	0.29	9.2	1.5	<0.02	<2	9,210	46.1	14.8	<1	13	178	0.286
EB2605255	**SH14B 0.5-1**	**08 Feb 2026**	498	<10	<0.02	0.8	8.9	1.5	<0.02	<2	4,370	21.9	7	<1	37	498	0.799
EB2605255	**SH14B 1-1.5**	**08 Feb 2026**	671	<10	<0.02	1.08	8.8	1.5	<0.02	<2	2,570	12.9	4.13	<1	50	671	1.08
EB2605255	**SH14B 1.5-2**	**08 Feb 2026**	625	<10	<0.02	1	8.8	1.5	<0.02	<2	2,390	12	3.83	<1	47	625	1
EB2605255	**SH14B 2-2.5**	**08 Feb 2026**	616	<10	<0.02	0.99	8.7	1.5	<0.02	<2	2,490	12.5	3.99	<1	46	616	0.988
EB2605255	**SH14C 0-0.5**	**08 Feb 2026**	194	<10	<0.02	0.31	9.2	1.5	<0.02	<2	9,280	46.4	14.9	<1	15	194	0.31
EB2605255	**SH14C 0.5-1**	**08 Feb 2026**	351	<10	<0.02	0.56	8.9	1.5	<0.02	<2	5,110	25.6	8.19	<1	26	351	0.562
EB2605255	**SH14C 1-1.5**	**08 Feb 2026**	446	<10	<0.02	0.72	8.8	1.5	<0.02	<2	3,560	17.8	5.71	<1	33	446	0.715
EB2605255	**SH14C 1.5-2**	**08 Feb 2026**	653	<10	<0.02	1.05	8.8	1.5	<0.02	<2	2,630	13.2	4.22	<1	49	653	1.05
EB2605255	**SH14C 2-2.5**	**08 Feb 2026**	452	<10	<0.02	0.72	8.8	1.5	<0.02	<2	2,110	10.6	3.39	<1	34	452	0.724
EB2605255	**SH16B 0-0.5**	**10 Feb 2026**	274	<10	<0.02	0.44	9.1	1.5	<0.02	<2	9,230	46.2	14.8	<1	21	274	0.44
EB2605255	**SH16B 0.5-1**	**10 Feb 2026**	445	<10	<0.02	0.71	8.8	1.5	<0.02	<2	5,690	28.5	9.13	<1	33	445	0.714
EB2605255	**SH16B 1-1.5**	**10 Feb 2026**	527	<10	<0.02	0.84	8.7	1.5	<0.02	<2	2,600	13	4.16	<1	40	527	0.844
EB2605255	**SH16C 0-0.5**	**10 Feb 2026**	203	<10	<0.02	0.33	9.1	1.5	<0.02	<2	8,190	41	13.1	<1	15	203	0.325
EB2605255	**SH16C 0.5-1**	**10 Feb 2026**	434	<10	<0.02	0.7	9.1	1.5	<0.02	<2	4,600	23	7.38	<1	33	434	0.696
EB2605255	**SH16C 1-1.5**	**10 Feb 2026**	122	<10	<0.02	0.2	8.7	1.5	<0.02	<2	2,550	12.8	4.09	<1	9	122	0.196
EB2605255	**SH2 0-0.5**	**11 Feb 2026**	627	<10	<0.02	1.01	8.6	1.5	<0.02	<2	2,920	14.6	4.68	<1	47	627	1.01
EB2605255	**SH2 0.5-1**	**11 Feb 2026**	702	<10	<0.02	1.13	8.6	1.5	<0.02	<2	2,430	12.1	3.89	<1	53	702	1.13
EB2605255	**SH2 1-1.5**	**11 Feb 2026**	649	<10	<0.02	1.04	8.6	1.5	<0.02	<2	2,100	10.5	3.37	<1	49	649	1.04
EB2605255	**SH3 0-0.5**	**09 Feb 2026**	236	<10	<0.02	0.38	9.1	1.5	<0.02	<2	8,970	44.9	14.4	<1	18	236	0.378
EB2605255	**SH3 0.5-1**	**09 Feb 2026**	498	<10	<0.02	0.8	8.8	1.5	<0.02	<2	5,160	25.8	8.27	<1	37	498	0.799
EB2605255	**SH3 1-1.5**	**09 Feb 2026**	671	<10	<0.02	1.08	8.6	1.5	<0.02	<2	2,860	14.3	4.59	<1	50	671	1.08
EB2605255	**SH3 1.5-2**	**09 Feb 2026**	773	<10	<0.02	1.24	8.6	1.5	<0.02	<2	2,720	13.6	4.36	<1	58	773	1.24
EB2605255	**SH4 0-0.5**	**09 Feb 2026**	30	<10	<0.02	0.05	9.5	1.5	<0.02	<2	1,560	7.79	2.5	<1	2	30	0.048
EB2605255	**SH4 0.5-1**	**09 Feb 2026**	117	<10	<0.02	0.19	9.4	1.5	<0.02	<2	9,690	48.5	15.5	<1	9	117	0.188
EB2605255	**SH4 1-1.5**	**09 Feb 2026**	165	<10	<0.02	0.26	9.3	1.5	<0.02	<2	11,600	57.9	18.5	<1	12	165	0.264
EB2605255	**SH5 0-0.5**	**08 Feb 2026**	187	<10	<0.02	0.3	9.2	1.5	<0.02	<2	9,590	48	15.4	<1	14	187	0.3
EB2605255	**SH5 0.5-1**	**08 Feb 2026**	476	<10	<0.02	0.76	8.9	1.5	<0.02	<2	5,480	27.4	8.79	<1	36	476	0.763
EB2605255	**SH5 1-1.5**	**08 Feb 2026**	606	<10	<0.02	0.97	8.8	1.5	<0.02	<2	3,050	15.3	4.89	<1	45	606	0.972
EB2605255	**SH5 1.5-2**	**08 Feb 2026**	560	<10	<0.02	0.9	8.8	1.5	<0.02	<2	2,880	14.4	4.62	<1	42	560	0.898
EB2605255	**SH5 2-2.5**	**08 Feb 2026**	616	<10	<0.02	0.99	8.6	1.5	<0.02	<2	2,190	11	3.51	<1	46	616	0.988
EB2605255	**SH6 0-0.5**	**10 Feb 2026**	132	<10	<0.02	0.21	9.2	1.5	<0.02	<2	11,400	56.9	18.2	<1	10	132	0.211
EB2605255	**SH6 0.5-1**	**10 Feb 2026**	312	<10	<0.02	0.5	9	1.5	<0.02	<2	6,690	33.5	10.7	<1	23	312	0.5
EB2605255	**SH6 1-1.5**	**10 Feb 2026**	349	<10	<0.02	0.56	8.9	1.5	<0.02	<2	5,380	26.9	8.62	<1	26	349	0.559
EB2605255	**SH6 1.5-2**	**10 Feb 2026**	665	<10	<0.02	1.07	8.6	1.5	<0.02	<2	2,760	13.8	4.43	<1	50	665	1.07
EB2605255	**SH7 0-0.5**	**11 Feb 2026**	284	<10	<0.02	0.46	9	1.5	<0.02	<2	9,350	46.8	15	<1	21	284	0.455
EB2605255	**SH7 0.5-1**	**11 Feb 2026**	207	<10	<0.02	0.33	8.6	1.5	<0.02	<2	2,280	11.4	3.66	<1	16	207	0.331
EB2605255	**SH7 1-1.5**	**11 Feb 2026**	518	<10	<0.02	0.83	8.7	1.5	<0.02	<2	2,520	12.6	4.05	<1	39	518	0.83
EB2605255	**SH7 1.5-2**	**11 Feb 2026**	513	<10	<0.02	0.82	8.6	1.5	<0.02	<2	1,720	8.63	2.76	<1	39	513	0.823
EB2605255	**SH7 2-2.5**	**11 Feb 2026**	650	<10	<0.02	1.04	8.5	1.5	<0.02	<2	2,300	11.5	3.69	<1	49	650	1.04
EB2605255	**SH8 0-0.5**	**08 Feb 2026**	190	<10	<0.02	0.3	9.1	1.5	<0.02	<2	9,130	45.7	14.6	<1	14	190	0.304
EB2605255	**SH8 0.5-1**	**08 Feb 2026**	365	<10	<0.02	0.59	8.9	1.5	<0.02	<2	4,090	20.5	6.56	<1	27	365	0.586
EB2605255	**SH8 1-1.5**	**08 Feb 2026**	585	<10	<0.02	0.94	8.8	1.5	<0.02	<2	3,200	16	5.13	<1	44	585	0.937
EB2605255	**SH8 1.5-2**	**08 Feb 2026**	403	<10	<0.02	0.65	8.8	1.5	<0.02	<2	2,610	13	4.18	<1	30	403	0.647
EB2605255	**SH8 2-2.5**	**08 Feb 2026**	548	<10	<0.02	0.88	8.8	1.5	<0.02	<2	2,860	14.3	4.59	<1	41	548	0.878
EB2605255	**SH8 2.5-3**	**08 Feb 2026**	491	<10	<0.02	0.79	8.7	1.5	<0.02	<2	2,630	13.2	4.22	<1	37	491	0.788
EB2605255	**SH8 3-3.5**	**08 Feb 2026**	722	<10	<0.02	1.16	8.7	1.5	<0.02	<2	2,040	10.2	3.28	<1	54	722	1.16
EB2605255	**SH9 0-0.5**	**09 Feb 2026**	145	<10	<0.02	0.23	9	1.5	<0.02	<2	10,300	51.6	16.5	<1	11	145	0.233
EB2605255	**SH9 0.5-1**	**09 Feb 2026**	339	<10	<0.02	0.54	8.7	1.5	<0.02	<2	4,370	21.9	7	<1	25	339	0.544
EB2605255	**SH9 1-1.5**	**09 Feb 2026**	301	<10	<0.02	0.48	8.6	1.5	<0.02	<2	2,610	13.1	4.18	<1	23	301	0.482
EB2605255	**SH9 1.5-2**	**09 Feb 2026**	715	<10	<0.02	1.15	8.5	1.5	<0.02	<2	2,560	12.8	4.1	<1	54	715	1.15
EB2605255	**SH11 0.5-1**	**09 Feb 2026**	489	<10	<0.02	0.78	8.8	1.5	<0.02	<2	4,460	22.3	7.15	<1	37	489	0.784
EB2605255	**SH11 1-1.5**	**09 Feb 2026**	361	<10	<0.02	0.58	8.9	1.5	<0.02	<2	5,430	27.2	8.7	<1	27	361	0.579
EB2605255	**SH11 1.5-2**	**09 Feb 2026**	509	<10	<0.02	0.82	8.6	1.5	<0.02	<2	2,770	13.9	4.44	<1	38	509	0.817
EB2605255	**SH12 0-0.5**	**11 Feb 2026**	206	<10	<0.02	0.33	9.1	1.5	<0.02	<2	10,600	53	17	<1	15	206	0.33
EB2605255	**SH12 0.5-1**	**11 Feb 2026**	430	<10	<0.02	0.69	8.8	1.5	<0.02	<2	3,590	17.9	5.75	<1	32	430	0.69
EB2605255	**SH12 1-1.5**	**11 Feb 2026**	728	<10	<0.02	1.17	8.7	1.5	<0.02	<2	2,630	13.2	4.22	<1	55	728	1.17
EB2605255	**SH12 1.5-2**	**11 Feb 2026**	374	<10	<0.02	0.6	8.6	1.5	<0.02	<2	2,060	10.3	3.3	<1	28	374	0.6
EB2605255	**SH12 2-2.5**	**11 Feb 2026**	742	<10	<0.02	1.19	8.6	1.5	<0.02	<2	1,800	8.99	2.88	<1	56	742	1.19
EB2605255	**SH13 0-0.5**	**08 Feb 2026**	222	<10	<0.02	0.36	9.1	1.5	<0.02	<2	8,700	43.6	14	<1	17	222	0.355
EB2605255	**SH13 0.5-1**	**08 Feb 2026**	431	<10	<0.02	0.69	8.9	1.5	<0.02	<2	4,110	20.6	6.59	<1	32	431	0.69
EB2605255	**SH13 1-1.5**	**08 Feb 2026**	627	<10	<0.02	1	8.8	1.5	<0.02	<2	2,510	12.6	4.03	<1	47	627	1
EB2605255	**SH13 1.5-2**	**08 Feb 2026**	614	<10	<0.02	0.98	8.7	1.5	<0.02	<2	2,670	13.4	4.28	<1	46	614	0.985
EB2605255	**SH13 2-2.5**	**08 Feb 2026**	585	<10	<0.02	0.94	8.7	1.5	<0.02	<2	2,440	12.2	3.91	<1	44	585	0.939
EB2605255	**SH15 0-0.5**	**11 Feb 2026**	382	<10	<0.02	0.61	9	1.5	<0.02	<2	8,310	41.6	13.3	<1	29	382	0.612
EB2605255	**SH15 0.5-1**	**11 Feb 2026**	730	<10	<0.02	1.17	8.7	1.5	<0.02	<2	2,720	13.6	4.36	<1	55	730	1.17
EB2605255	**SH15 1-1.5**	**11 Feb 2026**	756	<10	<0.02	1.21	8.6	1.5	<0.02	<2	2,240	11.2	3.59	<1	57	756	1.21
EB2605255	**SH15 1.5-2**	**11 Feb 2026**	745	<10	<0.02	1.19	8.6	1.5	<0.02	<2	2,120	10.6	3.41	<1	56	745	1.19
EB2605255	**SH16 0-0.5**	**09 Feb 2026**	180	<10	<0.02	0.29	9.2	1.5	<0.02	<2	9,110	45.6	14.6	<1	13	180	0.288
EB2605255	**SH16 0.5-1**	**09 Feb 2026**	418	<10	<0.02	0.67	9	1.5	<0.02	<2	6,960	34.8	11.2	<1	31	418	0.671
EB2605255	**SH16 1-1.5**	**09 Feb 2026**	583	<10	<0.02	0.93	8.6	1.5	<0.02	<2	3,020	15.1	4.84	<1	44	583	0.935
EB2605255	**SH16 1.5-2**	**09 Feb 2026**	574	<10	<0.02	0.92	8.6	1.5	<0.02	<2	2,710	13.6	4.34	<1	43	574	0.92
Statistics																	
Number of Results			**83**	**83**	**83**	**83**	**83**	**83**	**83**	**83**	**83**	**83**	**83**	**83**	**83**	**83**	**83**
Number of Detects			**83**	**0**	**0**	**83**	**83**	**83**	**0**	**0**	**83**	**83**	**83**	**0**	**83**	**83**	**83**
Minimum Concentration			**30**	**<10**	**<0.02**	**0.05**	**8.5**	**1.5**	**<0.02**	**<2**	**1,560**	**7.79**	**2.5**	**<1**	**2**	**30**	**0.048**
Maximum Concentration			**773**	**<10**	**<0.02**	**1.24**	**9.5**	**1.5**	**<0.02**	**<2**	**11,600**	**57.9**	**18.5**	**<1**	**58**	**773**	**1.24**

Environmental Standards
QASSTM, Queensland Acid Sulphate Soil Technical Manual v5 (Dear et al., 2024) - action criteria

BMT Pty Ltd
Shute Harbour SAP

			Particle Size																Thickeners				TRH							TPH					BTEX							
			+118µm	+150µm	+19.0mm	+2.36mm	+300µm	+37.5mm	+4.75mm	+425µm	+600µm	+75.0mm	+75µm	+9.5mm	Clay in soils <2um	Cobbles (>6cm)	Gravel (>2mm)	Sand (0.06-2.00 mm)	Silt (2-60 µm)	Density	Settling Rate @ 50% of Settlement	Settling Rate @ 90% of Settlement	Underflow Density	Underflow Solids	C6-C10 Fraction (F1)	C6-C10 (F1 minus BTEX)	>C10-C16 Fraction (F2)	>C10-C16 Fraction (F2 minus Naphthalene)	>C16-C34 Fraction (F3)	>C34-C40 Fraction (F4)	>C10-C40 Fraction (Sum)	C6-C9 Fraction	C10-C14 Fraction	C15-C28 Fraction	C29-C36 Fraction	C10-C36 Fraction (Sum)	Naphthalene (VOC)	Benzene	Toluene	Ethylbenzene	Xylene (m & p)	Xylene (o)	Xylene Total	Total BTEX	2-methylnaphthalene
			% %	% %	% %	% %	% %	% %	% %	% %	% %	% %	% %	% %	% %	% %	% %	% %	% %	g/cm3 0.01	mm/min 0.001	mm/min 0.001	g/cm3 0.01	% 0.1	mg/kg 3	mg/kg 3	mg/kg 3	mg/kg 3	mg/kg 3	mg/kg 5	mg/kg 3	mg/kg 3	mg/kg 3	mg/kg 3	mg/kg 5	mg/kg 3	mg/kg 0.2	mg/kg 0.2	mg/kg 0.2	mg/kg 0.2	mg/kg 0.2	mg/kg 0.2	mg/kg 0.5	mg/kg 0.2	mg/kg 0.005
EQL																																										
ANZG Toxicant Default Guideline Values for Sediment Quality - DGV																																										
ANZG Toxicant Default Guideline Values for Sediment Quality - GV - High																																										
NEPM 2013 Table 1B(5) Generic EIL - Areas of Ecological Significance																																				10						
NEPM 2013 Table 1B(6) ESLs for Areas of Ecological Significance, Coarse Soil																										125	25	25								8	10	1.5			10		
Lab Report Number	**Field ID**	**Date**																																									
EB2605255	**SH1 0-0.5**	**09 Feb 2026**	18	50	<1	8	40	<1	4	34	29	<1	58	<1	19	<1	11	49	21	2.4					<3	<3.0	<3	<3	<3	<5	<3	<3	<3	<3	<5	<3	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.5	<0.2	<0.005
EB2605255	**SH1 0.5-1**	**09 Feb 2026**	20	45	<1	10	39	<1	3	34	31	<1	48	<1	30	<1	13	36	21	2.38					<3	<3.0	<3	<3	<3	<5	<3	<3	<3	<3	<5	<3	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.5	<0.2	<0.005
EB2605255	**SH1 1-1.5**	**09 Feb 2026**	11	15	<1	6	14	<1	2	14	13	<1	15	<1	45	<1	8	8	39	2.26																										
EB2605255	**SH1 1.5-2**	**09 Feb 2026**	17	20	<1	13	20	<1	8	19	19	<1	21	<1	41	<1	14	8	37	2.34																								
EB2605255	**SH11A 0-0.5**	**09 Feb 2026**	19	47	<1	9	39	<1	4	34	29	<1	54	1	19	<1	12	43	26	2.39					<3	<3.0	<3	<3	<3	<5	<3	<3	<3	<3	<5	<3	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.5	<0.2	<0.005
EB2605255	**SH11C 0-0.5**	**09 Feb 2026**	14	37	<1	6	30	<1	2	27	23	<1	43	<1	30	<1	9	35	26	2.38					<3	<3.0	<3	<3	<3	<5	<3	<3	<3	<3	<5	<3	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.5	<0.2	<0.005
EB2605255	**SH14A 0-0.5**	**08 Feb 2026**	8	24	<1	3	19	<1	<1	17	14	<1	28	<1	35	<1	4	27	34	2.53					<3	<3.0	<3	<3	<3	<5	<3	<3	<3	<3	<5	<3	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.5	<0.2	<0.005
EB2605255	**SH14A 0.5-1**	**08 Feb 2026**	2	8	<1	<1	6	<1	<1	5	4	<1	10	<1	54	<1	1	10	35	2.77					<3	<3.0	<3	<3	<3	<5	<3	<3	<3	<3	<5	<3	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.5	<0.2	<0.005
EB2605255	**SH14A 1-1.5**	**08 Feb 2026**	2	8	<1	<1	6	<1	<1	6	5	<1	8	<1	52	<1	1	8	39	2.78																								
EB2605255	**SH14A 1.5-2**	**08 Feb 2026**	1	4	<1	<1	3	<1	<1	3	2	<1	4	<1	53	<1	<1	5	42	2.5																								
EB2605255	**SH14A 2-2.5**	**08 Feb 2026**	<1	3	<1	<1	3	<1	<1	2	2	<1	4	<1	57	<1	<1	4	39	2.35																								
EB2605255	**SH14B 0-0.5**	**08 Feb 2026**	11	37	<1	4	29	<1	<1	25	22	<1	43	<1	21	<1	6	42	31	2.48					<3	<3.0	<3	<3	<3	<5	<3	<3	<3	<3	<5	<3	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.5	<0.2	<0.005
EB2605255	**SH14B 0.5-1**	**08 Feb 2026**	<1	5	<1	<1	3	<1	<1	2	2	<1	6	<1	54	<1	<1	8	38	2.64					<3	<3.0	<3	<3	<3	<5	<3	<3	<3	<3	<5	<3	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.5	<0.2	<0.005
EB2605255	**SH14B 1-1.5**	**08 Feb 2026**	<1	2	<1	<1	1	<1	<1	<1	<1	<1	2	<1	56	<1	<1	3	41	2.15																								
EB2605255	**SH14B 1.5-2**	**08 Feb 2026**	2	6	<1	1	5	<1	<1	5	4	<1	7	<1	54	<1	1	7	38	2.62																								
EB2605255	**SH14B 2-2.5**	**08 Feb 2026**	<1	4	<1	<1	3	<1	<1	3	2	<1	4	<1	56	<1	<1	5	39	2.47																								
EB2605255	**SH14C 0-0.5**	**08 Feb 2026**	10	39	<1	3	29	<1	<1	24	20	<1	47	<1	22	<1	5	45	28	2.43					<3	<3.0	<3	<3	<3	<5	<3	<3	<3	<3	<5	<3	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.5	<0.2	<0.005
EB2605255	**SH14C 0.5-1**	**08 Feb 2026**	3	10	<1	<1	8	<1	<1	7	6	<1	12	<1	44	<1	1	12	43	2.44					<3	<3.0	<3	<3	<3	<5	<3	<3	<3	<3	<5	<3	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.5	<0.2	<0.005
EB2605255	**SH14C 1-1.5**	**08 Feb 2026**	1	7	<1	<1	6	<1	<1	5	4	<1	8	<1	53	<1	1	7	39	2.89																								
EB2605255	**SH14C 1.5-2**	**08 Feb 2026**	2	7	<1	1	6	<1	<1	5	4	<1	8	<1	48	<1	1	8	43	2.14																								
EB2605255	**SH14C 2-2.5**	**08 Feb 2026**	1	4	<1	<1	3	<1	<1	3	2	<1	5	<1	58	<1	1	5	36	2.55																								
EB2605255	**SH16B 0-0.5**	**10 Feb 2026**	14	36	<1	7	30	<1	2	26	23	<1	40	<1	24	<1	9	33	34	2.42					<3	<3.0	<3	<3	<3	<5	<3	<3	<3	<3	<5	<3	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.5	<0.2	<0.005
EB2605255	**SH16B 0.5-1**	**10 Feb 2026**	8	19	<1	3	16	<1	<1	14	12	<1	22	<1	32	<1	5	18	45	2.45					<3	<3.0	<3	<3	<3	<5	<3	<3	<3	<3	<5	<3	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.5	<0.2	<0.005
EB2605255	**SH16B 1-1.5**	**10 Feb 2026**	2	7	<1	1	6	<1	<1	5	4	<1	8	<1	48	<1	2	7	43	1.96																								
EB2605255	**SH16C 0-0.5**	**10 Feb 2026**	11	35	<1	4	28	<1	1	24	20	<1	40	<1	23	<1	6	35	36	2.41					<3	<3.0	<3	<3	<3	<5	<3	<3	<3	<3	<5	<3	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.5	<0.2	<0.005
EB2605255	**SH16C 0.5-1**	**10 Feb 2026**	4	9	<1	2	7	<1	<1	6	6	<1	10	<1	49	<1	2	8	41	2.71					<3	<3.0	<3	<3	<3	<5	<3	<3	<3	<3	<5	<3	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.5	<0.2	<0.005
EB2605255	**SH16C 1-1.5**	**10 Feb 2026**	2	7	<1	<1	5	<1	<1	4	3	<1	8	<1	30	<1	1	8	61	2.4																								
EB2605255	**SH2 0-0.5**	**11 Feb 2026**	2	7	<1	<1	6	<1	<1	5	5	<1	8	<1	52	<1	1	9	38	2.43					<3	<3.0	<3	<3	<3	<5	<3	<3	<3	<3	<5	<3	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.5	<0.2	<0.005
EB2605255	**SH2 0.5-1**	**11 Feb 2026**	<1	4	<1	<1	3	<1	<1	3	2	<1	5	<1	62	<1	<1	6	32	2.6					<3	<3.0	<3	<3	<3	<5	<3	<3	<3	<3	<5	<3	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.5	<0.2	<0.005
EB2605255	**SH2 1-1.5**	**11 Feb 2026**	1	4	<1	<1	4	<1	<1	3	3	<1	5	<1	60	<1	<1	6	34	2.53																								
EB2605255	**SH3 0-0.5**	**09 Feb 2026**	14	40	<1	6	32	<1	1	28	24	<1	47	<1	26	<1	9	41	24	2.35					<3	<3.0	<3	<3	<3	<5	<3	<3	<3	<3	<5	<3	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.5	<0.2	<0.005
EB2605255	**SH3 0-1**	**10 Feb 2026**																			3.2	0.1	1.22	26.1																			
EB2605255	**SH3 0.5-1**	**09 Feb 2026**	3	12	<1	<1	9	<1	<1	8	6	<1	14	<1	46	<1	1	14	39	2.2					<3	<3.0	<3	<3	<3	<5	<3	<3	<3	<3	<5	<3	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.5	<0.2	<0.005
EB2605255	**SH3 1-1.5**	**09 Feb 2026**	2	6	<1	<1	5	<1	<1	4	3	<1	7	<1	56	<1	1	7	36	2.46																								
EB2605255	**SH3 1-2**	**10 Feb 2026**																			3	0.1	1.18	22.4																			
EB2605255	**SH3 1.5-2**	**09 Feb 2026**	2	9	<1	<1	8	<1	<1	7	6	<1	10	<1	56	<1	1	10	33	2.53																								
EB2605255	**SH4 0-0.5**	**09 Feb 2026**	52	86	<1	42	73	<1	29	66	62	<1	92	18	4	<1	45	49	2	2.4					<3	<3.0	<3	<3	<3	<5	<3	<3	<3	<3	<5	<3	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.5	<0.2	<0.005
EB2605255	**SH4 0.5-1**	**09 Feb 2026**	39	69	<1	27	61	<1	19	56	51	<1	74	15	12	<1	31	45	12	2.64					<3	<3.0	<3	<3	<3	<5	<3	<3	<3	<3	<5	<3	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.5	<0.2	<0.005
EB2605255	**SH4 1-1.5**	**09 Feb 2026**	26	57	<1	14	48	<1	7	43	38	<1	61	<1	21	<1	18	45	16	2.45																								
EB2605255	**SH5 0-0.5**	**08 Feb 2026**	12	43	<1	5	33	<1	3	28	24	<1	49	<1	23	<1	7	44	26	2.38					<3	<3.0	<3	<3	<3	<5	<3	<3	<3	<3	<5	<3	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.5	<0.2	<0.005
EB2605255	**SH5 0.5-1**	**08 Feb 2026**	7	17	<1	4	14	<1	2	13	11	<1	19	<1	44	<1	5	15	36	2.57					<3	<3.0	<3	<3	<3	<5	<3	<3	<3	<3	<5	<3	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.5	<0.2	<0.005
EB2605255	**SH5 1-1.5**	**08 Feb 2026**	<1	2	<1	<1	2	<1	<1	2	2	<1	2	<1	53	<1	<1	3	44	2.62																								
EB2605255	**SH5 1.5-2**	**08 Feb 2026**	1	3	<1	<1	3	<1	<1	3	2	<1	4	<1	51	<1	1	4	44	2.16																								
EB2605255	**SH5 2-2.5**	**08 Feb 2026**	1	2	<1	<1	2	<1	<1	2	2	<1	3	<1	63	<1	1	3	33	2.37																								
EB2605255	**SH6 0-0.5**	**10 Feb 2026**	9	45	<1	2	34	<1	<1	28	23	<1	52	<1	23	<1	4	49	24	2.42					<3	<3.0	<3	<3	<3	<5	<3	<3	<3	<3	<5	<3	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.5	<0.2	<0.005
EB2605255	**SH6 0.5-1**	**10 Feb 2026**	6	22	<1	2	18	<1	<1	15	13	<1	25	<1	26	<1	3	24	47	2.33					<3	<3.0	<3	<3	<3	<5	<3	<3	<3	<3	<5	<3	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.5	<0.2	<0.005
EB2605255	**SH6 1-1.5**	**10 Feb 2026**	3	11	<1	<1	9	<1	<1	7	6	<1	13	<1	35	<1	1	14	50	2.4																								
EB2605255	**SH6 1.5-2**	**10 Feb 2026**	2	6	<1	<1	5	<1	<1	4	3	<1	6	<1	40	<1	1	6	53	2.46																								
EB2605255	**SH7 0-0.5**	**11 Feb 2026**	2	12	<1	<1	10	<1	<1	8	6	<1	14	<1	31	<1	1	14	54	2.54					<3	<3.0	<3	<3	<3	<5	<3	<3	<3	<3	<5	<3	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.5	<0.2	<0.005
EB2605255	**SH7 0.5-1**	**11 Feb 2026**	2	6	<1	<1	5	<1	<1	4	3	<1	6	<1	43	<1	1	6	50	2.46					<3	<3.0	<3	<3	<3	<5	<3	<3	<3	<3	<5	<3	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.5	<0.2	<0.005
EB2605255	**SH7 1-1.5**	**11 Feb 2026**	<1	3	<1	<1	2	<1	<1	2	1	<1	4	<1	53	<1	<1	4	43	2.18																								
EB2605255	**SH7 1.5-2**	**11 Feb 2026**	<1	3	<1	<1	2	<1	<1	2	1	<1	3	<1	41	<1	<1	4	55	2.33																								
EB2605255	**SH7 2-2.5**	**11 Feb 2026**	<1	3	<1	<1	2	<1	<1	2	2	<1	3	<1	40	<1	<1	4	56	2.45																								
EB2605255	**SH8 0-0.5**	**08 Feb 2026**	7	38	<1	1	27	<1	<1	22	18	<1	45	<1	24	<1	3	44	29	2.32					<3	<3.0	<3	<3	<3	<5	<3	<3	<3	<3	<5	<3	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.5	<0.2	<0.005
EB2605255	**SH8 0.5-1**	**08 Feb 2026**	9	15	<1	5	14	<1	1	13	12	<1	16	<1	46	<1	7	10	37	1.92					<3	<3.0	<3	<3	<3	<5	<3	<3	<3	<3	<5	<3	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.5	<0.2	<0.005
EB2605255	**SH8 1-1.5**	**08 Feb 2026**	2	4	<1	<1	3	<1	<1	3	3	<1	5	<1	53	<1	1	6	40	2.49																								
EB2605255	**SH8 1.5-2**	**08 Feb 2026**	10	12	<1	6	12	<1	3	12	11	<1	13	<1	54	<1	7	7	32	2.49																								
EB2605255	**SH8 2-2.5**	**08 Feb 2026**	8	11	<1	5	11	<1	4	10	10	<1	12	<1	49	<1	6	7	38	2.2																								
EB2605255	**SH8 2.5-3**	**08 Feb 2026**	<1	3	<1	<1	2	<1	<1	2	2	<1	3	<1	53	<1	1	2	44	2.25																								
EB2605255	**SH8 3-3.5**	**08 Feb 2026**	3	5	<1	2	4	<1	1	4	3	<1	5	<1	58	<1	2	3	37	2.76																								
EB2605255	**SH9 0-0.5**	**09 Feb 2026**	10	35	<1	4	27	<1	1	23	19	<1	42	<1	26	<1	6	39	29	2.37					<3	<3.0	<3	<3	<3	<5	<3	<3	<3	<3	<5	<3	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.5	<0.2	<0.005
EB2605255	**SH9 0.5-1**	**09 Feb 2026**	2	10	<1	<1	8	<1	<1	6	5	<1	11	<1	50	<1	1	11	38	2.46					<3	<3.0	<3	<3	<3	<5	<3	<3	<3	<3	<5	<3	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.5	<0.2	<0.005
EB2605255	**SH9 1-1.5**	**09 Feb 2026**	3	9	<1	<1	7	<1	<1	6	5	<1	10	<1	54	<1	1	10	35	2.61																								
EB2605255	**SH9 1.5-2**	**09 Feb 2026**	2	6	<1	<1	5	<1	<1	4	3	<1	7	<1	56	<1	1	7	36	2.25																								
EB2605255	**SH11 0-1**	**09 Feb 2026**																			3	0.1	1.2	32.1																			
EB2605255	**SH11 0.5-1**	**09 Feb 2026**	6	16	<1	3	14	<1	1	12	10	<1	20	<1	46	<1	4	16	34	2.28					<3	<3.0	<3	<3	<3	<5	<3	<3	<3	<3	<5	<3	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.5	<0.2	<0.005
EB2605255	**SH11 1-1.5**	**09 Feb 2026**	4	16	<1	2	12	<1	<1	10	8	<1	20	<1	48	<1	3	18	31	2.56																								
EB2605255	**SH11 1-2**	**09 Feb 2026**																			3.2	0.1	1.26	27.8																			
EB2605255	**SH11 1.5-2**	**09 Feb 2026**	4	6	<1	3	6	<1	1	5	5	<1	6	<1	60	<1	3	3	34	2.52																								
EB2605255	**SH12 0-0.5**	**11 Feb 2026**	12	41	<1	6	32	<1	3	27	23	<1	46	<1	23	<1	8	38	31	2.45					<3	<3.0	<3	<3	4	<5	4	<3	<3	<3	<5	<3	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.5	<0.2	<0.005
EB2605255	**SH12 0-1**	**11 Feb 2026**																			3.6	0.1	1.23	27.6																			
EB2605255	**SH12 0.5-1**	**11 Feb 2026**	2	8	<1	<1	6	<1	<1	5	4	<1	9	<1	33	<1	1	10	56	2.35																								
EB2605255	**SH12 1-1.5**	**11 Feb 2026**	3	6	<1	<1	5	<1	<1	4	3	<1	6	<1	54	<1	1	5	40	2.47																								
EB2605255	**SH12 1-2**	**11 Feb 2026**																			1.9	0.1	1.19	24																			
EB2605255	**SH12 1.5-2**	**11 Feb 2026**	1	4	<1	<1	3	<1	<1	2	2	<1	4	<1	32	<1	1	5	62	2.01																								
EB2605255	**SH12 2-2.5**	**11 Feb 2026**	<1	3	<1	<1	2	<1	<1	2	1	<1	3	<1	54	<1	<1	3	43	2.37																								
EB2605255	**SH12 2-3**	**11 Feb 2026**																			2.8	0.1	1.19	29.9																			
EB2605255	**SH13 0-0.5**	**08 Feb 2026**	8	32	<1	3	26	<1	<1	21	18	<1	36	<1	29	<1	4	35	32	2.37					<3	<3.0	<3	<3	<3	<5	<3	<3	<3	<3	<5	<3	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.5	<0.2	<0.005
EB2605255	**SH13 0.5-1**	**08 Feb 2026**	3	11	<1	1	9	<1	<1	7	6	<1	13	<1	49	<1	2	12	37	2.76					<3	<3.0	<3	<3	<3	<5	<3	<3	<3	<3	<5	<3	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.5	<0.2	<0.005
EB2605255	**SH13 1-1.5**	**08 Feb 2026**	1	5	<1	<1	4	<1	<1	3	3	<1	5	<1	54	<1	<1	5	41	2.5																								
EB2605255	**SH13 1.5-2**	**08 Feb 2026**	2	6	<1	<1	5	<1	<1	4	3	<1	7	<1	53	<1	1	7	39	2.18																								
EB2605255	**SH13 2-2.5**	**08 Feb 2026**	2	5	<1	1	4	<1	<1	4	3	<1	6	<1	56	<1	1	6	37	2.16																								
EB2605255	**SH15 0-0.5**	**11 Feb 2026**	6	25	<1	1	19	<1	<1	16	13	<1	28	<1	38	<1	2	27	33	2.39					<3	<3.0	<3	<3	<3	<5	<3	<3	<3	<3	<5	<3	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.5	<0.2	<0.005
EB2605255	**SH15 0.5-1**	**11 Feb 2026**	1	5	<1	<1	4	<1	<1	3	3	<1	7	<1	56	<1	1	7	36	2.58					<3	<3.0	<3	<3	<3	<5	<3	<3	<3	<3	<5	<3	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.5	<0.2	<0.005
EB2605255	**SH15 1-1.5**	**11 Feb 2026**	1	5	<1	<1	4	<1	<1	3	3	<1	6	<1	58	<1	1	5	36	2.45																								
EB2605255	**SH15 1.5-2**	**11 Feb 2026**	4	10	<1	2	8	<1	<1	7	6	<1	12	<1	52	<1	3	10	35	2.48																								
EB2605255	**SH16 0-0.5**	**09 Feb 2026**	16	43	<1	7	34	<1	1	29	26	<1	50	<1	23	<1	9	45	23	2.33					<3	<3.0	<3	<3	<3	<5	<3	<3	<3	<3	<5	<3	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.5	<0.2	<0.005
EB2605255	**SH16 0.5-1**	**09 Feb 2026**	7	18	<1	3	15	<1	<1	13	12	<1	20	<1	42	<1	4	17	37	2.27					<3	<3.0	<3	<3	<3	<5	<3	<3	<3	<3	<5	<3	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.5	<0.2	<0.005
EB2605255	**SH16 1-1.5**	**09 Feb 2026**	3	5	<1

BMT Pty Ltd
Shute Harbour SAP

			PAHs																						Halogenated Benzenes	Metals																	Organic		
			Acenaphthene	Acenaphthylene	Anthracene	Coronene	Benz(a)anthracene	Benz(a)pyrene	Benz(b+j)fluoranthene	Benz(e)pyrene	Benz(g,h,i)perylene	Benz(k)fluoranthene	Chrysene	Dibenz(a,h)anthracene	Fluoranthene	Fluorene	Indeno(1,2,3-c,d)pyrene	Naphthalene	Phenanthrene	Perylene	Pyrene	Benz(a)pyrene TEQ calc (half)	Benz(a)pyrene TEQ (LOR)	Benz(a)pyrene TEQ calc (zero)	PAHs (Sum of total)	Hexachlorobenzene	Aluminium	Antimony	Arsenic	Cadmium	Chromium (III+VI)	Cobalt	Copper	Iron	Lead	Manganese	Mercury	Nickel	Selenium	Silver	Vanadium	Zinc	Total Organic Carbon	4,4 DDE	a-BHC
			mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	%	mg/kg	mg/kg
EQL			0.004	0.004	0.004	0.005	0.004	0.004	0.004	0.004	0.004	0.004	0.004	0.004	0.004	0.004	0.004	0.005	0.004	0.004	0.004	0.004	0.004	0.004	0.004	0.00005	50	0.5	1	0.1	1	0.5	1	50	1	10	0.01	1	0.1	0.1	1	2	1	0.02	0.0005	0.0005
ANZG Toxicant Default Guideline Values for Sediment Quality - DGV																		10							10			2	20	1.5	80		65		50		0.15	21		1		200			0.0014	
ANZG Toxicant Default Guideline Values for Sediment Quality - GV - High																									50			25	70	10	370		270		220		1	52		4		410			0.007	
NEPM 2013 Table 1B(5) Generic EIL - Areas of Ecological Significance																		10											40																	
NEPM 2013 Table 1B(6) ESLs for Areas of Ecological Significance, Coarse Soil								1.4																																					
Lab Report Number	**Field ID**	**Date**																																											
EB2605255	**SH1 0-0.5**	**09 Feb 2026**	<0.004	<0.004	<0.004	<0.005	<0.004	<0.004	0.005	<0.004	<0.004	<0.004	0.005	<0.004	0.007	<0.004	<0.004	<0.005	<0.004	<0.004	0.006	0.005	0.01	<0.004	0.023	<0.00050	3,920	<0.50	4.62	<0.1	9.5	2.2	3.3	6,380	3.6	91	<0.01	4.7	0.4	<0.1	11.6	11.6	0.4	<0.00050	<0.00050
EB2605255	**SH1 0.5-1**	**09 Feb 2026**	<0.004	<0.004	<0.004	<0.005	<0.004	<0.004	<0.004	<0.004	<0.004	<0.004	<0.004	<0.004	<0.004	<0.004	<0.004	<0.005	<0.004	<0.004	<0.004	0.005	0.01	<0.004	<0.004	<0.00050	5,510	<0.50	8.3	<0.1	12.5	3.3	3.5	9,300	5	155	<0.01	6.2	0.6	<0.1	17.3	13.5	0.41	<0.00050	<0.00050
EB2605255	**SH1 1-1.5**	**09 Feb 2026**																																											
EB2605255	**SH1 1.5-2**	**09 Feb 2026**																																											
EB2605255	**SH11A 0-0.5**	**09 Feb 2026**	<0.004	<0.004	<0.004	<0.005	<0.004	<0.004	<0.004	<0.004	<0.004	<0.004	<0.004	<0.004	<0.004	<0.004	<0.004	<0.005	<0.004	<0.004	<0.004	0.005	0.01	<0.004	<0.004	<0.00050	5,330	<0.50	6.82	<0.1	13.2	3.2	3.5	8,310	4.8	165	<0.01	6.3	0.6	<0.1	17.2	12.9	0.43	<0.00050	<0.00050
EB2605255	**SH11C 0-0.5**	**09 Feb 2026**	<0.004	<0.004	<0.004	<0.005	<0.004	<0.004	<0.004	<0.004	<0.004	<0.004	<0.004	<0.004	<0.004	<0.004	<0.004	<0.005	<0.004	<0.004	<0.004	0.005	0.01	<0.004	<0.004	<0.00050	5,750	<0.50	6.41	<0.1	13.4	3.2	3.5	8,390	4.8	153	<0.01	6.4	0.6	<0.1	17.2	13.5	0.45	<0.00050	<0.00050
EB2605255	**SH14A 0-0.5**	**08 Feb 2026**	<0.004	<0.004	<0.004	<0.005	<0.004	<0.004	<0.004	<0.004	<0.004	<0.004	<0.004	<0.004	<0.004	<0.004	<0.004	<0.005	<0.004	<0.004	<0.004	0.005	0.01	<0.004	<0.004	<0.00050	4,670	<0.50	6.83	<0.1	12.2	2.8	3.1	7,340	4.1	151	<0.01	5.5	0.5	<0.1	14.4	11.7	0.53	<0.00050	<0.00050
EB2605255	**SH14A 0.5-1**	**08 Feb 2026**	<0.004	<0.004	<0.004	<0.005	<0.004	<0.004	<0.004	<0.004	<0.004	<0.004	<0.004	<0.004	<0.004	<0.004	<0.004	<0.005	<0.004	<0.004	<0.004	0.005	0.01	<0.004	<0.004	<0.00050	10,200	<0.50	10.7	<0.1	22.2	6.5	6.8	21,100	8.3	235	<0.01	10.8	0.7	<0.1	29.8	23.9	0.71	<0.00050	<0.00050
EB2605255	**SH14A 1-1.5**	**08 Feb 2026**																																											
EB2605255	**SH14A 1.5-2**	**08 Feb 2026**																																											
EB2605255	**SH14A 2-2.5**	**08 Feb 2026**																																											
EB2605255	**SH14B 0-0.5**	**08 Feb 2026**	<0.004	<0.004	<0.004	<0.005	<0.004	<0.004	<0.004	<0.004	<0.004	<0.004	<0.004	<0.004	<0.004	<0.004	<0.004	<0.005	<0.004	<0.004	<0.004	0.005	0.01	<0.004	<0.004	<0.00050	4,060	<0.50	5.51	<0.1	11.2	2.5	2.8	6,490	4.1	165	<0.01	4.9	0.5	<0.1	13	10.5	0.46	<0.00050	<0.00050
EB2605255	**SH14B 0.5-1**	**08 Feb 2026**	<0.004	<0.004	<0.004	<0.005	<0.004	<0.004	<0.004	<0.004	<0.004	<0.004	<0.004	<0.004	<0.004	<0.004	<0.004	<0.005	<0.004	<0.004	<0.004	0.005	0.01	<0.004	<0.004	<0.00050	8,890	<0.50	12.4	<0.1	20.2	6.4	6.9	18,500	9.6	321	<0.01	10.4	0.9	<0.1	28.3	22.2	0.71	<0.00050	<0.00050
EB2605255	**SH14B 1-1.5**	**08 Feb 2026**																																											
EB2605255	**SH14B 1.5-2**	**08 Feb 2026**																																											
EB2605255	**SH14B 2-2.5**	**08 Feb 2026**																																											
EB2605255	**SH14C 0-0.5**	**08 Feb 2026**	<0.004	<0.004	<0.004	<0.005	<0.004	<0.004	<0.004	<0.004	<0.004	<0.004	<0.004	<0.004	<0.004	<0.004	<0.004	<0.005	<0.004	<0.004	<0.004	0.005	0.01	<0.004	<0.004	<0.00050	5,880	<0.50	7.12	<0.1	14.8	3.6	3.6	8,710	4.8	173	<0.01	6.7	0.6	<0.1	17.7	14.5	0.49	<0.00050	<0.00050
EB2605255	**SH14C 0.5-1**	**08 Feb 2026**	<0.004	<0.004	<0.004	<0.005	<0.004	<0.004	<0.004	<0.004	<0.004	<0.004	<0.004	<0.004	<0.004	<0.004	<0.004	<0.005	<0.004	<0.004	<0.004	0.005	0.01	<0.004	<0.004	<0.00050	8,930	<0.50	9.91	<0.1	19.4	5.9	6	16,900	8.3	250	<0.01	9.8	0.8	<0.1	25.7	21	0.67	<0.00050	<0.00050
EB2605255	**SH14C 1-1.5**	**08 Feb 2026**																																											
EB2605255	**SH14C 1.5-2**	**08 Feb 2026**																																											
EB2605255	**SH14C 2-2.5**	**08 Feb 2026**																																											
EB2605255	**SH16B 0-0.5**	**10 Feb 2026**	<0.004	<0.004	<0.004	<0.005	<0.004	<0.004	<0.004	<0.004	<0.004	<0.004	<0.004	<0.004	<0.004	<0.004	<0.004	<0.005	<0.004	<0.004	<0.004	0.005	0.01	<0.004	<0.004	<0.00050	6,360	<0.50	6.4	<0.1	14.6	3.6	3.9	9,560	5.1	154	<0.01	7	0.5	<0.1	17.7	15.1	0.5	<0.00050	<0.00050
EB2605255	**SH16B 0.5-1**	**10 Feb 2026**	<0.004	<0.004	<0.004	<0.005	<0.004	<0.004	<0.004	<0.004	<0.004	<0.004	<0.004	<0.004	<0.004	<0.004	<0.004	<0.005	<0.004	<0.004	<0.004	0.005	0.01	<0.004	<0.004	<0.00050	8,770	<0.50	8.2	<0.1	17	4.5	4.5	15,100	6.4	189	<0.01	8.1	0.7	<0.1	19.9	17.7	0.65	<0.00050	<0.00050
EB2605255	**SH16B 1-1.5**	**10 Feb 2026**																																											
EB2605255	**SH16C 0-0.5**	**10 Feb 2026**	<0.004	<0.004	<0.004	<0.005	<0.004	<0.004	<0.004	<0.004	<0.004	<0.004	<0.004	<0.004	<0.004	<0.004	<0.004	<0.005	<0.004	<0.004	<0.004	0.005	0.01	<0.004	<0.004	<0.00050	5,310	<0.50	6.27	<0.1	11.4	2.7	3	8,360	4.4	142	<0.01	5.4	0.6	<0.1	14.7	11.2	0.41	<0.00050	<0.00050
EB2605255	**SH16C 0.5-1**	**10 Feb 2026**	<0.004	<0.004	<0.004	<0.005	<0.004	<0.004	<0.004	<0.004	<0.004	<0.004	<0.004	<0.004	<0.004	<0.004	<0.004	<0.005	<0.004	<0.004	<0.004	0.005	0.01	<0.004	<0.004	<0.00050	10,700	<0.50	9.14	<0.1	20.7	7	7.6	23,200	9.6	228	<0.01	11.2	0.7	<0.1	29.1	24.4	0.74	<0.00050	<0.00050
EB2605255	**SH16C 1-1.5**	**10 Feb 2026**																																											
EB2605255	**SH2 0-0.5**	**11 Feb 2026**	<0.004	<0.004	<0.004	<0.005	<0.004	<0.004	<0.004	<0.004	<0.004	<0.004	<0.004	<0.004	<0.004	<0.004	<0.004	<0.005	<0.004	<0.004	<0.004	0.005	0.01	<0.004	<0.004	<0.00050	10,800	<0.50	9.97	<0.1	18.6	7.2	7.7	22,800	10.2	242	<0.01	10.3	0.7	<0.1	29	22.9	0.81	<0.00050	<0.00050
EB2605255	**SH2 0.5-1**	**11 Feb 2026**	<0.004	<0.004	<0.004	<0.005	<0.004	<0.004	<0.004	<0.004	<0.004	<0.004	<0.004	<0.004	<0.004	<0.004	<0.004	<0.005	<0.004	<0.004	<0.004	0.005	0.01	<0.004	<0.004	<0.00050	10,900	<0.50	10.5	<0.1	19.3	7.7	8.3	23,900	10.2	256	<0.01	11	0.7	<0.1	30.9	24.4	0.79	<0.00050	<0.00050
EB2605255	**SH2 1-1.5**	**11 Feb 2026**																																											
EB2605255	**SH3 0-0.5**	**09 Feb 2026**	<0.004	<0.004	<0.004	<0.005	<0.004	<0.004	<0.004	<0.004	<0.004	<0.004	<0.004	<0.004	<0.004	<0.004	<0.004	<0.005	<0.004	<0.004	<0.004	0.005	0.01	<0.004	<0.004	<0.00050	5,640	<0.50	7.23	<0.1	13.6	3.5	4.1	9,120	5.2	165	<0.01	6.6	0.6	<0.1	17.5	15	0.44	<0.00050	<0.00050
EB2605255	**SH3 0-1**	**10 Feb 2026**																																											
EB2605255	**SH3 0.5-1**	**09 Feb 2026**	<0.004	<0.004	<0.004	<0.005	<0.004	<0.004	<0.004	<0.004	<0.004	<0.004	<0.004	<0.004	<0.004	<0.004	<0.004	<0.005	<0.004	<0.004	<0.004	0.005	0.01	<0.004	<0.004	<0.00050	9,700	<0.50	9.46	<0.1	20.1	6.7	6.8	20,200	8.7	235	<0.01	10.6	0.8	<0.1	26.4	23.6	0.73	<0.00050	<0.00050
EB2605255	**SH3 1-1.5**	**09 Feb 2026**																																											
EB2605255	**SH3 1-2**	**10 Feb 2026**																																											
EB2605255	**SH3 1.5-2**	**09 Feb 2026**																																											
EB2605255	**SH4 0-0.5**	**09 Feb 2026**	<0.004	<0.004	<0.004	<0.005	<0.004	<0.004	<0.004	<0.004	<0.004	<0.004	<0.004	<0.004	<0.004	<0.004	<0.004	<0.005	<0.004	<0.004	<0.004	0.005	0.01	<0.004	<0.004	<0.00050	1,280	<0.50	1.98	<0.1	5.8	0.5	1.6	1,980	2.8	18	<0.01	3	0.2	<0.1	4.4	6.5	0.13	<0.00050	<0.00050
EB2605255	**SH4 0.5-1**	**09 Feb 2026**	<0.004	<0.004	<0.004	<0.005	<0.004	<0.004	<0.004	<0.004	<0.004	<0.004	<0.004	<0.004	<0.004	<0.004	<0.004	<0.005	<0.004	<0.004	<0.004	0.005	0.01	<0.004	<0.004	<0.00050	3,690	<0.50	4.87	<0.1	8.4	1.8	2	5,220	2.7	81	<0.01	4	0.4	<0.1	11.1	7.5	0.27	<0.00050	<0.00050
EB2605255	**SH4 1-1.5**	**09 Feb 2026**																																											
EB2605255	**SH5 0-0.5**	**08 Feb 2026**	<0.004	<0.004	<0.004	<0.005	<0.004	<0.004	<0.004	<0.004	<0.004	<0.004	<0.004	<0.004	<0.004	<0.004	<0.004	<0.005	<0.004	<0.004	<0.004	0.005	0.01	<0.004	<0.004	<0.00050	2,860	<0.50	4.69	<0.1	8.3	1.7	2.2	4,470	3.3	140	<0.01	3.4	0.5	<0.1	9.8	8.2	0.42	<0.00050	<0.00050
EB2605255	**SH5 0.5-1**	**08 Feb 2026**	<0.004	<0.004	<0.004	<0.005	<0.004	<0.004	<0.004	<0.004	<0.004	<0.004	<0.004	<0.004	<0.004	<0.004	<0.004	<0.005	<0.004	<0.004	<0.004	0.005	0.01	<0.004	<0.004	<0.00050	9,590	<0.50	9.96	<0.1	20.1	6.6	6.5	18,800	8.2	225	<0.01	10.4	0.7	<0.1	27	22.1	0.66	<0.00050	<0.00050
EB2605255	**SH5 1-1.5**	**08 Feb 2026**																																											
EB2605255	**SH5 1.5-2**	**08 Feb 2026**																																											
EB2605255	**SH5 2-2.5**	**08 Feb 2026**																																											
EB2605255	**SH6 0-0.5**	**10 Feb 2026**	<0.004	<0.004	<0.004	<0.005	<0.004	<0.004	<0.004	<0.004	<0.004	<0.004	<0.004	<0.004	<0.004	<0.004	<0.004	<0.005	<0.004	<0.004	<0.004	0.005	0.01	<0.004	<0.004	<0.00050	5,690	<0.50	6.57	<0.1	12.2	3.1	3.2	8,340	4.4	151	<0.01	5.6	0.5	<0.1	14.6	12.2	0.41	<0.00050	<0.00050
EB2605255	**SH6 0.5-1**	**10 Feb 2026**	<0.004	<0.004	<0.004	<0.005	<0.004	<0.004	<0.004	<0.004	<0.004	<0.004	<0.004	<0.004	<0.004	<0.004	<0.004	<0.005	<0.004	<0.004	<0.004	0.005	0.01	<0.004	<0.004	<0.00050	9,310	<0.50	8.86	<0.1	19.2	5.6	5.8	18,300	7.3	192	<0.01	9.6	0.7	<0.1	23.9	20.8	0.57	<0.00050	<0.00050
EB2605255	**SH6 1-1.5**	**10 Feb 2026**																																											
EB2605255	**SH6 1.5-2**	**10 Feb 2026**																																											
EB2605255	**SH7 0-0.5**	**11 Feb 2026**	<0.004	<0.004	<0.004	<0.005	<0.004	<0.004	<0.004	<0.004	<0.004	<0.004	<0.004	<0.004	<0.004	<0.004	<0.004	<0.005	<0.004	<0.004	<0.004	0.005	0.01	<0.004	<0.004	<0.00050	10,400	<0.50	9.2	<0.1	18.8	6.5	6.9	19,200	8.8	201	<0.01	10	0.6	<0.1	26.2	22.9	0.48	<0.00050	<0.00050
EB2605255	**SH7 0.5-1**	**11 Feb 2026**	<0.004	<0.004	<0.004	<0.005	<0.004	<0.004	<0.004	<0.004	<0.004	<0.004	<0.004	<0.004	<0.004	<0.004	<0.004	<0.005	<0.004	<0.004	<0.004	0.005	0.01	<0.004	<0.004	<0.00050	9,720	<0.50	11.7	<0.1	18.8	7.4	7.5	22,200	9.3	224	<0.01	10.4	0.6	<0.1	29.2	22.9	0.75	<0.00050	<0.00050
EB2605255	**SH7 1-1.5**	**11 Feb 2026**																																											
EB2605255	**SH7 1.5-2**	**11 Feb 2026**																																											
EB2605255	**SH7 2-2.5**	**11 Feb 2026**																																											
EB2605255	**SH8 0-0.5**	**08 Feb 2026**	<0.004	<0.004	<0.004	<0.005	<0.004	<0.004	<0.004	<0.004	<0.004	<0.004	<0.004	<0.004	<0.004	<0.004	<0.004	<0.005	<0.004	<0.004	<0.004	0.005	0.01	<0.004	<0.004	<0.00050	8,360	<0.50	10.3	<0.1	18.5	5.2	5.4	15,200	6.7	219	<0.01	9.1	0.6	<0.1	24.3	19.3	0.47	<0.00050	<0.00050
EB2605255	**SH8 0.5-1**	**08 Feb 2026**	<0.004	<0.004	<0.004	<0.005	<0.004	<0.004	<0.004	<0.004	<0.004	<0.004	<0.004	<0.004	<0.004	<0.004	<0.004	<0.005	<0.004	<0.004	<0.004	0.005	0.01	<0.004	<0.004	<0.00050	10,300	<0.50	10.4	<0.1	21	7.2	7.4	20,100	8.9	238	<0.01	11.3	0.7	<0.1	30.2	24.5	0.7	<0.00050	<0.00050
EB2605255	**SH8 1-1.5**	**08 Feb 2026**																																											
EB2605255	**SH8 1.5-2**	**08 Feb 2026**																																											
EB2605255	**SH8 2-2.5**	**08 Feb 2026**																																											
EB2605255	**SH8 2.5-3**	**08 Feb 2026**																																											
EB2605255	**SH8 3-3.5**	**08 Feb 2026**																																											
EB2605255	**SH9 0-0.5**	**09 Feb 2026**	<0.004	<0.004	<0.004	<0.005	<0.004	<0.004	<0.004	<0.004	<0.004	<0.004	<0.004	<0.004	<0.004	<0.004	<0.004	<0.005	<0.004	<0.004	<0.004	0.005	0.01	<0.004	<0.004	<0.00050	4,340	<0.50	4.96	<0.1	9.7	2.2	2.7	6,700	4.6	151	<0.01	4.3	0.5	<0.1	12.2	10.7	0.44	<0.00050	<0.00050
EB2605255	**SH9 0.5-1**	**09 Feb 2026**	<0.004	<0.004	<0.004	<0.005	<0.004	<0.004	<0.004	<0.004	<0.004	<0.004	<0.004	<0.004	<0.004	<0.004	<0.004	<0.005	<0.004	<0.004	<0.004	0.005	0.01	<0.004	<0.004	<0.00050	9,500	<0.50	9.38	<0.1	19.6	6.1	6.5	19,000	8.6	225	<0.01	10	0.7	<0.1	27.2	21.7	0.82	<0.00050	<0.00050
EB2605255	**SH9 1-1.5**	**09 Feb 2026**																																											
EB2605255	**SH9 1.5-2**	**09 Feb 2026**																																											
EB2605255	**SH11 0-1**	**09 Feb 2026**																																											
EB2605255	**SH11 0.5-1**	**09 Feb 2026**	<0.004	<0.004	<0.004	<0.005	<0.004	<0.004	<0.004	<0.004	<0.004	<0.004	<0.004	<0.004	<0.004	<0.004	<0.004	<0.005	<0.004	<0.004	<0.004	0.005	0.01	<0.004	<0.004	<0.00050	9,340	<0.50	9.5	<0.1	19.3	5.9	6.3	18,300	7.9	202	<0.01	9.8	0.7	<0.1	25.9	21.6	0.73	<0.00050	<0.00050
EB2605255	**SH11 1-1.5**	**09 Feb 2026**																																											
EB2605255	**SH11 1-2**	**09 Feb 2026**																																											
EB2605255	**SH11 1.5-2**	**09 Feb 2026**																																											
EB2605255	**SH12 0-0.5**	**11 Feb 2026**	<0.004	<0.004	<0.004	<0.005	<0.004	<0.004	<0.004	<0.004	<0.004	<0.004	<0.004	<0.004	<0.004	<0.004	<0.004	<0.005	<0.004	<0.004	<0.004	0.005	0.01	<0.004	<0.004	<0.00050	5,220	<0.50	4.9	<0.1	12.2	2.9	3	7,270	4.6	163	<0.01	5.8	0.5	<0.1	14.9	11.5	0.46	<0.00050	<0.00050
EB2605255	**SH12 0-1**	**11 Feb 2026**																																											
EB2605255	**SH12 0.5-1**	**11 Feb 2026**																																											
EB2605255	**SH12 1-1.5**	**11 Feb 2026**																																											
EB2605255	**SH12 1-2**	**11 Feb 2026**																																											
EB2605255	**SH12 1.5-2**	**11 Feb 2026**																																											
EB2605255	**SH12 2-2.5**	**11 Feb 2026**																																											
EB2605255	**SH12 2-3**	**11 Feb 2026**																																											
EB2605255	**SH13 0-0.5**	**08 Feb 2026**	<0.004	<0.004	<0.004	<0.005	<0.004	<0.004	<0.004	<0.004	<0.004	<0.004	<0.004	<0.004	<0.004	<0.004	<0.004	<0.005	<0.004	<0.004	<0.004	0.005	0.01	<0.004	<0.004	<0.00050	6,000	<0.50	7.36	<0.1	14.7	3.8	3.9	9,350	5	171	<0.01	6.9	0.6	<0.1	17.9	14.4	0.49	<0.00050	<0.00050
EB2605255	**SH13 0.5-1**	**08 Feb 2026**	<0.004	<0.004	<0.004	<0.005	<0.004	<0.004	<0.004	<0.004	<0.004	<0.004	<0.004	<0.004	<0.004	<0.004	<0.004	<0.005	<0.004	<0.004	<0.004	0.005	0.01	<0.004	<0.004	<0.00050	8,210	<0.50	9.16	<0.1	18.4	5.8	5.9	16,700	7.3	215	<0.01	9.4	0.6	<0.1	25.3	19.8	0.71	<0.00050	<0.00050
EB2605255	**SH13 1-1.5**	**08 Feb 2026**																																											
EB2605255	**SH13 1.5-2**	**08 Feb 2026**																																											
EB2605255	**SH13 2-2.5**	**08 Feb 2026**																																											
EB2605255	**SH15 0-0.5**	**11 Feb 2026**	<0.004	<0.004	<0.004	<0.005	<0.004	<0.004	<0.004	<0.004	<0.004	<0.004	<0.004	<0.004	<0.004	<0.004	<0.004	<0.005	<0.004	<0.004	<0.004	0.005	0.01	<0.004	<0.004	<0.00050	6,440	<0.50	7.78	<0.1	13.6	4	4.5	10,800	6.3	190	<0.01	6.8	0.6	<0.1	19.2	19.2	0.57	<0.00050	<0.00050
EB2605255	**SH15 0.5-1**	**11 Feb 2026**	<0.004	<0.004	<0.004	<0.005	<0.004	<0.004	<0.004	<0.004	<0.004	<0.004	<0.004	<0.004	<0.004	<0.004	<0.004	<0.005	<0.004	<0.004	<0.004	0.005	0.01	<0.004	<0.004	<0.00050	11,200	<0.50	10.8	<0.1	18.8	7.1	7.4	24,800	10.6	270	<0.01	10.5	0.8	<0.1	28.7	23	0.74	<0.00050	<0.00050
EB2605255	**SH15 1-1.5**	**11 Feb 2026**																																											
EB2605255	**SH15 1.5-2**	**11 Feb 2026**																																											
EB2605255	**SH16 0-0.5**	**09 Feb 2026**	<0.004	<0.004	<0.004	<0.005	<0.004	<0.004	<0.004	<0.004	<0.004	<0.004	<0.004	<0.004	<0.004	<0.004	<0.004	<0.005	<0.004	<0.004	<0.004	0.005	0.01	<0.004

BMT Pty Ltd
Shute Harbour SAP

			Organochlorine Pesticides																						Organotins			Inorganics		PCBs								
			Aldrin	Aldrin + Dieldrin	b-BHC	Chlordane	Chlordane (cis)	Chlordane (trans)	d-BHC	DDD	DDE	DDT	DDT+DDE+DDD	Dieldrin	Endosulfan	Endosulfan I	Endosulfan II	Endosulfan sulphate	Endrin	Endrin aldehyde	Endrin ketone	g-BHC (Lindane)	Heptachlor	Heptachlor epoxide	Methoxychlor	Oxychlordane	Dibutyltin (as Sn)	Monobutyltin (as Sn)	Tributyltin as SN	Clarity	Moisture Content	Aroclor 1016	Aroclor 1221	Aroclor 1232	Aroclor 1242	Aroclor 1248	Aroclor 1254	Aroclor 1260	PCBs (Sum of total)
			mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	µg/kg	µg/kg	mg/kg	-	%	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
EQL			0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.00025	0.0005	0.0005	0.0005	0.0005	1	1	0.0005		1	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005
ANZG Toxicant Default Guideline Values for Sediment Quality - DGV						0.0045								0.0028					0.0027			0.0009							0.009										0.034
ANZG Toxicant Default Guideline Values for Sediment Quality - GV - High						0.009								0.007					0.06			0.0014							0.07										0.28
NEPM 2013 Table 1B(5) Generic EIL - Areas of Ecological Significance												3																										
NEPM 2013 Table 1B(6) ESLs for Areas of Ecological Significance, Coarse Soil																																						
Lab Report Number	**Field ID**	**Date**																																				
EB2602255	**SH1 0-0.5**	**09 Feb 2026**	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00025	<0.00050	<0.00050	<0.00050	<0.00050	<1	<1	<0.0005		32.8								
EB2602255	**SH1 0.5-1**	**09 Feb 2026**	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00025	<0.00050	<0.00050	<0.00050	<0.00050	<1	<1	<0.0005		38.1								
EB2602255	**SH1 1-1.5**	**09 Feb 2026**																																				
EB2602255	**SH1 1.5-2**	**09 Feb 2026**																																				
EB2602255	**SH11A 0-0.5**	**09 Feb 2026**	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00025	<0.00050	<0.00050	<0.00050	<0.00050	<1	<1	<0.0005		37.2								
EB2602255	**SH11C 0-0.5**	**09 Feb 2026**	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00025	<0.00050	<0.00050	<0.00050	<0.00050	<1	<1	<0.0005		34.2								
EB2602255	**SH14A 0-0.5**	**08 Feb 2026**	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00025	<0.00050	<0.00050	<0.00050	<0.00050	<1	<1	<0.0005		37.3								
EB2602255	**SH14A 0.5-1**	**08 Feb 2026**	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00025	<0.00050	<0.00050	<0.00050	<0.00050	<1	<1	<0.0005		46.3								
EB2602255	**SH14A 1-1.5**	**08 Feb 2026**																																				
EB2602255	**SH14A 1.5-2**	**08 Feb 2026**																																				
EB2602255	**SH14A 2-2.5**	**08 Feb 2026**																																				
EB2602255	**SH14B 0-0.5**	**08 Feb 2026**	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00025	<0.00050	<0.00050	<0.00050	<0.00050	<1	<1	<0.0005		34.2								
EB2602255	**SH14B 0.5-1**	**08 Feb 2026**	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00025	<0.00050	<0.00050	<0.00050	<0.00050	<1	<1	<0.0005		44.8								
EB2602255	**SH14B 1-1.5**	**08 Feb 2026**																																				
EB2602255	**SH14B 1.5-2**	**08 Feb 2026**																																				
EB2602255	**SH14B 2-2.5**	**08 Feb 2026**																																				
EB2602255	**SH14C 0-0.5**	**08 Feb 2026**	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00025	<0.00050	<0.00050	<0.00050	<0.00050	<1	<1	<0.0005		35.9								
EB2602255	**SH14C 0.5-1**	**08 Feb 2026**	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00025	<0.00050	<0.00050	<0.00050	<0.00050	<1	<1	<0.0005		45.9								
EB2602255	**SH14C 1-1.5**	**08 Feb 2026**																																				
EB2602255	**SH14C 1.5-2**	**08 Feb 2026**																																				
EB2602255	**SH14C 2-2.5**	**08 Feb 2026**																																				
EB2602255	**SH16B 0-0.5**	**10 Feb 2026**	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00025	<0.00050	<0.00050	<0.00050	<0.00050	<1	<1	<0.0005		39.1								
EB2602255	**SH16B 0.5-1**	**10 Feb 2026**	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00025	<0.00050	<0.00050	<0.00050	<0.00050	<1	<1	<0.0005		42.3								
EB2602255	**SH16B 1-1.5**	**10 Feb 2026**																																				
EB2602255	**SH16C 0-0.5**	**10 Feb 2026**	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00025	<0.00050	<0.00050	<0.00050	<0.00050	<1	<1	<0.0005		33.5								
EB2602255	**SH16C 0.5-1**	**10 Feb 2026**	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00025	<0.00050	<0.00050	<0.00050	<0.00050	<1	<1	<0.0005		46.9								
EB2602255	**SH16C 1-1.5**	**10 Feb 2026**																																				
EB2602255	**SH2 0-0.5**	**11 Feb 2026**	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00025	<0.00050	<0.00050	<0.00050	<0.00050	<1	<1	<0.0005		46.6	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
EB2602255	**SH2 0.5-1**	**11 Feb 2026**	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00025	<0.00050	<0.00050	<0.00050	<0.00050	<1	<1	<0.0005		46.8	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
EB2602255	**SH2 1-1.5**	**11 Feb 2026**																																				
EB2602255	**SH3 0-0.5**	**09 Feb 2026**	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00025	<0.00050	<0.00050	<0.00050	<0.00050	<1	<1	<0.0005		36.5	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
EB2602255	**SH3 0-1**	**10 Feb 2026**																												1								
EB2602255	**SH3 0.5-1**	**09 Feb 2026**	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00025	<0.00050	<0.00050	<0.00050	<0.00050	<1	<1	<0.0005		45.3	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
EB2602255	**SH3 1-1.5**	**09 Feb 2026**																																				
EB2602255	**SH3 1-2**	**10 Feb 2026**																												1								
EB2602255	**SH3 1.5-2**	**09 Feb 2026**																																				
EB2602255	**SH4 0-0.5**	**09 Feb 2026**	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00025	<0.00050	<0.00050	<0.00050	<0.00050	<1	<1	<0.0005		16.9	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
EB2602255	**SH4 0.5-1**	**09 Feb 2026**	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00025	<0.00050	<0.00050	<0.00050	<0.00050	<1	<1	<0.0005		24.8	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
EB2602255	**SH4 1-1.5**	**09 Feb 2026**																																				
EB2602255	**SH5 0-0.5**	**08 Feb 2026**	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00025	<0.00050	<0.00050	<0.00050	<0.00050	<1	<1	<0.0005		29								
EB2602255	**SH5 0.5-1**	**08 Feb 2026**	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00025	<0.00050	<0.00050	<0.00050	<0.00050	<1	<1	<0.0005		48.2								
EB2602255	**SH5 1-1.5**	**08 Feb 2026**																																				
EB2602255	**SH5 1.5-2**	**08 Feb 2026**																																				
EB2602255	**SH5 2-2.5**	**08 Feb 2026**																																				
EB2602255	**SH6 0-0.5**	**10 Feb 2026**	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00025	<0.00050	<0.00050	<0.00050	<0.00050	<1	<1	<0.0005		36.9								
EB2602255	**SH6 0.5-1**	**10 Feb 2026**	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00025	<0.00050	<0.00050	<0.00050	<0.00050	<1	<1	<0.0005		43.7								
EB2602255	**SH6 1-1.5**	**10 Feb 2026**																																				
EB2602255	**SH6 1.5-2**	**10 Feb 2026**																																				
EB2602255	**SH7 0-0.5**	**11 Feb 2026**	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00025	<0.00050	<0.00050	<0.00050	<0.00050	<1	<1	<0.0005		45.1								
EB2602255	**SH7 0.5-1**	**11 Feb 2026**	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00025	<0.00050	<0.00050	<0.00050	<0.00050	<1	<1	<0.0005		44.4								
EB2602255	**SH7 1-1.5**	**11 Feb 2026**																																				
EB2602255	**SH7 1.5-2**	**11 Feb 2026**																																				
EB2602255	**SH7 2-2.5**	**11 Feb 2026**																																				
EB2602255	**SH8 0-0.5**	**08 Feb 2026**	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00025	<0.00050	<0.00050	<0.00050	<0.00050	<1	<1	<0.0005		40.2	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
EB2602255	**SH8 0.5-1**	**08 Feb 2026**	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00025	<0.00050	<0.00050	<0.00050	<0.00050	<1	<1	<0.0005		49.4	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
EB2602255	**SH8 1-1.5**	**08 Feb 2026**																																				
EB2602255	**SH8 1.5-2**	**08 Feb 2026**																																				
EB2602255	**SH8 2-2.5**	**08 Feb 2026**																																				
EB2602255	**SH8 2.5-3**	**08 Feb 2026**																																				
EB2602255	**SH8 3-3.5**	**08 Feb 2026**																																				
EB2602255	**SH9 0-0.5**	**09 Feb 2026**	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00025	<0.00050	<0.00050	<0.00050	<0.00050	<1	<1	<0.0005		36.4	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
EB2602255	**SH9 0.5-1**	**09 Feb 2026**	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00025	<0.00050	<0.00050	<0.00050	<0.00050	<1	<1	<0.0005		45.7	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
EB2602255	**SH9 1-1.5**	**09 Feb 2026**																																				
EB2602255	**SH9 1.5-2**	**09 Feb 2026**																																				
EB2602255	**SH11 0-1**	**09 Feb 2026**																												1								
EB2602255	**SH11 0.5-1**	**09 Feb 2026**	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00025	<0.00050	<0.00050	<0.00050	<0.00050	<1	<1	<0.0005		44.8								
EB2602255	**SH11 1-1.5**	**09 Feb 2026**																																				
EB2602255	**SH11 1-2**	**09 Feb 2026**																												1								
EB2602255	**SH11 1.5-2**	**09 Feb 2026**																																				
EB2602255	**SH12 0-0.5**	**11 Feb 2026**	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00025	<0.00050	<0.00050	<0.00050	<0.00050	<1	<1	<0.0005		35.8								
EB2602255	**SH12 0-1**	**11 Feb 2026**																												1								
EB2602255	**SH12 0.5-1**	**11 Feb 2026**																																				
EB2602255	**SH12 1-1.5**	**11 Feb 2026**																																				
EB2602255	**SH12 1-2**	**11 Feb 2026**																												1								
EB2602255	**SH12 1.5-2**	**11 Feb 2026**																																				
EB2602255	**SH12 2-2.5**	**11 Feb 2026**																																				
EB2602255	**SH12 2-3**	**11 Feb 2026**																												1								
EB2602255	**SH13 0-0.5**	**08 Feb 2026**	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00025	<0.00050	<0.00050	<0.00050	<0.00050	<1	<1	<0.0005		39.7								
EB2602255	**SH13 0.5-1**	**08 Feb 2026**	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00025	<0.00050	<0.00050	<0.00050	<0.00050	<1	<1	<0.0005		46.8								
EB2602255	**SH13 1-1.5**	**08 Feb 2026**																																				
EB2602255	**SH13 1.5-2**	**08 Feb 2026**																																				
EB2602255	**SH13 2-2.5**	**08 Feb 2026**																																				
EB2602255	**SH15 0-0.5**	**11 Feb 2026**	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00025	<0.00050	<0.00050	<0.00050	<0.00050	<1	<1	<0.0005		37.8								
EB2602255	**SH15 0.5-1**	**11 Feb 2026**	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00025	<0.00050	<0.00050	<0.00050	<0.00050	<1	<1	<0.0005		46.3								
EB2602255	**SH15 1-1.5**	**11 Feb 2026**																																				
EB2602255	**SH15 1.5-2**	**11 Feb 2026**																																				
EB2602255	**SH16 0-0.5**	**09 Feb 2026**	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00025	<0.00050	<0.00050	<0.00050	<0.00050	<1	<1	<0.0005		39.7								
EB2602255	**SH16 0.5-1**	**09 Feb 2026**	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00025	<0.00050	<0.00050	<0.00050	<0.00050	<1	<1	<0.0005		40.1								
EB2602255	**SH16 1-1.5**	**09 Feb 2026**																																				
EB2602255	**SH16 1.5-2**	**09 Feb 2026**																																				

Statistics

Number of Results			**38**	**38**	**38**	**38**	**38**	**38**	**38**	**38**	**38**	**38**	**38**	**38**	**38**	**38**	**38**	**38**	**38**	**38**	**38**	**38**	**38**	**38**	**38**	**38**	**38**	**38**	**38**	**7**	**38**	**10**	**10**	**10**	**10**	**10**	**10**	**10**	**10**
Number of Detects			**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**7**	**38**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
Minimum Concentration			**<0.0005**	**<0.0005**	**<0.0005**	**<0.0005**	**<0.0005**	**<0.0005**	**<0.0005**	**<0.0005**	**<0.0005**	**<0.0005**	**<0.0005**	**<0.0005**	**<0.0005**	**<0.0005**	**<0.0005**	**<0.0005**	**<0.0005**	**<0.0005**	**<0.0005**	**<0.0005**	**<0.0005**	**<0.0005**	**<0.0005**	**<0.0005**	**<0.0005**	**<1**	**<1**	**<0.0005**	**1**	**16.9**	**<0.005**	**<0.005**	**<0.005**	**<0.005**	**<0.005**	**<0.005**	**<0.005**	**<0.005**
Maximum Concentration			**<0.0005**	**<0.0005**	**<0.0005**	**<0.0005**	**<0.0005**	**<0.0005**	**<0.0005**	**<0.0005**	**<0.0005**	**<0.0005**	**<0.0005**	**<0.0005**	**<0.0005**	**<0.0005**	**<0.0005**	**<0.0005**	**<0.0005**	**<0.0005**	**<0.0005**	**<0.00025**	**<0.0005**	**<0.0005**	**<0.0005**	**<0.0005**	**<1**	**<1**	**<0.0005**	**1**	**49.4**	**<0.005**	**<0.005**	**<0.005**	**<0.005**	**<0.005**	**<0.005**	**<0.005**	**<0.005**

Environmental Standards
ANZG, ANZG Toxicant Default Guideline Values for Sediment Quality - DGV
ANZG, ANZG Toxicant Default Guideline Values for Sediment Quality - GV - High
2013, NEPM 2013 Table 1B(6) ESLs for Areas of Ecological Significance, Coarse Soil

Annex B Laboratory Reports

CERTIFICATE OF ANALYSIS

Work Order	: **EB2605255**	Page	: 1 of 116
Client	: **BMT COMMERCIAL AUSTRALIA PTY LTD**	Laboratory	: Environmental Division Brisbane
Contact	: MACKENZIE STACEY	Contact	: Nathan King
Address	:	Address	: 2 Byth Street Stafford QLD Australia 4053
Telephone	: ----	Telephone	: +61-7-3552-8685
Project	: 004043 Shute Harbour SAP	Date Samples Received	: 13-Feb-2026 08:30
Order number	: 1111	Date Analysis Commenced	: 13-Feb-2026
C-O-C number	: ----	Issue Date	: 26-Feb-2026 14:18
Sampler	: CRAIG HEATHERINGTON, ELYSSA MCLEOD		
Site	: ----		
Quote number	: EB26BMTWBM0001_V6		
No. of samples received	: 91		
No. of samples analysed	: 90		

Accreditation No. 825
Accredited for compliance with
ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted, unless the sampling was conducted by ALS. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Surrogate Control Limits

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QA/QC Compliance Assessment to assist with Quality Review and Sample Receipt Notification.

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories	*Position*	*Accreditation Category*
Aleksandar Vujkovic	Laboratory Technician	Newcastle - Inorganics, Mayfield West, NSW
Beatriz Llarinas	Senior Chemist	Brisbane Inorganics, Stafford, QLD
Beatriz Llarinas	Senior Chemist	Brisbane Soil Preparation, Stafford, QLD
Ben Felgendrejeris	Senior Acid Sulfate Soil Chemist	Brisbane Acid Sulphate Soils, Stafford, QLD
Edwandy Fadjar	Organic Coordinator	Sydney Organics, Smithfield, NSW
Layla Hafner	Acid Sulphate Soils - Chemist	Brisbane Acid Sulphate Soils, Stafford, QLD
Mark Hallas	Senior Inorganic Chemist	Brisbane Soil Preparation, Stafford, QLD
Timothy Creagh	Senior Chemist - Organics	Brisbane Organics, Stafford, QLD

General Comments

The analytical procedures used by ALS have been developed from established internationally recognised procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are fully validated and are often at the client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

When sampling time information is not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes.

Where a result is required to meet compliance limits the associated uncertainty must be considered. Refer to the ALS Contract for details.

Key : CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
LOR = Limit of reporting
^ = This result is computed from individual analyte detections at or above the level of reporting
ø = ALS is not NATA accredited for these tests.
~ = Indicates an estimated value.

- EA150H: Soil particle density results fell outside the scope of AS1289.3.6.3. Results should be scrutinised accordingly.
- EP080-SD: Where reported, Total Xylenes is the sum of the reported concentrations of m&p-Xylene and o-Xylene at or above the LOR.
- EP131A: Where reported, Total Chlordane (sum) is the sum of the reported concentrations of cis-Chlordane and trans-Chlordane at or above the LOR.
- ASS: EA033 (CRS Suite): Analysis is performed as per the Acid Sulfate Soils Laboratory Methods Guidelines (2004) and the updated National Acid Sulfate Soils Guidance: National acid sulfate soils identification and laboratory methods manual, Department of Agriculture and Water Resources, Canberra, ACT (2018)
- **Settleability analysis will be conducted by ALS Newcastle, NATA Accreditation No. 825, Site No. 1656.**
- **Specialty Organics will be conducted by ALS Sydney, NATA accreditation no. 825, site no 10911.**
- ASS: EA033 (CRS Suite): Retained Acidity not required because pH KCl greater than or equal to 4.5
- EP071 – TRH Semivolatile Fraction: Sample 'SH16 0-0.5' (EB2605255_053) shows poor matrix spike recovery due to heterogeneity.
- EP080- SD - TRH Volatile/BTEX in Sediments: Sample 'SH16C 0.5-1' (EB2605255-069) shows poor surrogate recovery due to matrix interference (high moisture content).
- EP080- SD - TRH Volatile/BTEX in Sediments: Particular samples show poor surrogate recovery due to matrix interference (high moisture content).
- EG005-SD (Total Fe and Al in Sediments by ICP-AES): Sample 'SH5 0-0.5' (EB2605255-028) shows poor duplicate results due to sample heterogeneity. Confirmed by visual inspection.
- EP080 - Volatile TRH/BTEX: Sample 'SH14A 0.5-1' (EB2605255-002) shows poor matrix spike recovery due to matrix interference (high moisture content).
- EP080 - Volatile TRH/BTEX: Sample 'SH7 0.5-1' (EB2605255-072) shows poor matrix spike recovery due to matrix interference. Confirmed by re-extraction and re-analysis.
- EP090 – Organotin Analysis: High surrogate recoveries have been deemed acceptable as all associated analyte results are less than LOR.
- EP090 – Organotin Analysis: Sample 'SH14A 0.5-1' (EB2605255-002) and 'SH3 0.5-1' (EB2605255-048) shows poor matrix spike recovery due to matrix interference. Confirmed by re-extraction and re-analysis.
- ASS: EA033 (CRS Suite): Laboratory determinations of ANC needs to be corroborated by effectiveness of the measured ANC in relation to incubation ANC. Unless corroborated, the results of ANC testing should be discounted when determining Net Acidity for comparison with action criteria, or for the determination of the acidity hazard and required liming amounts.
- ASS: EA033 (CRS Suite): Liming rate is calculated and reported on a dry weight basis assuming use of fine agricultural lime (CaCO3) and using a safety factor of 1.5 to allow for non-homogeneous mixing and poor reactivity of lime. For conversion of Liming Rate from 'kg/t dry weight' to 'kg/m3 in-situ soil', multiply 'reported results' x 'wet bulk density of soil in t/m3'.
- EA151: ALS does not hold NATA accreditation for Settleability.

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Sample ID	SH14A 0-0.5	SH14A 0.5-1	SH14A 1-1.5	SH14A 1.5-2	SH14A 2-2.5
			Sampling date / time	08-Feb-2026 00:00	08-Feb-2026 00:00	08-Feb-2026 00:00	08-Feb-2026 00:00	08-Feb-2026 00:00
Compound	CAS Number	LOR	Unit	EB2605255-001	EB2605255-002	EB2605255-003	EB2605255-004	EB2605255-005
				Result	Result	Result	Result	Result
EA033-A: Actual Acidity								
pH KCl (23A)	----	0.1	pH Unit	**9.0**	**8.8**	**8.8**	**8.7**	**8.6**
Titratable Actual Acidity (23F)	----	2	mole H+ / t	<2	<2	<2	<2	<2
sulfidic - Titratable Actual Acidity (s-23F)	----	0.02	% pyrite S	<0.02	<0.02	<0.02	<0.02	<0.02
EA033-B: Potential Acidity								
Chromium Reducible Sulfur (22B)	----	0.005	% S	**0.303**	**0.659**	**0.954**	**0.800**	**0.881**
acidity - Chromium Reducible Sulfur (a-22B)	----	10	mole H+ / t	**189**	**411**	**595**	**499**	**549**
EA033-C: Acid Neutralising Capacity								
Acid Neutralising Capacity (19A2)	----	0.01	% CaCO3	**40.3**	**20.6**	**16.6**	**12.3**	**10.8**
acidity - Acid Neutralising Capacity (a-19A2)	----	10	mole H+ / t	**8040**	**4120**	**3320**	**2470**	**2150**
sulfidic - Acid Neutralising Capacity (s-19A2)	----	0.01	% pyrite S	**12.9**	**6.60**	**5.32**	**3.95**	**3.45**
EA033-E: Acid Base Accounting								
ANC Fineness Factor	----	0.5	-	**1.5**	**1.5**	**1.5**	**1.5**	**1.5**
Net Acidity (sulfur units)	----	0.02	% S	<0.02	<0.02	<0.02	<0.02	<0.02
Net Acidity (acidity units)	----	10	mole H+ / t	<10	<10	<10	<10	<10
Liming Rate	----	1	kg CaCO3/t	<1	<1	<1	<1	<1
Net Acidity excluding ANC (sulfur units)	----	0.02	% S	**0.30**	**0.66**	**0.95**	**0.80**	**0.88**
Net Acidity excluding ANC (acidity units)	----	10	mole H+ / t	**189**	**411**	**595**	**499**	**549**
Liming Rate excluding ANC	----	1	kg CaCO3/t	**14**	**31**	**45**	**37**	**41**
EA055: Moisture Content (Dried @ 105-110°C)								
Moisture Content	----	1.0	%	**37.3**	**46.3**	**----**	**----**	**----**
EA150: Particle Sizing								
+75µm	----	1	%	**28**	**10**	**8**	**4**	**4**
+150µm	----	1	%	**24**	**8**	**8**	**4**	**3**
+300µm	----	1	%	**19**	**6**	**6**	**3**	**3**
+425µm	----	1	%	**17**	**5**	**6**	**3**	**2**
+600µm	----	1	%	**14**	**4**	**5**	**2**	**2**

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Sample ID	SH14A 0-0.5	SH14A 0.5-1	SH14A 1-1.5	SH14A 1.5-2	SH14A 2-2.5
				Sampling date / time	08-Feb-2026 00:00	08-Feb-2026 00:00	08-Feb-2026 00:00	08-Feb-2026 00:00	08-Feb-2026 00:00
Compound	CAS Number	LOR	Unit		EB2605255-001	EB2605255-002	EB2605255-003	EB2605255-004	EB2605255-005
					Result	Result	Result	Result	Result
EA150: Particle Sizing - Continued									
+1180µm	----	1	%		8	2	2	1	<1
+2.36mm	----	1	%		3	<1	<1	<1	<1
+4.75mm	----	1	%		<1	<1	<1	<1	<1
+9.5mm	----	1	%		<1	<1	<1	<1	<1
+19.0mm	----	1	%		<1	<1	<1	<1	<1
+37.5mm	----	1	%		<1	<1	<1	<1	<1
+75.0mm	----	1	%		<1	<1	<1	<1	<1
EA150: Soil Classification based on Particle Size									
Clay (<2 µm)	----	1	%		35	54	52	53	57
Silt (2-60 µm)	----	1	%		34	35	39	42	39
Sand (0.06-2.00 mm)	----	1	%		27	10	8	5	4
Gravel (>2mm)	----	1	%		4	1	1	<1	<1
Cobbles (>6cm)	----	1	%		<1	<1	<1	<1	<1
EA152: Soil Particle Density									
Soil Particle Density (Clay/Silt/Sand)	----	0.01	g/cm3		2.53	2.77	2.78	2.50	2.35
EG005(ED093)-SD: Total Metals in Sediments by ICP-AES									
Aluminium	7429-90-5	50	mg/kg		4670	10200	----	----	----
Iron	7439-89-6	50	mg/kg		7340	21100	----	----	----
EG020-SD: Total Metals in Sediments by ICPMS									
Antimony	7440-36-0	0.50	mg/kg		<0.50	<0.50	----	----	----
Arsenic	7440-38-2	1.00	mg/kg		6.83	10.7	----	----	----
Cadmium	7440-43-9	0.1	mg/kg		<0.1	<0.1	----	----	----
Chromium	7440-47-3	1.0	mg/kg		12.2	22.2	----	----	----
Copper	7440-50-8	1.0	mg/kg		3.1	6.8	----	----	----
Cobalt	7440-48-4	0.5	mg/kg		2.8	6.5	----	----	----
Lead	7439-92-1	1.0	mg/kg		4.1	8.3	----	----	----
Manganese	7439-96-5	10	mg/kg		151	235	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Sample ID	SH14A 0-0.5	SH14A 0.5-1	SH14A 1-1.5	SH14A 1.5-2	SH14A 2-2.5
			Sampling date / time	08-Feb-2026 00:00	08-Feb-2026 00:00	08-Feb-2026 00:00	08-Feb-2026 00:00	08-Feb-2026 00:00
Compound	CAS Number	LOR	Unit	EB2605255-001	EB2605255-002	EB2605255-003	EB2605255-004	EB2605255-005
				Result	Result	Result	Result	Result
EG020-SD: Total Metals in Sediments by ICPMS - Continued								
Nickel	7440-02-0	1.0	mg/kg	**5.5**	**10.8**	----	----	----
Selenium	7782-49-2	0.1	mg/kg	**0.5**	**0.7**	----	----	----
Silver	7440-22-4	0.1	mg/kg	<0.1	<0.1	----	----	----
Vanadium	7440-62-2	2.0	mg/kg	**14.4**	**29.8**	----	----	----
Zinc	7440-66-6	1.0	mg/kg	**11.7**	**23.9**	----	----	----
EG035T: Total Recoverable Mercury by FIMS								
Mercury	7439-97-6	0.01	mg/kg	<0.01	<0.01	----	----	----
EP003: Total Organic Carbon (TOC) in Soil								
Total Organic Carbon	----	0.02	%	**0.53**	**0.71**	----	----	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions								
>C10 - C16 Fraction	----	3	mg/kg	<3	<3	----	----	----
>C16 - C34 Fraction	----	3	mg/kg	<3	<3	----	----	----
>C34 - C40 Fraction	----	5	mg/kg	<5	<5	----	----	----
>C10 - C40 Fraction (sum)	----	3	mg/kg	<3	<3	----	----	----
>C10 - C16 Fraction minus Naphthalene (F2)	----	3	mg/kg	<3	<3	----	----	----
EP080-SD / EP071-SD: Total Petroleum Hydrocarbons								
C6 - C9 Fraction	----	3	mg/kg	<3	<3	----	----	----
C10 - C14 Fraction	----	3	mg/kg	<3	<3	----	----	----
C15 - C28 Fraction	----	3	mg/kg	<3	<3	----	----	----
C29 - C36 Fraction	----	5	mg/kg	<5	<5	----	----	----
^ **C10 - C36 Fraction (sum)**	----	3	mg/kg	<3	<3	----	----	----
EP080-SD / EP071-SD: Total Recoverable Hydrocarbons								
C6 - C10 Fraction	C6_C10	3	mg/kg	<3	<3	----	----	----
C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	3.0	mg/kg	<3.0	<3.0	----	----	----
EP080-SD: BTEXN								
Benzene	71-43-2	0.2	mg/kg	<0.2	<0.2	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Sample ID	SH14A 0-0.5	SH14A 0.5-1	SH14A 1-1.5	SH14A 1.5-2	SH14A 2-2.5
				Sampling date / time	08-Feb-2026 00:00	08-Feb-2026 00:00	08-Feb-2026 00:00	08-Feb-2026 00:00	08-Feb-2026 00:00
Compound	CAS Number	LOR	Unit		EB2605255-001	EB2605255-002	EB2605255-003	EB2605255-004	EB2605255-005
					Result	Result	Result	Result	Result
EP080-SD: BTEXN - Continued									
Toluene	108-88-3	0.2	mg/kg		<0.2	<0.2	----	----	----
Ethylbenzene	100-41-4	0.2	mg/kg		<0.2	<0.2	----	----	----
meta- & para-Xylene	108-38-3 106-42-3	0.2	mg/kg		<0.2	<0.2	----	----	----
ortho-Xylene	95-47-6	0.2	mg/kg		<0.2	<0.2	----	----	----
^ **Total Xylenes**	----	0.5	mg/kg		<0.5	<0.5	----	----	----
^ **Sum of BTEX**	----	0.2	mg/kg		<0.2	<0.2	----	----	----
Naphthalene	91-20-3	0.2	mg/kg		<0.2	<0.2	----	----	----
EP090: Organotin Compounds									
Monobutyltin	78763-54-9	1	µgSn/kg		<1	<1	----	----	----
Dibutyltin	1002-53-5	1	µgSn/kg		<1	<1	----	----	----
Tributyltin	56573-85-4	0.5	µgSn/kg		<0.5	<0.5	----	----	----
EP131A: Organochlorine Pesticides									
Aldrin	309-00-2	0.50	µg/kg		<0.50	<0.50	----	----	----
alpha-BHC	319-84-6	0.50	µg/kg		<0.50	<0.50	----	----	----
beta-BHC	319-85-7	0.50	µg/kg		<0.50	<0.50	----	----	----
delta-BHC	319-86-8	0.50	µg/kg		<0.50	<0.50	----	----	----
4.4`-DDD	72-54-8	0.50	µg/kg		<0.50	<0.50	----	----	----
4.4`-DDE	72-55-9	0.50	µg/kg		<0.50	<0.50	----	----	----
4.4`-DDT	50-29-3	0.50	µg/kg		<0.50	<0.50	----	----	----
^ **Sum of DDD + DDE + DDT**	72-54-8/72-55-9/50-2	0.50	µg/kg		<0.50	<0.50	----	----	----
Dieldrin	60-57-1	0.50	µg/kg		<0.50	<0.50	----	----	----
alpha-Endosulfan	959-98-8	0.50	µg/kg		<0.50	<0.50	----	----	----
beta-Endosulfan	33213-65-9	0.50	µg/kg		<0.50	<0.50	----	----	----
Endosulfan sulfate	1031-07-8	0.50	µg/kg		<0.50	<0.50	----	----	----
^ **Endosulfan (sum)**	115-29-7	0.50	µg/kg		<0.50	<0.50	----	----	----
Endrin	72-20-8	0.50	µg/kg		<0.50	<0.50	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Sample ID	SH14A 0-0.5	SH14A 0.5-1	SH14A 1-1.5	SH14A 1.5-2	SH14A 2-2.5
				Sampling date / time	08-Feb-2026 00:00	08-Feb-2026 00:00	08-Feb-2026 00:00	08-Feb-2026 00:00	08-Feb-2026 00:00
Compound	CAS Number	LOR	Unit		EB2605255-001	EB2605255-002	EB2605255-003	EB2605255-004	EB2605255-005
					Result	Result	Result	Result	Result
EP131A: Organochlorine Pesticides - Continued									
Endrin aldehyde	7421-93-4	0.50	µg/kg		<0.50	<0.50	----	----	----
Endrin ketone	53494-70-5	0.50	µg/kg		<0.50	<0.50	----	----	----
Heptachlor	76-44-8	0.50	µg/kg		<0.50	<0.50	----	----	----
Heptachlor epoxide	1024-57-3	0.50	µg/kg		<0.50	<0.50	----	----	----
Hexachlorobenzene (HCB)	118-74-1	0.50	µg/kg		<0.50	<0.50	----	----	----
gamma-BHC - (Lindane)	58-89-9	0.25	µg/kg		<0.25	<0.25	----	----	----
Methoxychlor	72-43-5	0.50	µg/kg		<0.50	<0.50	----	----	----
cis-Chlordane	5103-71-9	0.50	µg/kg		<0.50	<0.50	----	----	----
trans-Chlordane	5103-74-2	0.50	µg/kg		<0.50	<0.50	----	----	----
^ Total Chlordane (sum)	----	0.50	µg/kg		<0.50	<0.50	----	----	----
Oxychlordane	27304-13-8	0.50	µg/kg		<0.50	<0.50	----	----	----
^ Sum of Aldrin + Dieldrin	309-00-2/60-57-1	0.50	µg/kg		<0.50	<0.50	----	----	----
EP132B: Polynuclear Aromatic Hydrocarbons									
Naphthalene	91-20-3	5	µg/kg		<5	<5	----	----	----
2-Methylnaphthalene	91-57-6	5	µg/kg		<5	<5	----	----	----
Acenaphthylene	208-96-8	4	µg/kg		<4	<4	----	----	----
Acenaphthene	83-32-9	4	µg/kg		<4	<4	----	----	----
Fluorene	86-73-7	4	µg/kg		<4	<4	----	----	----
Phenanthrene	85-01-8	4	µg/kg		<4	<4	----	----	----
Anthracene	120-12-7	4	µg/kg		<4	<4	----	----	----
Fluoranthene	206-44-0	4	µg/kg		<4	<4	----	----	----
Pyrene	129-00-0	4	µg/kg		<4	<4	----	----	----
Benz(a)anthracene	56-55-3	4	µg/kg		<4	<4	----	----	----
Chrysene	218-01-9	4	µg/kg		<4	<4	----	----	----
Benzo(b+j)fluoranthene	205-99-2 205-82-3	4	µg/kg		<4	<4	----	----	----
Benzo(k)fluoranthene	207-08-9	4	µg/kg		<4	<4	----	----	----
Benzo(e)pyrene	192-97-2	4	µg/kg		<4	<4	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Sample ID	SH14A 0-0.5	SH14A 0.5-1	SH14A 1-1.5	SH14A 1.5-2	SH14A 2-2.5
				Sampling date / time	08-Feb-2026 00:00	08-Feb-2026 00:00	08-Feb-2026 00:00	08-Feb-2026 00:00	08-Feb-2026 00:00
Compound	CAS Number	LOR	Unit		EB2605255-001	EB2605255-002	EB2605255-003	EB2605255-004	EB2605255-005
					Result	Result	Result	Result	Result
EP132B: Polynuclear Aromatic Hydrocarbons - Continued									
Benzo(a)pyrene	50-32-8	4	µg/kg		<4	<4	----	----	----
Perylene	198-55-0	4	µg/kg		<4	<4	----	----	----
Benzo(g.h.i)perylene	191-24-2	4	µg/kg		<4	<4	----	----	----
Dibenz(a.h)anthracene	53-70-3	4	µg/kg		<4	<4	----	----	----
Indeno(1.2.3.cd)pyrene	193-39-5	4	µg/kg		<4	<4	----	----	----
Coronene	191-07-1	5	µg/kg		<5	<5	----	----	----
^ Sum of PAHs	----	4	µg/kg		<4	<4	----	----	----
^ Benzo(a)pyrene TEQ (zero)	----	4	µg/kg		<4	<4	----	----	----
^ Benzo(a)pyrene TEQ (half LOR)	----	4	µg/kg		5	5	----	----	----
^ Benzo(a)pyrene TEQ (LOR)	----	4	µg/kg		10	10	----	----	----
EP080-SD: TPH(V)/BTEX Surrogates									
1.2-Dichloroethane-D4	17060-07-0	0.2	%		70.4	59.6	----	----	----
Toluene-D8	2037-26-5	0.2	%		74.5	51.7	----	----	----
4-Bromofluorobenzene	460-00-4	0.2	%		79.9	64.4	----	----	----
EP090S: Organotin Surrogate									
Tripropyltin	----	0.5	%		109	85.9	----	----	----
EP131S: OC Pesticide Surrogate									
Dibromo-DDE	21655-73-2	0.50	%		80.6	84.9	----	----	----
EP132T: Base/Neutral Extractable Surrogates - SD									
2-Fluorobiphenyl	321-60-8	10	%		71.3	62.5	----	----	----
Anthracene-d10	1719-06-8	10	%		97.5	89.7	----	----	----
4-Terphenyl-d14	1718-51-0	10	%		73.6	68.8	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Sample ID	SH14B 0-0.5	SH14B 0.5-1	SH14B 1-1.5	SH14B 1.5-2	SH14B 2-2.5
			Sampling date / time	08-Feb-2026 00:00	08-Feb-2026 00:00	08-Feb-2026 00:00	08-Feb-2026 00:00	08-Feb-2026 00:00
Compound	CAS Number	LOR	Unit	EB2605255-006	EB2605255-007	EB2605255-008	EB2605255-009	EB2605255-010
				Result	Result	Result	Result	Result
EA033-A: Actual Acidity								
pH KCl (23A)	----	0.1	pH Unit	**9.2**	**8.9**	**8.8**	**8.8**	**8.7**
Titratable Actual Acidity (23F)	----	2	mole H+ / t	<2	<2	<2	<2	<2
sulfidic - Titratable Actual Acidity (s-23F)	----	0.02	% pyrite S	<0.02	<0.02	<0.02	<0.02	<0.02
EA033-B: Potential Acidity								
Chromium Reducible Sulfur (22B)	----	0.005	% S	**0.286**	**0.799**	**1.08**	**1.00**	**0.988**
acidity - Chromium Reducible Sulfur (a-22B)	----	10	mole H+ / t	**178**	**498**	**671**	**625**	**616**
EA033-C: Acid Neutralising Capacity								
Acid Neutralising Capacity (19A2)	----	0.01	% CaCO3	**46.1**	**21.9**	**12.9**	**12.0**	**12.5**
acidity - Acid Neutralising Capacity (a-19A2)	----	10	mole H+ / t	**9210**	**4370**	**2570**	**2390**	**2490**
sulfidic - Acid Neutralising Capacity (s-19A2)	----	0.01	% pyrite S	**14.8**	**7.00**	**4.13**	**3.83**	**3.99**
EA033-E: Acid Base Accounting								
ANC Fineness Factor	----	0.5	-	**1.5**	**1.5**	**1.5**	**1.5**	**1.5**
Net Acidity (sulfur units)	----	0.02	% S	<0.02	<0.02	<0.02	<0.02	<0.02
Net Acidity (acidity units)	----	10	mole H+ / t	<10	<10	<10	<10	<10
Liming Rate	----	1	kg CaCO3/t	<1	<1	<1	<1	<1
Net Acidity excluding ANC (sulfur units)	----	0.02	% S	**0.29**	**0.80**	**1.08**	**1.00**	**0.99**
Net Acidity excluding ANC (acidity units)	----	10	mole H+ / t	**178**	**498**	**671**	**625**	**616**
Liming Rate excluding ANC	----	1	kg CaCO3/t	**13**	**37**	**50**	**47**	**46**
EA055: Moisture Content (Dried @ 105-110°C)								
Moisture Content	----	1.0	%	**34.2**	**44.8**	**----**	**----**	**----**
EA150: Particle Sizing								
+75µm	----	1	%	**43**	**6**	**2**	**7**	**4**
+150µm	----	1	%	**37**	**5**	**2**	**6**	**4**
+300µm	----	1	%	**29**	**3**	**1**	**5**	**3**
+425µm	----	1	%	**25**	**2**	<1	**5**	**3**
+600µm	----	1	%	**22**	**2**	<1	**4**	**2**

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Sample ID	SH14B 0-0.5	SH14B 0.5-1	SH14B 1-1.5	SH14B 1.5-2	SH14B 2-2.5
			Sampling date / time	08-Feb-2026 00:00	08-Feb-2026 00:00	08-Feb-2026 00:00	08-Feb-2026 00:00	08-Feb-2026 00:00
Compound	CAS Number	LOR	Unit	EB2605255-006	EB2605255-007	EB2605255-008	EB2605255-009	EB2605255-010
				Result	Result	Result	Result	Result
EA150: Particle Sizing - Continued								
+1180µm	----	1	%	**11**	<1	<1	**2**	<1
+2.36mm	----	1	%	**4**	<1	<1	**1**	<1
+4.75mm	----	1	%	<1	<1	<1	<1	<1
+9.5mm	----	1	%	<1	<1	<1	<1	<1
+19.0mm	----	1	%	<1	<1	<1	<1	<1
+37.5mm	----	1	%	<1	<1	<1	<1	<1
+75.0mm	----	1	%	<1	<1	<1	<1	<1
EA150: Soil Classification based on Particle Size								
Clay (<2 µm)	----	1	%	**21**	**54**	**56**	**54**	**56**
Silt (2-60 µm)	----	1	%	**31**	**38**	**41**	**38**	**39**
Sand (0.06-2.00 mm)	----	1	%	**42**	**8**	**3**	**7**	**5**
Gravel (>2mm)	----	1	%	**6**	<1	<1	**1**	<1
Cobbles (>6cm)	----	1	%	<1	<1	<1	<1	<1
EA152: Soil Particle Density								
Soil Particle Density (Clay/Silt/Sand)	----	0.01	g/cm3	**2.48**	**2.64**	**2.15**	**2.62**	**2.47**
EG005(ED093)-SD: Total Metals in Sediments by ICP-AES								
Aluminium	7429-90-5	50	mg/kg	**4060**	**8890**	----	----	----
Iron	7439-89-6	50	mg/kg	**6490**	**18500**	----	----	----
EG020-SD: Total Metals in Sediments by ICPMS								
Antimony	7440-36-0	0.50	mg/kg	<0.50	<0.50	----	----	----
Arsenic	7440-38-2	1.00	mg/kg	**5.51**	**12.4**	----	----	----
Cadmium	7440-43-9	0.1	mg/kg	<0.1	<0.1	----	----	----
Chromium	7440-47-3	1.0	mg/kg	**11.2**	**20.2**	----	----	----
Copper	7440-50-8	1.0	mg/kg	**2.8**	**6.9**	----	----	----
Cobalt	7440-48-4	0.5	mg/kg	**2.5**	**6.4**	----	----	----
Lead	7439-92-1	1.0	mg/kg	**4.1**	**9.6**	----	----	----
Manganese	7439-96-5	10	mg/kg	**165**	**321**	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Sample ID	SH14B 0-0.5	SH14B 0.5-1	SH14B 1-1.5	SH14B 1.5-2	SH14B 2-2.5
				Sampling date / time	08-Feb-2026 00:00	08-Feb-2026 00:00	08-Feb-2026 00:00	08-Feb-2026 00:00	08-Feb-2026 00:00
Compound	CAS Number	LOR	Unit		EB2605255-006	EB2605255-007	EB2605255-008	EB2605255-009	EB2605255-010
					Result	Result	Result	Result	Result
EG020-SD: Total Metals in Sediments by ICPMS - Continued									
Nickel	7440-02-0	1.0	mg/kg		**4.9**	**10.4**	----	----	----
Selenium	7782-49-2	0.1	mg/kg		**0.5**	**0.9**	----	----	----
Silver	7440-22-4	0.1	mg/kg		<0.1	<0.1	----	----	----
Vanadium	7440-62-2	2.0	mg/kg		**13.0**	**28.3**	----	----	----
Zinc	7440-66-6	1.0	mg/kg		**10.5**	**22.2**	----	----	----
EG035T: Total Recoverable Mercury by FIMS									
Mercury	7439-97-6	0.01	mg/kg		<0.01	<0.01	----	----	----
EP003: Total Organic Carbon (TOC) in Soil									
Total Organic Carbon	----	0.02	%		**0.46**	**0.71**	----	----	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions									
>C10 - C16 Fraction	----	3	mg/kg		<3	<3	----	----	----
>C16 - C34 Fraction	----	3	mg/kg		<3	<3	----	----	----
>C34 - C40 Fraction	----	5	mg/kg		<5	<5	----	----	----
>C10 - C40 Fraction (sum)	----	3	mg/kg		<3	<3	----	----	----
>C10 - C16 Fraction minus Naphthalene (F2)	----	3	mg/kg		<3	<3	----	----	----
EP080-SD / EP071-SD: Total Petroleum Hydrocarbons									
C6 - C9 Fraction	----	3	mg/kg		<3	<3	----	----	----
C10 - C14 Fraction	----	3	mg/kg		<3	<3	----	----	----
C15 - C28 Fraction	----	3	mg/kg		<3	<3	----	----	----
C29 - C36 Fraction	----	5	mg/kg		<5	<5	----	----	----
^ **C10 - C36 Fraction (sum)**	----	3	mg/kg		<3	<3	----	----	----
EP080-SD / EP071-SD: Total Recoverable Hydrocarbons									
C6 - C10 Fraction	C6_C10	3	mg/kg		<3	<3	----	----	----
C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	3.0	mg/kg		<3.0	<3.0	----	----	----
EP080-SD: BTEXN									
Benzene	71-43-2	0.2	mg/kg		<0.2	<0.2	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Sample ID	SH14B 0-0.5	SH14B 0.5-1	SH14B 1-1.5	SH14B 1.5-2	SH14B 2-2.5
			Sampling date / time	08-Feb-2026 00:00	08-Feb-2026 00:00	08-Feb-2026 00:00	08-Feb-2026 00:00	08-Feb-2026 00:00
Compound	CAS Number	LOR	Unit	EB2605255-006	EB2605255-007	EB2605255-008	EB2605255-009	EB2605255-010
				Result	Result	Result	Result	Result
EP080-SD: BTEXN - Continued								
Toluene	108-88-3	0.2	mg/kg	<0.2	<0.2	----	----	----
Ethylbenzene	100-41-4	0.2	mg/kg	<0.2	<0.2	----	----	----
meta- & para-Xylene	108-38-3 106-42-3	0.2	mg/kg	<0.2	<0.2	----	----	----
ortho-Xylene	95-47-6	0.2	mg/kg	<0.2	<0.2	----	----	----
^ **Total Xylenes**	----	0.5	mg/kg	<0.5	<0.5	----	----	----
^ **Sum of BTEX**	----	0.2	mg/kg	<0.2	<0.2	----	----	----
Naphthalene	91-20-3	0.2	mg/kg	<0.2	<0.2	----	----	----
EP090: Organotin Compounds								
Monobutyltin	78763-54-9	1	µgSn/kg	<1	<1	----	----	----
Dibutyltin	1002-53-5	1	µgSn/kg	<1	<1	----	----	----
Tributyltin	56573-85-4	0.5	µgSn/kg	<0.5	<0.5	----	----	----
EP131A: Organochlorine Pesticides								
Aldrin	309-00-2	0.50	µg/kg	<0.50	<0.50	----	----	----
alpha-BHC	319-84-6	0.50	µg/kg	<0.50	<0.50	----	----	----
beta-BHC	319-85-7	0.50	µg/kg	<0.50	<0.50	----	----	----
delta-BHC	319-86-8	0.50	µg/kg	<0.50	<0.50	----	----	----
4.4`-DDD	72-54-8	0.50	µg/kg	<0.50	<0.50	----	----	----
4.4`-DDE	72-55-9	0.50	µg/kg	<0.50	<0.50	----	----	----
4.4`-DDT	50-29-3	0.50	µg/kg	<0.50	<0.50	----	----	----
^ **Sum of DDD + DDE + DDT**	72-54-8/72-55-9/50-2	0.50	µg/kg	<0.50	<0.50	----	----	----
Dieldrin	60-57-1	0.50	µg/kg	<0.50	<0.50	----	----	----
alpha-Endosulfan	959-98-8	0.50	µg/kg	<0.50	<0.50	----	----	----
beta-Endosulfan	33213-65-9	0.50	µg/kg	<0.50	<0.50	----	----	----
Endosulfan sulfate	1031-07-8	0.50	µg/kg	<0.50	<0.50	----	----	----
^ **Endosulfan (sum)**	115-29-7	0.50	µg/kg	<0.50	<0.50	----	----	----
Endrin	72-20-8	0.50	µg/kg	<0.50	<0.50	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Sample ID	SH14B 0-0.5	SH14B 0.5-1	SH14B 1-1.5	SH14B 1.5-2	SH14B 2-2.5
				Sampling date / time	08-Feb-2026 00:00	08-Feb-2026 00:00	08-Feb-2026 00:00	08-Feb-2026 00:00	08-Feb-2026 00:00
Compound	CAS Number	LOR	Unit		EB2605255-006	EB2605255-007	EB2605255-008	EB2605255-009	EB2605255-010
					Result	Result	Result	Result	Result
EP131A: Organochlorine Pesticides - Continued									
Endrin aldehyde	7421-93-4	0.50	µg/kg		<0.50	<0.50	----	----	----
Endrin ketone	53494-70-5	0.50	µg/kg		<0.50	<0.50	----	----	----
Heptachlor	76-44-8	0.50	µg/kg		<0.50	<0.50	----	----	----
Heptachlor epoxide	1024-57-3	0.50	µg/kg		<0.50	<0.50	----	----	----
Hexachlorobenzene (HCB)	118-74-1	0.50	µg/kg		<0.50	<0.50	----	----	----
gamma-BHC - (Lindane)	58-89-9	0.25	µg/kg		<0.25	<0.25	----	----	----
Methoxychlor	72-43-5	0.50	µg/kg		<0.50	<0.50	----	----	----
cis-Chlordane	5103-71-9	0.50	µg/kg		<0.50	<0.50	----	----	----
trans-Chlordane	5103-74-2	0.50	µg/kg		<0.50	<0.50	----	----	----
^ Total Chlordane (sum)	----	0.50	µg/kg		<0.50	<0.50	----	----	----
Oxychlordane	27304-13-8	0.50	µg/kg		<0.50	<0.50	----	----	----
^ Sum of Aldrin + Dieldrin	309-00-2/60-57-1	0.50	µg/kg		<0.50	<0.50	----	----	----
EP132B: Polynuclear Aromatic Hydrocarbons									
Naphthalene	91-20-3	5	µg/kg		<5	<5	----	----	----
2-Methylnaphthalene	91-57-6	5	µg/kg		<5	<5	----	----	----
Acenaphthylene	208-96-8	4	µg/kg		<4	<4	----	----	----
Acenaphthene	83-32-9	4	µg/kg		<4	<4	----	----	----
Fluorene	86-73-7	4	µg/kg		<4	<4	----	----	----
Phenanthrene	85-01-8	4	µg/kg		<4	<4	----	----	----
Anthracene	120-12-7	4	µg/kg		<4	<4	----	----	----
Fluoranthene	206-44-0	4	µg/kg		<4	<4	----	----	----
Pyrene	129-00-0	4	µg/kg		<4	<4	----	----	----
Benz(a)anthracene	56-55-3	4	µg/kg		<4	<4	----	----	----
Chrysene	218-01-9	4	µg/kg		<4	<4	----	----	----
Benzo(b+j)fluoranthene	205-99-2 205-82-3	4	µg/kg		<4	<4	----	----	----
Benzo(k)fluoranthene	207-08-9	4	µg/kg		<4	<4	----	----	----
Benzo(e)pyrene	192-97-2	4	µg/kg		<4	<4	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Sample ID	SH14B 0-0.5	SH14B 0.5-1	SH14B 1-1.5	SH14B 1.5-2	SH14B 2-2.5
				Sampling date / time	08-Feb-2026 00:00	08-Feb-2026 00:00	08-Feb-2026 00:00	08-Feb-2026 00:00	08-Feb-2026 00:00
Compound	CAS Number	LOR	Unit		EB2605255-006	EB2605255-007	EB2605255-008	EB2605255-009	EB2605255-010
					Result	Result	Result	Result	Result
EP132B: Polynuclear Aromatic Hydrocarbons - Continued									
Benzo(a)pyrene	50-32-8	4	µg/kg		<4	<4	----	----	----
Perylene	198-55-0	4	µg/kg		<4	<4	----	----	----
Benzo(g.h.i)perylene	191-24-2	4	µg/kg		<4	<4	----	----	----
Dibenz(a.h)anthracene	53-70-3	4	µg/kg		<4	<4	----	----	----
Indeno(1.2.3.cd)pyrene	193-39-5	4	µg/kg		<4	<4	----	----	----
Coronene	191-07-1	5	µg/kg		<5	<5	----	----	----
^ Sum of PAHs	----	4	µg/kg		<4	<4	----	----	----
^ Benzo(a)pyrene TEQ (zero)	----	4	µg/kg		<4	<4	----	----	----
^ Benzo(a)pyrene TEQ (half LOR)	----	4	µg/kg		5	5	----	----	----
^ Benzo(a)pyrene TEQ (LOR)	----	4	µg/kg		10	10	----	----	----
EP080-SD: TPH(V)/BTEX Surrogates									
1.2-Dichloroethane-D4	17060-07-0	0.2	%		80.7	63.0	----	----	----
Toluene-D8	2037-26-5	0.2	%		86.0	67.2	----	----	----
4-Bromofluorobenzene	460-00-4	0.2	%		94.4	73.2	----	----	----
EP090S: Organotin Surrogate									
Tripropyltin	----	0.5	%		107	104	----	----	----
EP131S: OC Pesticide Surrogate									
Dibromo-DDE	21655-73-2	0.50	%		42.9	73.6	----	----	----
EP132T: Base/Neutral Extractable Surrogates - SD									
2-Fluorobiphenyl	321-60-8	10	%		75.4	79.2	----	----	----
Anthracene-d10	1719-06-8	10	%		102	111	----	----	----
4-Terphenyl-d14	1718-51-0	10	%		77.8	84.4	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Sample ID	SH14C 0-0.5	SH14C 0.5-1	SH14C 1-1.5	SH14C 1.5-2	SH14C 2-2.5
			Sampling date / time	08-Feb-2026 00:00	08-Feb-2026 00:00	08-Feb-2026 00:00	08-Feb-2026 00:00	08-Feb-2026 00:00
Compound	CAS Number	LOR	Unit	EB2605255-011	EB2605255-012	EB2605255-013	EB2605255-014	EB2605255-015
				Result	Result	Result	Result	Result
EA033-A: Actual Acidity								
pH KCl (23A)	----	0.1	pH Unit	**9.2**	**8.9**	**8.8**	**8.8**	**8.8**
Titratable Actual Acidity (23F)	----	2	mole H+ / t	<2	<2	<2	<2	<2
sulfidic - Titratable Actual Acidity (s-23F)	----	0.02	% pyrite S	<0.02	<0.02	<0.02	<0.02	<0.02
EA033-B: Potential Acidity								
Chromium Reducible Sulfur (22B)	----	0.005	% S	**0.310**	**0.562**	**0.715**	**1.05**	**0.724**
acidity - Chromium Reducible Sulfur (a-22B)	----	10	mole H+ / t	**194**	**351**	**446**	**653**	**452**
EA033-C: Acid Neutralising Capacity								
Acid Neutralising Capacity (19A2)	----	0.01	% CaCO3	**46.4**	**25.6**	**17.8**	**13.2**	**10.6**
acidity - Acid Neutralising Capacity (a-19A2)	----	10	mole H+ / t	**9280**	**5110**	**3560**	**2630**	**2110**
sulfidic - Acid Neutralising Capacity (s-19A2)	----	0.01	% pyrite S	**14.9**	**8.19**	**5.71**	**4.22**	**3.39**
EA033-E: Acid Base Accounting								
ANC Fineness Factor	----	0.5	-	**1.5**	**1.5**	**1.5**	**1.5**	**1.5**
Net Acidity (sulfur units)	----	0.02	% S	<0.02	<0.02	<0.02	<0.02	<0.02
Net Acidity (acidity units)	----	10	mole H+ / t	<10	<10	<10	<10	<10
Liming Rate	----	1	kg CaCO3/t	<1	<1	<1	<1	<1
Net Acidity excluding ANC (sulfur units)	----	0.02	% S	**0.31**	**0.56**	**0.72**	**1.05**	**0.72**
Net Acidity excluding ANC (acidity units)	----	10	mole H+ / t	**194**	**351**	**446**	**653**	**452**
Liming Rate excluding ANC	----	1	kg CaCO3/t	**15**	**26**	**33**	**49**	**34**
EA055: Moisture Content (Dried @ 105-110°C)								
Moisture Content	----	1.0	%	**35.9**	**45.9**	**----**	**----**	**----**
EA150: Particle Sizing								
+75µm	----	1	%	**47**	**12**	**8**	**8**	**5**
+150µm	----	1	%	**39**	**10**	**7**	**7**	**4**
+300µm	----	1	%	**29**	**8**	**6**	**6**	**3**
+425µm	----	1	%	**24**	**7**	**5**	**5**	**3**
+600µm	----	1	%	**20**	**6**	**4**	**4**	**2**

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Sample ID	SH14C 0-0.5	SH14C 0.5-1	SH14C 1-1.5	SH14C 1.5-2	SH14C 2-2.5
			Sampling date / time	08-Feb-2026 00:00	08-Feb-2026 00:00	08-Feb-2026 00:00	08-Feb-2026 00:00	08-Feb-2026 00:00
Compound	CAS Number	LOR	Unit	EB2605255-011	EB2605255-012	EB2605255-013	EB2605255-014	EB2605255-015
				Result	Result	Result	Result	Result
EA150: Particle Sizing - Continued								
+1180µm	----	1	%	10	3	1	2	1
+2.36mm	----	1	%	3	<1	<1	1	<1
+4.75mm	----	1	%	<1	<1	<1	<1	<1
+9.5mm	----	1	%	<1	<1	<1	<1	<1
+19.0mm	----	1	%	<1	<1	<1	<1	<1
+37.5mm	----	1	%	<1	<1	<1	<1	<1
+75.0mm	----	1	%	<1	<1	<1	<1	<1
EA150: Soil Classification based on Particle Size								
Clay (<2 µm)	----	1	%	22	44	53	48	58
Silt (2-60 µm)	----	1	%	28	43	39	43	36
Sand (0.06-2.00 mm)	----	1	%	45	12	7	8	5
Gravel (>2mm)	----	1	%	5	1	1	1	1
Cobbles (>6cm)	----	1	%	<1	<1	<1	<1	<1
EA152: Soil Particle Density								
Soil Particle Density (Clay/Silt/Sand)	----	0.01	g/cm3	2.43	2.44	2.89	2.14	2.55
EG005(ED093)-SD: Total Metals in Sediments by ICP-AES								
Aluminium	7429-90-5	50	mg/kg	5880	8930	----	----	----
Iron	7439-89-6	50	mg/kg	8710	16900	----	----	----
EG020-SD: Total Metals in Sediments by ICPMS								
Antimony	7440-36-0	0.50	mg/kg	<0.50	<0.50	----	----	----
Arsenic	7440-38-2	1.00	mg/kg	7.12	9.91	----	----	----
Cadmium	7440-43-9	0.1	mg/kg	<0.1	<0.1	----	----	----
Chromium	7440-47-3	1.0	mg/kg	14.8	19.4	----	----	----
Copper	7440-50-8	1.0	mg/kg	3.6	6.0	----	----	----
Cobalt	7440-48-4	0.5	mg/kg	3.6	5.9	----	----	----
Lead	7439-92-1	1.0	mg/kg	4.8	8.3	----	----	----
Manganese	7439-96-5	10	mg/kg	173	250	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Sample ID	SH14C 0-0.5	SH14C 0.5-1	SH14C 1-1.5	SH14C 1.5-2	SH14C 2-2.5
				Sampling date / time	08-Feb-2026 00:00	08-Feb-2026 00:00	08-Feb-2026 00:00	08-Feb-2026 00:00	08-Feb-2026 00:00
Compound	CAS Number	LOR	Unit		EB2605255-011	EB2605255-012	EB2605255-013	EB2605255-014	EB2605255-015
					Result	Result	Result	Result	Result
EG020-SD: Total Metals in Sediments by ICPMS - Continued									
Nickel	7440-02-0	1.0	mg/kg		**6.7**	**9.8**	----	----	----
Selenium	7782-49-2	0.1	mg/kg		**0.6**	**0.8**	----	----	----
Silver	7440-22-4	0.1	mg/kg		<0.1	<0.1	----	----	----
Vanadium	7440-62-2	2.0	mg/kg		**17.7**	**25.7**	----	----	----
Zinc	7440-66-6	1.0	mg/kg		**14.5**	**21.0**	----	----	----
EG035T: Total Recoverable Mercury by FIMS									
Mercury	7439-97-6	0.01	mg/kg		<0.01	<0.01	----	----	----
EP003: Total Organic Carbon (TOC) in Soil									
Total Organic Carbon	----	0.02	%		**0.49**	**0.67**	----	----	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions									
>C10 - C16 Fraction	----	3	mg/kg		<3	<3	----	----	----
>C16 - C34 Fraction	----	3	mg/kg		<3	<3	----	----	----
>C34 - C40 Fraction	----	5	mg/kg		<5	<5	----	----	----
>C10 - C40 Fraction (sum)	----	3	mg/kg		<3	<3	----	----	----
>C10 - C16 Fraction minus Naphthalene (F2)	----	3	mg/kg		<3	<3	----	----	----
EP080-SD / EP071-SD: Total Petroleum Hydrocarbons									
C6 - C9 Fraction	----	3	mg/kg		<3	<3	----	----	----
C10 - C14 Fraction	----	3	mg/kg		<3	<3	----	----	----
C15 - C28 Fraction	----	3	mg/kg		<3	<3	----	----	----
C29 - C36 Fraction	----	5	mg/kg		<5	<5	----	----	----
^ **C10 - C36 Fraction (sum)**	----	3	mg/kg		<3	<3	----	----	----
EP080-SD / EP071-SD: Total Recoverable Hydrocarbons									
C6 - C10 Fraction	C6_C10	3	mg/kg		<3	<3	----	----	----
C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	3.0	mg/kg		<3.0	<3.0	----	----	----
EP080-SD: BTEXN									
Benzene	71-43-2	0.2	mg/kg		<0.2	<0.2	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Sample ID	SH14C 0-0.5	SH14C 0.5-1	SH14C 1-1.5	SH14C 1.5-2	SH14C 2-2.5
			Sampling date / time	08-Feb-2026 00:00	08-Feb-2026 00:00	08-Feb-2026 00:00	08-Feb-2026 00:00	08-Feb-2026 00:00
Compound	CAS Number	LOR	Unit	EB2605255-011	EB2605255-012	EB2605255-013	EB2605255-014	EB2605255-015
				Result	Result	Result	Result	Result
EP080-SD: BTEXN - Continued								
Toluene	108-88-3	0.2	mg/kg	<0.2	<0.2	----	----	----
Ethylbenzene	100-41-4	0.2	mg/kg	<0.2	<0.2	----	----	----
meta- & para-Xylene	108-38-3 106-42-3	0.2	mg/kg	<0.2	<0.2	----	----	----
ortho-Xylene	95-47-6	0.2	mg/kg	<0.2	<0.2	----	----	----
^ **Total Xylenes**	----	0.5	mg/kg	<0.5	<0.5	----	----	----
^ **Sum of BTEX**	----	0.2	mg/kg	<0.2	<0.2	----	----	----
Naphthalene	91-20-3	0.2	mg/kg	<0.2	<0.2	----	----	----
EP090: Organotin Compounds								
Monobutyltin	78763-54-9	1	µgSn/kg	<1	<1	----	----	----
Dibutyltin	1002-53-5	1	µgSn/kg	<1	<1	----	----	----
Tributyltin	56573-85-4	0.5	µgSn/kg	<0.5	<0.5	----	----	----
EP131A: Organochlorine Pesticides								
Aldrin	309-00-2	0.50	µg/kg	<0.50	<0.50	----	----	----
alpha-BHC	319-84-6	0.50	µg/kg	<0.50	<0.50	----	----	----
beta-BHC	319-85-7	0.50	µg/kg	<0.50	<0.50	----	----	----
delta-BHC	319-86-8	0.50	µg/kg	<0.50	<0.50	----	----	----
4.4`-DDD	72-54-8	0.50	µg/kg	<0.50	<0.50	----	----	----
4.4`-DDE	72-55-9	0.50	µg/kg	<0.50	<0.50	----	----	----
4.4`-DDT	50-29-3	0.50	µg/kg	<0.50	<0.50	----	----	----
^ **Sum of DDD + DDE + DDT**	72-54-8/72-55-9/50-2	0.50	µg/kg	<0.50	<0.50	----	----	----
Dieldrin	60-57-1	0.50	µg/kg	<0.50	<0.50	----	----	----
alpha-Endosulfan	959-98-8	0.50	µg/kg	<0.50	<0.50	----	----	----
beta-Endosulfan	33213-65-9	0.50	µg/kg	<0.50	<0.50	----	----	----
Endosulfan sulfate	1031-07-8	0.50	µg/kg	<0.50	<0.50	----	----	----
^ **Endosulfan (sum)**	115-29-7	0.50	µg/kg	<0.50	<0.50	----	----	----
Endrin	72-20-8	0.50	µg/kg	<0.50	<0.50	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Sample ID	SH14C 0-0.5	SH14C 0.5-1	SH14C 1-1.5	SH14C 1.5-2	SH14C 2-2.5
				Sampling date / time	08-Feb-2026 00:00	08-Feb-2026 00:00	08-Feb-2026 00:00	08-Feb-2026 00:00	08-Feb-2026 00:00
Compound	CAS Number	LOR	Unit		EB2605255-011	EB2605255-012	EB2605255-013	EB2605255-014	EB2605255-015
					Result	Result	Result	Result	Result
EP131A: Organochlorine Pesticides - Continued									
Endrin aldehyde	7421-93-4	0.50	µg/kg		<0.50	<0.50	----	----	----
Endrin ketone	53494-70-5	0.50	µg/kg		<0.50	<0.50	----	----	----
Heptachlor	76-44-8	0.50	µg/kg		<0.50	<0.50	----	----	----
Heptachlor epoxide	1024-57-3	0.50	µg/kg		<0.50	<0.50	----	----	----
Hexachlorobenzene (HCB)	118-74-1	0.50	µg/kg		<0.50	<0.50	----	----	----
gamma-BHC - (Lindane)	58-89-9	0.25	µg/kg		<0.25	<0.25	----	----	----
Methoxychlor	72-43-5	0.50	µg/kg		<0.50	<0.50	----	----	----
cis-Chlordane	5103-71-9	0.50	µg/kg		<0.50	<0.50	----	----	----
trans-Chlordane	5103-74-2	0.50	µg/kg		<0.50	<0.50	----	----	----
^ Total Chlordane (sum)	----	0.50	µg/kg		<0.50	<0.50	----	----	----
Oxychlordane	27304-13-8	0.50	µg/kg		<0.50	<0.50	----	----	----
^ Sum of Aldrin + Dieldrin	309-00-2/60-57-1	0.50	µg/kg		<0.50	<0.50	----	----	----
EP132B: Polynuclear Aromatic Hydrocarbons									
Naphthalene	91-20-3	5	µg/kg		<5	<5	----	----	----
2-Methylnaphthalene	91-57-6	5	µg/kg		<5	<5	----	----	----
Acenaphthylene	208-96-8	4	µg/kg		<4	<4	----	----	----
Acenaphthene	83-32-9	4	µg/kg		<4	<4	----	----	----
Fluorene	86-73-7	4	µg/kg		<4	<4	----	----	----
Phenanthrene	85-01-8	4	µg/kg		<4	<4	----	----	----
Anthracene	120-12-7	4	µg/kg		<4	<4	----	----	----
Fluoranthene	206-44-0	4	µg/kg		<4	<4	----	----	----
Pyrene	129-00-0	4	µg/kg		<4	<4	----	----	----
Benz(a)anthracene	56-55-3	4	µg/kg		<4	<4	----	----	----
Chrysene	218-01-9	4	µg/kg		<4	<4	----	----	----
Benzo(b+j)fluoranthene	205-99-2 205-82-3	4	µg/kg		<4	<4	----	----	----
Benzo(k)fluoranthene	207-08-9	4	µg/kg		<4	<4	----	----	----
Benzo(e)pyrene	192-97-2	4	µg/kg		<4	<4	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Sample ID	SH14C 0-0.5	SH14C 0.5-1	SH14C 1-1.5	SH14C 1.5-2	SH14C 2-2.5
				Sampling date / time	08-Feb-2026 00:00	08-Feb-2026 00:00	08-Feb-2026 00:00	08-Feb-2026 00:00	08-Feb-2026 00:00
Compound	CAS Number	LOR	Unit		EB2605255-011	EB2605255-012	EB2605255-013	EB2605255-014	EB2605255-015
					Result	Result	Result	Result	Result
EP132B: Polynuclear Aromatic Hydrocarbons - Continued									
Benzo(a)pyrene	50-32-8	4	µg/kg		<4	<4	----	----	----
Perylene	198-55-0	4	µg/kg		<4	<4	----	----	----
Benzo(g.h.i)perylene	191-24-2	4	µg/kg		<4	<4	----	----	----
Dibenz(a.h)anthracene	53-70-3	4	µg/kg		<4	<4	----	----	----
Indeno(1.2.3.cd)pyrene	193-39-5	4	µg/kg		<4	<4	----	----	----
Coronene	191-07-1	5	µg/kg		<5	<5	----	----	----
^ Sum of PAHs	----	4	µg/kg		<4	<4	----	----	----
^ Benzo(a)pyrene TEQ (zero)	----	4	µg/kg		<4	<4	----	----	----
^ Benzo(a)pyrene TEQ (half LOR)	----	4	µg/kg		5	5	----	----	----
^ Benzo(a)pyrene TEQ (LOR)	----	4	µg/kg		10	10	----	----	----
EP080-SD: TPH(V)/BTEX Surrogates									
1.2-Dichloroethane-D4	17060-07-0	0.2	%		73.7	59.4	----	----	----
Toluene-D8	2037-26-5	0.2	%		78.3	62.0	----	----	----
4-Bromofluorobenzene	460-00-4	0.2	%		88.3	66.0	----	----	----
EP090S: Organotin Surrogate									
Tripropyltin	----	0.5	%		101	84.3	----	----	----
EP131S: OC Pesticide Surrogate									
Dibromo-DDE	21655-73-2	0.50	%		60.5	101	----	----	----
EP132T: Base/Neutral Extractable Surrogates - SD									
2-Fluorobiphenyl	321-60-8	10	%		70.3	85.6	----	----	----
Anthracene-d10	1719-06-8	10	%		99.2	109	----	----	----
4-Terphenyl-d14	1718-51-0	10	%		73.9	81.8	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Sample ID	SH13 0-0.5	SH13 0.5-1	SH13 1-1.5	SH13 1.5-2	SH13 2-2.5
			Sampling date / time	08-Feb-2026 00:00	08-Feb-2026 00:00	08-Feb-2026 00:00	08-Feb-2026 00:00	08-Feb-2026 00:00
Compound	CAS Number	LOR	Unit	EB2605255-016	EB2605255-017	EB2605255-018	EB2605255-019	EB2605255-020
				Result	Result	Result	Result	Result
EA033-A: Actual Acidity								
pH KCl (23A)	----	0.1	pH Unit	**9.1**	**8.9**	**8.8**	**8.7**	**8.7**
Titratable Actual Acidity (23F)	----	2	mole H+ / t	<2	<2	<2	<2	<2
sulfidic - Titratable Actual Acidity (s-23F)	----	0.02	% pyrite S	<0.02	<0.02	<0.02	<0.02	<0.02
EA033-B: Potential Acidity								
Chromium Reducible Sulfur (22B)	----	0.005	% S	**0.355**	**0.690**	**1.00**	**0.985**	**0.939**
acidity - Chromium Reducible Sulfur (a-22B)	----	10	mole H+ / t	**222**	**431**	**627**	**614**	**585**
EA033-C: Acid Neutralising Capacity								
Acid Neutralising Capacity (19A2)	----	0.01	% CaCO3	**43.6**	**20.6**	**12.6**	**13.4**	**12.2**
acidity - Acid Neutralising Capacity (a-19A2)	----	10	mole H+ / t	**8700**	**4110**	**2510**	**2670**	**2440**
sulfidic - Acid Neutralising Capacity (s-19A2)	----	0.01	% pyrite S	**14.0**	**6.59**	**4.03**	**4.28**	**3.91**
EA033-E: Acid Base Accounting								
ANC Fineness Factor	----	0.5	-	**1.5**	**1.5**	**1.5**	**1.5**	**1.5**
Net Acidity (sulfur units)	----	0.02	% S	<0.02	<0.02	<0.02	<0.02	<0.02
Net Acidity (acidity units)	----	10	mole H+ / t	<10	<10	<10	<10	<10
Liming Rate	----	1	kg CaCO3/t	<1	<1	<1	<1	<1
Net Acidity excluding ANC (sulfur units)	----	0.02	% S	**0.36**	**0.69**	**1.00**	**0.98**	**0.94**
Net Acidity excluding ANC (acidity units)	----	10	mole H+ / t	**222**	**431**	**627**	**614**	**585**
Liming Rate excluding ANC	----	1	kg CaCO3/t	**17**	**32**	**47**	**46**	**44**
EA055: Moisture Content (Dried @ 105-110°C)								
Moisture Content	----	1.0	%	**39.7**	**46.8**	**----**	**----**	**----**
EA150: Particle Sizing								
+75µm	----	1	%	**36**	**13**	**5**	**7**	**6**
+150µm	----	1	%	**32**	**11**	**5**	**6**	**5**
+300µm	----	1	%	**26**	**9**	**4**	**5**	**4**
+425µm	----	1	%	**21**	**7**	**3**	**4**	**4**
+600µm	----	1	%	**18**	**6**	**3**	**3**	**3**

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Sample ID	SH13 0-0.5	SH13 0.5-1	SH13 1-1.5	SH13 1.5-2	SH13 2-2.5
			Sampling date / time	08-Feb-2026 00:00	08-Feb-2026 00:00	08-Feb-2026 00:00	08-Feb-2026 00:00	08-Feb-2026 00:00
Compound	CAS Number	LOR	Unit	EB2605255-016	EB2605255-017	EB2605255-018	EB2605255-019	EB2605255-020
				Result	Result	Result	Result	Result
EA150: Particle Sizing - Continued								
+1180µm	----	1	%	8	3	1	2	2
+2.36mm	----	1	%	3	1	<1	<1	1
+4.75mm	----	1	%	<1	<1	<1	<1	<1
+9.5mm	----	1	%	<1	<1	<1	<1	<1
+19.0mm	----	1	%	<1	<1	<1	<1	<1
+37.5mm	----	1	%	<1	<1	<1	<1	<1
+75.0mm	----	1	%	<1	<1	<1	<1	<1
EA150: Soil Classification based on Particle Size								
Clay (<2 µm)	----	1	%	29	49	54	53	56
Silt (2-60 µm)	----	1	%	32	37	41	39	37
Sand (0.06-2.00 mm)	----	1	%	35	12	5	7	6
Gravel (>2mm)	----	1	%	4	2	<1	1	1
Cobbles (>6cm)	----	1	%	<1	<1	<1	<1	<1
EA152: Soil Particle Density								
Soil Particle Density (Clay/Silt/Sand)	----	0.01	g/cm3	2.37	2.76	2.50	2.18	2.16
EG005(ED093)-SD: Total Metals in Sediments by ICP-AES								
Aluminium	7429-90-5	50	mg/kg	6000	8210	----	----	----
Iron	7439-89-6	50	mg/kg	9350	16700	----	----	----
EG020-SD: Total Metals in Sediments by ICPMS								
Antimony	7440-36-0	0.50	mg/kg	<0.50	<0.50	----	----	----
Arsenic	7440-38-2	1.00	mg/kg	7.36	9.16	----	----	----
Cadmium	7440-43-9	0.1	mg/kg	<0.1	<0.1	----	----	----
Chromium	7440-47-3	1.0	mg/kg	14.7	18.4	----	----	----
Copper	7440-50-8	1.0	mg/kg	3.9	5.9	----	----	----
Cobalt	7440-48-4	0.5	mg/kg	3.8	5.8	----	----	----
Lead	7439-92-1	1.0	mg/kg	5.0	7.3	----	----	----
Manganese	7439-96-5	10	mg/kg	171	215	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Sample ID	SH13 0-0.5	SH13 0.5-1	SH13 1-1.5	SH13 1.5-2	SH13 2-2.5
				Sampling date / time	08-Feb-2026 00:00	08-Feb-2026 00:00	08-Feb-2026 00:00	08-Feb-2026 00:00	08-Feb-2026 00:00
Compound	CAS Number	LOR	Unit		EB2605255-016	EB2605255-017	EB2605255-018	EB2605255-019	EB2605255-020
					Result	Result	Result	Result	Result
EG020-SD: Total Metals in Sediments by ICPMS - Continued									
Nickel	7440-02-0	1.0	mg/kg		**6.9**	**9.4**	----	----	----
Selenium	7782-49-2	0.1	mg/kg		**0.6**	**0.6**	----	----	----
Silver	7440-22-4	0.1	mg/kg		<0.1	<0.1	----	----	----
Vanadium	7440-62-2	2.0	mg/kg		**17.9**	**25.3**	----	----	----
Zinc	7440-66-6	1.0	mg/kg		**14.4**	**19.8**	----	----	----
EG035T: Total Recoverable Mercury by FIMS									
Mercury	7439-97-6	0.01	mg/kg		<0.01	<0.01	----	----	----
EP003: Total Organic Carbon (TOC) in Soil									
Total Organic Carbon	----	0.02	%		**0.49**	**0.71**	----	----	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions									
>C10 - C16 Fraction	----	3	mg/kg		<3	<3	----	----	----
>C16 - C34 Fraction	----	3	mg/kg		<3	<3	----	----	----
>C34 - C40 Fraction	----	5	mg/kg		<5	<5	----	----	----
>C10 - C40 Fraction (sum)	----	3	mg/kg		<3	<3	----	----	----
>C10 - C16 Fraction minus Naphthalene (F2)	----	3	mg/kg		<3	<3	----	----	----
EP080-SD / EP071-SD: Total Petroleum Hydrocarbons									
C6 - C9 Fraction	----	3	mg/kg		<3	<3	----	----	----
C10 - C14 Fraction	----	3	mg/kg		<3	<3	----	----	----
C15 - C28 Fraction	----	3	mg/kg		<3	<3	----	----	----
C29 - C36 Fraction	----	5	mg/kg		<5	<5	----	----	----
^ **C10 - C36 Fraction (sum)**	----	3	mg/kg		<3	<3	----	----	----
EP080-SD / EP071-SD: Total Recoverable Hydrocarbons									
C6 - C10 Fraction	C6_C10	3	mg/kg		<3	<3	----	----	----
C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	3.0	mg/kg		<3.0	<3.0	----	----	----
EP080-SD: BTEXN									
Benzene	71-43-2	0.2	mg/kg		<0.2	<0.2	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Sample ID	SH13 0-0.5	SH13 0.5-1	SH13 1-1.5	SH13 1.5-2	SH13 2-2.5
				Sampling date / time	08-Feb-2026 00:00	08-Feb-2026 00:00	08-Feb-2026 00:00	08-Feb-2026 00:00	08-Feb-2026 00:00
Compound	CAS Number	LOR	Unit		EB2605255-016	EB2605255-017	EB2605255-018	EB2605255-019	EB2605255-020
					Result	Result	Result	Result	Result
EP080-SD: BTEXN - Continued									
Toluene	108-88-3	0.2	mg/kg		<0.2	<0.2	----	----	----
Ethylbenzene	100-41-4	0.2	mg/kg		<0.2	<0.2	----	----	----
meta- & para-Xylene	108-38-3 106-42-3	0.2	mg/kg		<0.2	<0.2	----	----	----
ortho-Xylene	95-47-6	0.2	mg/kg		<0.2	<0.2	----	----	----
^ **Total Xylenes**	----	0.5	mg/kg		<0.5	<0.5	----	----	----
^ **Sum of BTEX**	----	0.2	mg/kg		<0.2	<0.2	----	----	----
Naphthalene	91-20-3	0.2	mg/kg		<0.2	<0.2	----	----	----
EP090: Organotin Compounds									
Monobutyltin	78763-54-9	1	µgSn/kg		<1	<1	----	----	----
Dibutyltin	1002-53-5	1	µgSn/kg		<1	<1	----	----	----
Tributyltin	56573-85-4	0.5	µgSn/kg		<0.5	<0.5	----	----	----
EP131A: Organochlorine Pesticides									
Aldrin	309-00-2	0.50	µg/kg		<0.50	<0.50	----	----	----
alpha-BHC	319-84-6	0.50	µg/kg		<0.50	<0.50	----	----	----
beta-BHC	319-85-7	0.50	µg/kg		<0.50	<0.50	----	----	----
delta-BHC	319-86-8	0.50	µg/kg		<0.50	<0.50	----	----	----
4.4`-DDD	72-54-8	0.50	µg/kg		<0.50	<0.50	----	----	----
4.4`-DDE	72-55-9	0.50	µg/kg		<0.50	<0.50	----	----	----
4.4`-DDT	50-29-3	0.50	µg/kg		<0.50	<0.50	----	----	----
^ **Sum of DDD + DDE + DDT**	72-54-8/72-55-9/50-2	0.50	µg/kg		<0.50	<0.50	----	----	----
Dieldrin	60-57-1	0.50	µg/kg		<0.50	<0.50	----	----	----
alpha-Endosulfan	959-98-8	0.50	µg/kg		<0.50	<0.50	----	----	----
beta-Endosulfan	33213-65-9	0.50	µg/kg		<0.50	<0.50	----	----	----
Endosulfan sulfate	1031-07-8	0.50	µg/kg		<0.50	<0.50	----	----	----
^ **Endosulfan (sum)**	115-29-7	0.50	µg/kg		<0.50	<0.50	----	----	----
Endrin	72-20-8	0.50	µg/kg		<0.50	<0.50	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Sample ID	SH13 0-0.5	SH13 0.5-1	SH13 1-1.5	SH13 1.5-2	SH13 2-2.5
				Sampling date / time	08-Feb-2026 00:00	08-Feb-2026 00:00	08-Feb-2026 00:00	08-Feb-2026 00:00	08-Feb-2026 00:00
Compound	CAS Number	LOR	Unit		EB2605255-016	EB2605255-017	EB2605255-018	EB2605255-019	EB2605255-020
					Result	Result	Result	Result	Result
EP131A: Organochlorine Pesticides - Continued									
Endrin aldehyde	7421-93-4	0.50	µg/kg		<0.50	<0.50	----	----	----
Endrin ketone	53494-70-5	0.50	µg/kg		<0.50	<0.50	----	----	----
Heptachlor	76-44-8	0.50	µg/kg		<0.50	<0.50	----	----	----
Heptachlor epoxide	1024-57-3	0.50	µg/kg		<0.50	<0.50	----	----	----
Hexachlorobenzene (HCB)	118-74-1	0.50	µg/kg		<0.50	<0.50	----	----	----
gamma-BHC - (Lindane)	58-89-9	0.25	µg/kg		<0.25	<0.25	----	----	----
Methoxychlor	72-43-5	0.50	µg/kg		<0.50	<0.50	----	----	----
cis-Chlordane	5103-71-9	0.50	µg/kg		<0.50	<0.50	----	----	----
trans-Chlordane	5103-74-2	0.50	µg/kg		<0.50	<0.50	----	----	----
^ Total Chlordane (sum)	----	0.50	µg/kg		<0.50	<0.50	----	----	----
Oxychlordane	27304-13-8	0.50	µg/kg		<0.50	<0.50	----	----	----
^ Sum of Aldrin + Dieldrin	309-00-2/60-57-1	0.50	µg/kg		<0.50	<0.50	----	----	----
EP132B: Polynuclear Aromatic Hydrocarbons									
Naphthalene	91-20-3	5	µg/kg		<5	<5	----	----	----
2-Methylnaphthalene	91-57-6	5	µg/kg		<5	<5	----	----	----
Acenaphthylene	208-96-8	4	µg/kg		<4	<4	----	----	----
Acenaphthene	83-32-9	4	µg/kg		<4	<4	----	----	----
Fluorene	86-73-7	4	µg/kg		<4	<4	----	----	----
Phenanthrene	85-01-8	4	µg/kg		<4	<4	----	----	----
Anthracene	120-12-7	4	µg/kg		<4	<4	----	----	----
Fluoranthene	206-44-0	4	µg/kg		<4	<4	----	----	----
Pyrene	129-00-0	4	µg/kg		<4	<4	----	----	----
Benz(a)anthracene	56-55-3	4	µg/kg		<4	<4	----	----	----
Chrysene	218-01-9	4	µg/kg		<4	<4	----	----	----
Benzo(b+j)fluoranthene	205-99-2 205-82-3	4	µg/kg		<4	<4	----	----	----
Benzo(k)fluoranthene	207-08-9	4	µg/kg		<4	<4	----	----	----
Benzo(e)pyrene	192-97-2	4	µg/kg		<4	<4	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Sample ID	SH13 0-0.5	SH13 0.5-1	SH13 1-1.5	SH13 1.5-2	SH13 2-2.5
				Sampling date / time	08-Feb-2026 00:00	08-Feb-2026 00:00	08-Feb-2026 00:00	08-Feb-2026 00:00	08-Feb-2026 00:00
Compound	CAS Number	LOR	Unit		EB2605255-016	EB2605255-017	EB2605255-018	EB2605255-019	EB2605255-020
					Result	Result	Result	Result	Result
EP132B: Polynuclear Aromatic Hydrocarbons - Continued									
Benzo(a)pyrene	50-32-8	4	µg/kg		<4	<4	----	----	----
Perylene	198-55-0	4	µg/kg		<4	<4	----	----	----
Benzo(g.h.i)perylene	191-24-2	4	µg/kg		<4	<4	----	----	----
Dibenz(a.h)anthracene	53-70-3	4	µg/kg		<4	<4	----	----	----
Indeno(1.2.3.cd)pyrene	193-39-5	4	µg/kg		<4	<4	----	----	----
Coronene	191-07-1	5	µg/kg		<5	<5	----	----	----
^ Sum of PAHs	----	4	µg/kg		<4	<4	----	----	----
^ Benzo(a)pyrene TEQ (zero)	----	4	µg/kg		<4	<4	----	----	----
^ Benzo(a)pyrene TEQ (half LOR)	----	4	µg/kg		5	5	----	----	----
^ Benzo(a)pyrene TEQ (LOR)	----	4	µg/kg		10	10	----	----	----
EP080-SD: TPH(V)/BTEX Surrogates									
1.2-Dichloroethane-D4	17060-07-0	0.2	%		61.6	57.2	----	----	----
Toluene-D8	2037-26-5	0.2	%		65.8	61.8	----	----	----
4-Bromofluorobenzene	460-00-4	0.2	%		74.8	67.1	----	----	----
EP090S: Organotin Surrogate									
Tripropyltin	----	0.5	%		92.6	99.1	----	----	----
EP131S: OC Pesticide Surrogate									
Dibromo-DDE	21655-73-2	0.50	%		90.6	51.0	----	----	----
EP132T: Base/Neutral Extractable Surrogates - SD									
2-Fluorobiphenyl	321-60-8	10	%		76.9	67.0	----	----	----
Anthracene-d10	1719-06-8	10	%		121	118	----	----	----
4-Terphenyl-d14	1718-51-0	10	%		91.4	93.3	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Sample ID	SH8 0-0.5	SH8 0.5-1	SH8 1-1.5	SH8 1.5-2	SH8 2-2.5
			Sampling date / time	08-Feb-2026 00:00	08-Feb-2026 00:00	08-Feb-2026 00:00	08-Feb-2026 00:00	08-Feb-2026 00:00
Compound	CAS Number	LOR	Unit	EB2605255-021	EB2605255-022	EB2605255-023	EB2605255-024	EB2605255-025
				Result	Result	Result	Result	Result
EA033-A: Actual Acidity								
pH KCl (23A)	----	0.1	pH Unit	**9.1**	**8.9**	**8.8**	**8.8**	**8.8**
Titratable Actual Acidity (23F)	----	2	mole H+ / t	<2	<2	<2	<2	<2
sulfidic - Titratable Actual Acidity (s-23F)	----	0.02	% pyrite S	<0.02	<0.02	<0.02	<0.02	<0.02
EA033-B: Potential Acidity								
Chromium Reducible Sulfur (22B)	----	0.005	% S	**0.304**	**0.586**	**0.937**	**0.647**	**0.878**
acidity - Chromium Reducible Sulfur (a-22B)	----	10	mole H+ / t	**190**	**365**	**585**	**403**	**548**
EA033-C: Acid Neutralising Capacity								
Acid Neutralising Capacity (19A2)	----	0.01	% CaCO3	**45.7**	**20.5**	**16.0**	**13.0**	**14.3**
acidity - Acid Neutralising Capacity (a-19A2)	----	10	mole H+ / t	**9130**	**4090**	**3200**	**2610**	**2860**
sulfidic - Acid Neutralising Capacity (s-19A2)	----	0.01	% pyrite S	**14.6**	**6.56**	**5.13**	**4.18**	**4.59**
EA033-E: Acid Base Accounting								
ANC Fineness Factor	----	0.5	-	**1.5**	**1.5**	**1.5**	**1.5**	**1.5**
Net Acidity (sulfur units)	----	0.02	% S	<0.02	<0.02	<0.02	<0.02	<0.02
Net Acidity (acidity units)	----	10	mole H+ / t	<10	<10	<10	<10	<10
Liming Rate	----	1	kg CaCO3/t	<1	<1	<1	<1	<1
Net Acidity excluding ANC (sulfur units)	----	0.02	% S	**0.30**	**0.59**	**0.94**	**0.65**	**0.88**
Net Acidity excluding ANC (acidity units)	----	10	mole H+ / t	**190**	**365**	**585**	**403**	**548**
Liming Rate excluding ANC	----	1	kg CaCO3/t	**14**	**27**	**44**	**30**	**41**
EA055: Moisture Content (Dried @ 105-110°C)								
Moisture Content	----	1.0	%	**40.2**	**49.4**	**----**	**----**	**----**
EA150: Particle Sizing								
+75µm	----	1	%	**45**	**16**	**5**	**13**	**12**
+150µm	----	1	%	**38**	**15**	**4**	**12**	**11**
+300µm	----	1	%	**27**	**14**	**3**	**12**	**11**
+425µm	----	1	%	**22**	**13**	**3**	**12**	**10**
+600µm	----	1	%	**18**	**12**	**3**	**11**	**10**

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Sample ID	SH8 0-0.5	SH8 0.5-1	SH8 1-1.5	SH8 1.5-2	SH8 2-2.5
			Sampling date / time	08-Feb-2026 00:00	08-Feb-2026 00:00	08-Feb-2026 00:00	08-Feb-2026 00:00	08-Feb-2026 00:00
Compound	CAS Number	LOR	Unit	EB2605255-021	EB2605255-022	EB2605255-023	EB2605255-024	EB2605255-025
				Result	Result	Result	Result	Result
EA150: Particle Sizing - Continued								
+1180µm	----	1	%	7	9	2	10	8
+2.36mm	----	1	%	1	5	<1	6	5
+4.75mm	----	1	%	<1	1	<1	3	4
+9.5mm	----	1	%	<1	<1	<1	<1	<1
+19.0mm	----	1	%	<1	<1	<1	<1	<1
+37.5mm	----	1	%	<1	<1	<1	<1	<1
+75.0mm	----	1	%	<1	<1	<1	<1	<1
EA150: Soil Classification based on Particle Size								
Clay (<2 µm)	----	1	%	24	46	53	54	49
Silt (2-60 µm)	----	1	%	29	37	40	32	38
Sand (0.06-2.00 mm)	----	1	%	44	10	6	7	7
Gravel (>2mm)	----	1	%	3	7	1	7	6
Cobbles (>6cm)	----	1	%	<1	<1	<1	<1	<1
EA152: Soil Particle Density								
Soil Particle Density (Clay/Silt/Sand)	----	0.01	g/cm3	2.32	1.92	2.49	2.49	2.20
EG005(ED093)-SD: Total Metals in Sediments by ICP-AES								
Aluminium	7429-90-5	50	mg/kg	8360	10300	----	----	----
Iron	7439-89-6	50	mg/kg	15200	20100	----	----	----
EG020-SD: Total Metals in Sediments by ICPMS								
Antimony	7440-36-0	0.50	mg/kg	<0.50	<0.50	----	----	----
Arsenic	7440-38-2	1.00	mg/kg	10.3	10.4	----	----	----
Cadmium	7440-43-9	0.1	mg/kg	<0.1	<0.1	----	----	----
Chromium	7440-47-3	1.0	mg/kg	18.5	21.0	----	----	----
Copper	7440-50-8	1.0	mg/kg	5.4	7.4	----	----	----
Cobalt	7440-48-4	0.5	mg/kg	5.2	7.2	----	----	----
Lead	7439-92-1	1.0	mg/kg	6.7	8.9	----	----	----
Manganese	7439-96-5	10	mg/kg	219	238	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Sample ID	SH8 0-0.5	SH8 0.5-1	SH8 1-1.5	SH8 1.5-2	SH8 2-2.5
				Sampling date / time	08-Feb-2026 00:00	08-Feb-2026 00:00	08-Feb-2026 00:00	08-Feb-2026 00:00	08-Feb-2026 00:00
Compound	CAS Number	LOR	Unit		EB2605255-021	EB2605255-022	EB2605255-023	EB2605255-024	EB2605255-025
					Result	Result	Result	Result	Result
EG020-SD: Total Metals in Sediments by ICPMS - Continued									
Nickel	7440-02-0	1.0	mg/kg		**9.1**	**11.3**	----	----	----
Selenium	7782-49-2	0.1	mg/kg		**0.6**	**0.7**	----	----	----
Silver	7440-22-4	0.1	mg/kg		<0.1	<0.1	----	----	----
Vanadium	7440-62-2	2.0	mg/kg		**24.3**	**30.2**	----	----	----
Zinc	7440-66-6	1.0	mg/kg		**19.3**	**24.5**	----	----	----
EG035T: Total Recoverable Mercury by FIMS									
Mercury	7439-97-6	0.01	mg/kg		<0.01	<0.01	----	----	----
EP003: Total Organic Carbon (TOC) in Soil									
Total Organic Carbon	----	0.02	%		**0.47**	**0.70**	----	----	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions									
>C10 - C16 Fraction	----	3	mg/kg		<3	<3	----	----	----
>C16 - C34 Fraction	----	3	mg/kg		<3	<3	----	----	----
>C34 - C40 Fraction	----	5	mg/kg		<5	<5	----	----	----
>C10 - C40 Fraction (sum)	----	3	mg/kg		<3	<3	----	----	----
>C10 - C16 Fraction minus Naphthalene (F2)	----	3	mg/kg		<3	<3	----	----	----
EP080-SD / EP071-SD: Total Petroleum Hydrocarbons									
C6 - C9 Fraction	----	3	mg/kg		<3	<3	----	----	----
C10 - C14 Fraction	----	3	mg/kg		<3	<3	----	----	----
C15 - C28 Fraction	----	3	mg/kg		<3	<3	----	----	----
C29 - C36 Fraction	----	5	mg/kg		<5	<5	----	----	----
^ **C10 - C36 Fraction (sum)**	----	3	mg/kg		<3	<3	----	----	----
EP080-SD / EP071-SD: Total Recoverable Hydrocarbons									
C6 - C10 Fraction	C6_C10	3	mg/kg		<3	<3	----	----	----
C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	3.0	mg/kg		<3.0	<3.0	----	----	----
EP080-SD: BTEXN									
Benzene	71-43-2	0.2	mg/kg		<0.2	<0.2	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Sample ID	SH8 0-0.5	SH8 0.5-1	SH8 1-1.5	SH8 1.5-2	SH8 2-2.5
				Sampling date / time	08-Feb-2026 00:00	08-Feb-2026 00:00	08-Feb-2026 00:00	08-Feb-2026 00:00	08-Feb-2026 00:00
Compound	CAS Number	LOR	Unit		EB2605255-021	EB2605255-022	EB2605255-023	EB2605255-024	EB2605255-025
					Result	Result	Result	Result	Result
EP080-SD: BTEXN - Continued									
Toluene	108-88-3	0.2	mg/kg		<0.2	<0.2	----	----	----
Ethylbenzene	100-41-4	0.2	mg/kg		<0.2	<0.2	----	----	----
meta- & para-Xylene	108-38-3 106-42-3	0.2	mg/kg		<0.2	<0.2	----	----	----
ortho-Xylene	95-47-6	0.2	mg/kg		<0.2	<0.2	----	----	----
^ **Total Xylenes**	----	0.5	mg/kg		<0.5	<0.5	----	----	----
^ **Sum of BTEX**	----	0.2	mg/kg		<0.2	<0.2	----	----	----
Naphthalene	91-20-3	0.2	mg/kg		<0.2	<0.2	----	----	----
EP090: Organotin Compounds									
Monobutyltin	78763-54-9	1	µgSn/kg		<1	<1	----	----	----
Dibutyltin	1002-53-5	1	µgSn/kg		<1	<1	----	----	----
Tributyltin	56573-85-4	0.5	µgSn/kg		<0.5	<0.5	----	----	----
EP131A: Organochlorine Pesticides									
Aldrin	309-00-2	0.50	µg/kg		<0.50	<0.50	----	----	----
alpha-BHC	319-84-6	0.50	µg/kg		<0.50	<0.50	----	----	----
beta-BHC	319-85-7	0.50	µg/kg		<0.50	<0.50	----	----	----
delta-BHC	319-86-8	0.50	µg/kg		<0.50	<0.50	----	----	----
4.4`-DDD	72-54-8	0.50	µg/kg		<0.50	<0.50	----	----	----
4.4`-DDE	72-55-9	0.50	µg/kg		<0.50	<0.50	----	----	----
4.4`-DDT	50-29-3	0.50	µg/kg		<0.50	<0.50	----	----	----
^ **Sum of DDD + DDE + DDT**	72-54-8/72-55-9/50-2	0.50	µg/kg		<0.50	<0.50	----	----	----
Dieldrin	60-57-1	0.50	µg/kg		<0.50	<0.50	----	----	----
alpha-Endosulfan	959-98-8	0.50	µg/kg		<0.50	<0.50	----	----	----
beta-Endosulfan	33213-65-9	0.50	µg/kg		<0.50	<0.50	----	----	----
Endosulfan sulfate	1031-07-8	0.50	µg/kg		<0.50	<0.50	----	----	----
^ **Endosulfan (sum)**	115-29-7	0.50	µg/kg		<0.50	<0.50	----	----	----
Endrin	72-20-8	0.50	µg/kg		<0.50	<0.50	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Sample ID	SH8 0-0.5	SH8 0.5-1	SH8 1-1.5	SH8 1.5-2	SH8 2-2.5
				Sampling date / time	08-Feb-2026 00:00	08-Feb-2026 00:00	08-Feb-2026 00:00	08-Feb-2026 00:00	08-Feb-2026 00:00
Compound	CAS Number	LOR	Unit		EB2605255-021	EB2605255-022	EB2605255-023	EB2605255-024	EB2605255-025
					Result	Result	Result	Result	Result
EP131A: Organochlorine Pesticides - Continued									
Endrin aldehyde	7421-93-4	0.50	µg/kg		<0.50	<0.50	----	----	----
Endrin ketone	53494-70-5	0.50	µg/kg		<0.50	<0.50	----	----	----
Heptachlor	76-44-8	0.50	µg/kg		<0.50	<0.50	----	----	----
Heptachlor epoxide	1024-57-3	0.50	µg/kg		<0.50	<0.50	----	----	----
Hexachlorobenzene (HCB)	118-74-1	0.50	µg/kg		<0.50	<0.50	----	----	----
gamma-BHC - (Lindane)	58-89-9	0.25	µg/kg		<0.25	<0.25	----	----	----
Methoxychlor	72-43-5	0.50	µg/kg		<0.50	<0.50	----	----	----
cis-Chlordane	5103-71-9	0.50	µg/kg		<0.50	<0.50	----	----	----
trans-Chlordane	5103-74-2	0.50	µg/kg		<0.50	<0.50	----	----	----
^ Total Chlordane (sum)	----	0.50	µg/kg		<0.50	<0.50	----	----	----
Oxychlordane	27304-13-8	0.50	µg/kg		<0.50	<0.50	----	----	----
^ Sum of Aldrin + Dieldrin	309-00-2/60-57-1	0.50	µg/kg		<0.50	<0.50	----	----	----
EP131B: Polychlorinated Biphenyls (as Aroclors)									
^ Total Polychlorinated biphenyls	----	5.0	µg/kg		<5.0	<5.0	----	----	----
Aroclor 1016	12674-11-2	5.0	µg/kg		<5.0	<5.0	----	----	----
Aroclor 1221	11104-28-2	5.0	µg/kg		<5.0	<5.0	----	----	----
Aroclor 1232	11141-16-5	5.0	µg/kg		<5.0	<5.0	----	----	----
Aroclor 1242	53469-21-9	5.0	µg/kg		<5.0	<5.0	----	----	----
Aroclor 1248	12672-29-6	5.0	µg/kg		<5.0	<5.0	----	----	----
Aroclor 1254	11097-69-1	5.0	µg/kg		<5.0	<5.0	----	----	----
Aroclor 1260	11096-82-5	5.0	µg/kg		<5.0	<5.0	----	----	----
EP132B: Polynuclear Aromatic Hydrocarbons									
Naphthalene	91-20-3	5	µg/kg		<5	<5	----	----	----
2-Methylnaphthalene	91-57-6	5	µg/kg		<5	<5	----	----	----
Acenaphthylene	208-96-8	4	µg/kg		<4	<4	----	----	----
Acenaphthene	83-32-9	4	µg/kg		<4	<4	----	----	----
Fluorene	86-73-7	4	µg/kg		<4	<4	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Sample ID	SH8 0-0.5	SH8 0.5-1	SH8 1-1.5	SH8 1.5-2	SH8 2-2.5
				Sampling date / time	08-Feb-2026 00:00	08-Feb-2026 00:00	08-Feb-2026 00:00	08-Feb-2026 00:00	08-Feb-2026 00:00
Compound	CAS Number	LOR	Unit		EB2605255-021	EB2605255-022	EB2605255-023	EB2605255-024	EB2605255-025
					Result	Result	Result	Result	Result
EP132B: Polynuclear Aromatic Hydrocarbons - Continued									
Phenanthrene	85-01-8	4	µg/kg		<4	<4	----	----	----
Anthracene	120-12-7	4	µg/kg		<4	<4	----	----	----
Fluoranthene	206-44-0	4	µg/kg		<4	<4	----	----	----
Pyrene	129-00-0	4	µg/kg		<4	<4	----	----	----
Benz(a)anthracene	56-55-3	4	µg/kg		<4	<4	----	----	----
Chrysene	218-01-9	4	µg/kg		<4	<4	----	----	----
Benzo(b+j)fluoranthene	205-99-2 205-82-3	4	µg/kg		<4	<4	----	----	----
Benzo(k)fluoranthene	207-08-9	4	µg/kg		<4	<4	----	----	----
Benzo(e)pyrene	192-97-2	4	µg/kg		<4	<4	----	----	----
Benzo(a)pyrene	50-32-8	4	µg/kg		<4	<4	----	----	----
Perylene	198-55-0	4	µg/kg		<4	<4	----	----	----
Benzo(g.h.i)perylene	191-24-2	4	µg/kg		<4	<4	----	----	----
Dibenz(a.h)anthracene	53-70-3	4	µg/kg		<4	<4	----	----	----
Indeno(1.2.3.cd)pyrene	193-39-5	4	µg/kg		<4	<4	----	----	----
Coronene	191-07-1	5	µg/kg		<5	<5	----	----	----
^ Sum of PAHs	----	4	µg/kg		<4	<4	----	----	----
^ Benzo(a)pyrene TEQ (zero)	----	4	µg/kg		<4	<4	----	----	----
^ Benzo(a)pyrene TEQ (half LOR)	----	4	µg/kg		**5**	**5**	----	----	----
^ Benzo(a)pyrene TEQ (LOR)	----	4	µg/kg		**10**	**10**	----	----	----
EP080-SD: TPH(V)/BTEX Surrogates									
1.2-Dichloroethane-D4	17060-07-0	0.2	%		**61.1**	**69.5**	----	----	----
Toluene-D8	2037-26-5	0.2	%		**63.1**	**74.2**	----	----	----
4-Bromofluorobenzene	460-00-4	0.2	%		**75.0**	**89.6**	----	----	----
EP090S: Organotin Surrogate									
Tripropyltin	----	0.5	%		**136**	**110**	----	----	----
EP131S: OC Pesticide Surrogate									
Dibromo-DDE	21655-73-2	0.50	%		**72.3**	**73.7**	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Sample ID	SH8 0-0.5	SH8 0.5-1	SH8 1-1.5	SH8 1.5-2	SH8 2-2.5
				Sampling date / time	08-Feb-2026 00:00	08-Feb-2026 00:00	08-Feb-2026 00:00	08-Feb-2026 00:00	08-Feb-2026 00:00
Compound	CAS Number	LOR	Unit		EB2605255-021	EB2605255-022	EB2605255-023	EB2605255-024	EB2605255-025
					Result	Result	Result	Result	Result
EP131T: PCB Surrogate									
Decachlorobiphenyl	2051-24-3	0.5	%		**44.5**	**54.7**	**----**	**----**	**----**
EP132T: Base/Neutral Extractable Surrogates - SD									
2-Fluorobiphenyl	321-60-8	10	%		**68.4**	**80.1**	**----**	**----**	**----**
Anthracene-d10	1719-06-8	10	%		**84.0**	**85.2**	**----**	**----**	**----**
4-Terphenyl-d14	1718-51-0	10	%		**65.5**	**80.7**	**----**	**----**	**----**

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Sample ID	SH8 2.5-3	SH8 3-3.5	SH5 0-0.5	SH5 0.5-1	SH5 1-1.5
			Sampling date / time	08-Feb-2026 00:00	08-Feb-2026 00:00	08-Feb-2026 00:00	08-Feb-2026 00:00	08-Feb-2026 00:00
Compound	CAS Number	LOR	Unit	EB2605255-026	EB2605255-027	EB2605255-028	EB2605255-029	EB2605255-030
				Result	Result	Result	Result	Result
EA033-A: Actual Acidity								
pH KCl (23A)	----	0.1	pH Unit	**8.7**	**8.7**	**9.2**	**8.9**	**8.8**
Titratable Actual Acidity (23F)	----	2	mole H+ / t	<2	<2	<2	<2	<2
sulfidic - Titratable Actual Acidity (s-23F)	----	0.02	% pyrite S	<0.02	<0.02	<0.02	<0.02	<0.02
EA033-B: Potential Acidity								
Chromium Reducible Sulfur (22B)	----	0.005	% S	**0.788**	**1.16**	**0.300**	**0.763**	**0.972**
acidity - Chromium Reducible Sulfur (a-22B)	----	10	mole H+ / t	**491**	**722**	**187**	**476**	**606**
EA033-C: Acid Neutralising Capacity								
Acid Neutralising Capacity (19A2)	----	0.01	% CaCO3	**13.2**	**10.2**	**48.0**	**27.4**	**15.3**
acidity - Acid Neutralising Capacity (a-19A2)	----	10	mole H+ / t	**2630**	**2040**	**9590**	**5480**	**3050**
sulfidic - Acid Neutralising Capacity (s-19A2)	----	0.01	% pyrite S	**4.22**	**3.28**	**15.4**	**8.79**	**4.89**
EA033-E: Acid Base Accounting								
ANC Fineness Factor	----	0.5	-	**1.5**	**1.5**	**1.5**	**1.5**	**1.5**
Net Acidity (sulfur units)	----	0.02	% S	<0.02	<0.02	<0.02	<0.02	<0.02
Net Acidity (acidity units)	----	10	mole H+ / t	<10	<10	<10	<10	<10
Liming Rate	----	1	kg CaCO3/t	<1	<1	<1	<1	<1
Net Acidity excluding ANC (sulfur units)	----	0.02	% S	**0.79**	**1.16**	**0.30**	**0.76**	**0.97**
Net Acidity excluding ANC (acidity units)	----	10	mole H+ / t	**491**	**722**	**187**	**476**	**606**
Liming Rate excluding ANC	----	1	kg CaCO3/t	**37**	**54**	**14**	**36**	**45**
EA055: Moisture Content (Dried @ 105-110°C)								
Moisture Content	----	1.0	%	**----**	**----**	**29.0**	**48.2**	**----**
EA150: Particle Sizing								
+75µm	----	1	%	**3**	**5**	**49**	**19**	**2**
+150µm	----	1	%	**3**	**5**	**43**	**17**	**2**
+300µm	----	1	%	**2**	**4**	**33**	**14**	**2**
+425µm	----	1	%	**2**	**4**	**28**	**13**	**2**
+600µm	----	1	%	**2**	**3**	**24**	**11**	**2**

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Sample ID	SH8 2.5-3	SH8 3-3.5	SH5 0-0.5	SH5 0.5-1	SH5 1-1.5
			Sampling date / time	08-Feb-2026 00:00	08-Feb-2026 00:00	08-Feb-2026 00:00	08-Feb-2026 00:00	08-Feb-2026 00:00
Compound	CAS Number	LOR	Unit	EB2605255-026	EB2605255-027	EB2605255-028	EB2605255-029	EB2605255-030
				Result	Result	Result	Result	Result
EA150: Particle Sizing - Continued								
+1180µm	----	1	%	<1	3	12	7	<1
+2.36mm	----	1	%	<1	2	5	4	<1
+4.75mm	----	1	%	<1	1	3	2	<1
+9.5mm	----	1	%	<1	<1	<1	<1	<1
+19.0mm	----	1	%	<1	<1	<1	<1	<1
+37.5mm	----	1	%	<1	<1	<1	<1	<1
+75.0mm	----	1	%	<1	<1	<1	<1	<1
EA150: Soil Classification based on Particle Size								
Clay (<2 µm)	----	1	%	53	58	23	44	53
Silt (2-60 µm)	----	1	%	44	37	26	36	44
Sand (0.06-2.00 mm)	----	1	%	2	3	44	15	3
Gravel (>2mm)	----	1	%	1	2	7	5	<1
Cobbles (>6cm)	----	1	%	<1	<1	<1	<1	<1
EA152: Soil Particle Density								
Soil Particle Density (Clay/Silt/Sand)	----	0.01	g/cm3	2.25	2.76	2.38	2.57	2.62
EG005(ED093)-SD: Total Metals in Sediments by ICP-AES								
Aluminium	7429-90-5	50	mg/kg	----	----	2860	9590	----
Iron	7439-89-6	50	mg/kg	----	----	4470	18800	----
EG020-SD: Total Metals in Sediments by ICPMS								
Antimony	7440-36-0	0.50	mg/kg	----	----	<0.50	<0.50	----
Arsenic	7440-38-2	1.00	mg/kg	----	----	4.69	9.96	----
Cadmium	7440-43-9	0.1	mg/kg	----	----	<0.1	<0.1	----
Chromium	7440-47-3	1.0	mg/kg	----	----	8.3	20.1	----
Copper	7440-50-8	1.0	mg/kg	----	----	2.2	6.5	----
Cobalt	7440-48-4	0.5	mg/kg	----	----	1.7	6.6	----
Lead	7439-92-1	1.0	mg/kg	----	----	3.3	8.2	----
Manganese	7439-96-5	10	mg/kg	----	----	140	225	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Sample ID	SH8 2.5-3	SH8 3-3.5	SH5 0-0.5	SH5 0.5-1	SH5 1-1.5
				Sampling date / time	08-Feb-2026 00:00	08-Feb-2026 00:00	08-Feb-2026 00:00	08-Feb-2026 00:00	08-Feb-2026 00:00
Compound	CAS Number	LOR	Unit		EB2605255-026	EB2605255-027	EB2605255-028	EB2605255-029	EB2605255-030
					Result	Result	Result	Result	Result
EG020-SD: Total Metals in Sediments by ICPMS - Continued									
Nickel	7440-02-0	1.0	mg/kg		----	----	**3.4**	**10.4**	----
Selenium	7782-49-2	0.1	mg/kg		----	----	**0.5**	**0.7**	----
Silver	7440-22-4	0.1	mg/kg		----	----	<0.1	<0.1	----
Vanadium	7440-62-2	2.0	mg/kg		----	----	**9.8**	**27.0**	----
Zinc	7440-66-6	1.0	mg/kg		----	----	**8.2**	**22.1**	----
EG035T: Total Recoverable Mercury by FIMS									
Mercury	7439-97-6	0.01	mg/kg		----	----	<0.01	<0.01	----
EP003: Total Organic Carbon (TOC) in Soil									
Total Organic Carbon	----	0.02	%		----	----	**0.42**	**0.66**	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions									
>C10 - C16 Fraction	----	3	mg/kg		----	----	<3	<3	----
>C16 - C34 Fraction	----	3	mg/kg		----	----	<3	<3	----
>C34 - C40 Fraction	----	5	mg/kg		----	----	<5	<5	----
>C10 - C40 Fraction (sum)	----	3	mg/kg		----	----	<3	<3	----
>C10 - C16 Fraction minus Naphthalene (F2)	----	3	mg/kg		----	----	<3	<3	----
EP080-SD / EP071-SD: Total Petroleum Hydrocarbons									
C6 - C9 Fraction	----	3	mg/kg		----	----	<3	<3	----
C10 - C14 Fraction	----	3	mg/kg		----	----	<3	<3	----
C15 - C28 Fraction	----	3	mg/kg		----	----	<3	<3	----
C29 - C36 Fraction	----	5	mg/kg		----	----	<5	<5	----
^ **C10 - C36 Fraction (sum)**	----	3	mg/kg		----	----	<3	<3	----
EP080-SD / EP071-SD: Total Recoverable Hydrocarbons									
C6 - C10 Fraction	C6_C10	3	mg/kg		----	----	<3	<3	----
C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	3.0	mg/kg		----	----	<3.0	<3.0	----
EP080-SD: BTEXN									
Benzene	71-43-2	0.2	mg/kg		----	----	<0.2	<0.2	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Sample ID	SH8 2.5-3	SH8 3-3.5	SH5 0-0.5	SH5 0.5-1	SH5 1-1.5
			Sampling date / time	08-Feb-2026 00:00	08-Feb-2026 00:00	08-Feb-2026 00:00	08-Feb-2026 00:00	08-Feb-2026 00:00
Compound	CAS Number	LOR	Unit	EB2605255-026	EB2605255-027	EB2605255-028	EB2605255-029	EB2605255-030
				Result	Result	Result	Result	Result
EP080-SD: BTEXN - Continued								
Toluene	108-88-3	0.2	mg/kg	----	----	<0.2	<0.2	----
Ethylbenzene	100-41-4	0.2	mg/kg	----	----	<0.2	<0.2	----
meta- & para-Xylene	108-38-3 106-42-3	0.2	mg/kg	----	----	<0.2	<0.2	----
ortho-Xylene	95-47-6	0.2	mg/kg	----	----	<0.2	<0.2	----
^ **Total Xylenes**	----	0.5	mg/kg	----	----	<0.5	<0.5	----
^ **Sum of BTEX**	----	0.2	mg/kg	----	----	<0.2	<0.2	----
Naphthalene	91-20-3	0.2	mg/kg	----	----	<0.2	<0.2	----
EP090: Organotin Compounds								
Monobutyltin	78763-54-9	1	µgSn/kg	----	----	<1	<1	----
Dibutyltin	1002-53-5	1	µgSn/kg	----	----	<1	<1	----
Tributyltin	56573-85-4	0.5	µgSn/kg	----	----	<0.5	<0.5	----
EP131A: Organochlorine Pesticides								
Aldrin	309-00-2	0.50	µg/kg	----	----	<0.50	<0.50	----
alpha-BHC	319-84-6	0.50	µg/kg	----	----	<0.50	<0.50	----
beta-BHC	319-85-7	0.50	µg/kg	----	----	<0.50	<0.50	----
delta-BHC	319-86-8	0.50	µg/kg	----	----	<0.50	<0.50	----
4.4`-DDD	72-54-8	0.50	µg/kg	----	----	<0.50	<0.50	----
4.4`-DDE	72-55-9	0.50	µg/kg	----	----	<0.50	<0.50	----
4.4`-DDT	50-29-3	0.50	µg/kg	----	----	<0.50	<0.50	----
^ **Sum of DDD + DDE + DDT**	72-54-8/72-55-9/50-2	0.50	µg/kg	----	----	<0.50	<0.50	----
Dieldrin	60-57-1	0.50	µg/kg	----	----	<0.50	<0.50	----
alpha-Endosulfan	959-98-8	0.50	µg/kg	----	----	<0.50	<0.50	----
beta-Endosulfan	33213-65-9	0.50	µg/kg	----	----	<0.50	<0.50	----
Endosulfan sulfate	1031-07-8	0.50	µg/kg	----	----	<0.50	<0.50	----
^ **Endosulfan (sum)**	115-29-7	0.50	µg/kg	----	----	<0.50	<0.50	----
Endrin	72-20-8	0.50	µg/kg	----	----	<0.50	<0.50	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Sample ID	SH8 2.5-3	SH8 3-3.5	SH5 0-0.5	SH5 0.5-1	SH5 1-1.5
				Sampling date / time	08-Feb-2026 00:00	08-Feb-2026 00:00	08-Feb-2026 00:00	08-Feb-2026 00:00	08-Feb-2026 00:00
Compound	CAS Number	LOR	Unit		EB2605255-026	EB2605255-027	EB2605255-028	EB2605255-029	EB2605255-030
					Result	Result	Result	Result	Result
EP131A: Organochlorine Pesticides - Continued									
Endrin aldehyde	7421-93-4	0.50	µg/kg		----	----	<0.50	<0.50	----
Endrin ketone	53494-70-5	0.50	µg/kg		----	----	<0.50	<0.50	----
Heptachlor	76-44-8	0.50	µg/kg		----	----	<0.50	<0.50	----
Heptachlor epoxide	1024-57-3	0.50	µg/kg		----	----	<0.50	<0.50	----
Hexachlorobenzene (HCB)	118-74-1	0.50	µg/kg		----	----	<0.50	<0.50	----
gamma-BHC - (Lindane)	58-89-9	0.25	µg/kg		----	----	<0.25	<0.25	----
Methoxychlor	72-43-5	0.50	µg/kg		----	----	<0.50	<0.50	----
cis-Chlordane	5103-71-9	0.50	µg/kg		----	----	<0.50	<0.50	----
trans-Chlordane	5103-74-2	0.50	µg/kg		----	----	<0.50	<0.50	----
^ Total Chlordane (sum)	----	0.50	µg/kg		----	----	<0.50	<0.50	----
Oxychlordane	27304-13-8	0.50	µg/kg		----	----	<0.50	<0.50	----
^ Sum of Aldrin + Dieldrin	309-00-2/60-57-1	0.50	µg/kg		----	----	<0.50	<0.50	----
EP132B: Polynuclear Aromatic Hydrocarbons									
Naphthalene	91-20-3	5	µg/kg		----	----	<5	<5	----
2-Methylnaphthalene	91-57-6	5	µg/kg		----	----	<5	<5	----
Acenaphthylene	208-96-8	4	µg/kg		----	----	<4	<4	----
Acenaphthene	83-32-9	4	µg/kg		----	----	<4	<4	----
Fluorene	86-73-7	4	µg/kg		----	----	<4	<4	----
Phenanthrene	85-01-8	4	µg/kg		----	----	<4	<4	----
Anthracene	120-12-7	4	µg/kg		----	----	<4	<4	----
Fluoranthene	206-44-0	4	µg/kg		----	----	<4	<4	----
Pyrene	129-00-0	4	µg/kg		----	----	<4	<4	----
Benz(a)anthracene	56-55-3	4	µg/kg		----	----	<4	<4	----
Chrysene	218-01-9	4	µg/kg		----	----	<4	<4	----
Benzo(b+j)fluoranthene	205-99-2 205-82-3	4	µg/kg		----	----	<4	<4	----
Benzo(k)fluoranthene	207-08-9	4	µg/kg		----	----	<4	<4	----
Benzo(e)pyrene	192-97-2	4	µg/kg		----	----	<4	<4	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Sample ID	SH8 2.5-3	SH8 3-3.5	SH5 0-0.5	SH5 0.5-1	SH5 1-1.5
				Sampling date / time	08-Feb-2026 00:00	08-Feb-2026 00:00	08-Feb-2026 00:00	08-Feb-2026 00:00	08-Feb-2026 00:00
Compound	CAS Number	LOR	Unit		EB2605255-026	EB2605255-027	EB2605255-028	EB2605255-029	EB2605255-030
					Result	Result	Result	Result	Result
EP132B: Polynuclear Aromatic Hydrocarbons - Continued									
Benzo(a)pyrene	50-32-8	4	µg/kg		----	----	<4	<4	----
Perylene	198-55-0	4	µg/kg		----	----	<4	<4	----
Benzo(g.h.i)perylene	191-24-2	4	µg/kg		----	----	<4	<4	----
Dibenz(a.h)anthracene	53-70-3	4	µg/kg		----	----	<4	<4	----
Indeno(1.2.3.cd)pyrene	193-39-5	4	µg/kg		----	----	<4	<4	----
Coronene	191-07-1	5	µg/kg		----	----	<5	<5	----
^ Sum of PAHs	----	4	µg/kg		----	----	<4	<4	----
^ Benzo(a)pyrene TEQ (zero)	----	4	µg/kg		----	----	<4	<4	----
^ Benzo(a)pyrene TEQ (half LOR)	----	4	µg/kg		----	----	5	5	----
^ Benzo(a)pyrene TEQ (LOR)	----	4	µg/kg		----	----	10	10	----
EP080-SD: TPH(V)/BTEX Surrogates									
1.2-Dichloroethane-D4	17060-07-0	0.2	%		----	----	62.1	58.8	----
Toluene-D8	2037-26-5	0.2	%		----	----	68.3	61.7	----
4-Bromofluorobenzene	460-00-4	0.2	%		----	----	72.8	70.2	----
EP090S: Organotin Surrogate									
Tripropyltin	----	0.5	%		----	----	95.0	91.2	----
EP131S: OC Pesticide Surrogate									
Dibromo-DDE	21655-73-2	0.50	%		----	----	63.3	63.0	----
EP132T: Base/Neutral Extractable Surrogates - SD									
2-Fluorobiphenyl	321-60-8	10	%		----	----	78.6	69.5	----
Anthracene-d10	1719-06-8	10	%		----	----	119	127	----
4-Terphenyl-d14	1718-51-0	10	%		----	----	88.2	93.1	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Sample ID	SH5 1.5-2	SH5 2-2.5	SH4 0-0.5	SH4 0.5-1	SH4 1-1.5
			Sampling date / time	08-Feb-2026 00:00	08-Feb-2026 00:00	09-Feb-2026 00:00	09-Feb-2026 00:00	09-Feb-2026 00:00
Compound	CAS Number	LOR	Unit	EB2605255-031	EB2605255-032	EB2605255-033	EB2605255-034	EB2605255-035
				Result	Result	Result	Result	Result
EA033-A: Actual Acidity								
pH KCl (23A)	----	0.1	pH Unit	**8.8**	**8.6**	**9.5**	**9.4**	**9.3**
Titratable Actual Acidity (23F)	----	2	mole H+ / t	<2	<2	<2	<2	<2
sulfidic - Titratable Actual Acidity (s-23F)	----	0.02	% pyrite S	<0.02	<0.02	<0.02	<0.02	<0.02
EA033-B: Potential Acidity								
Chromium Reducible Sulfur (22B)	----	0.005	% S	**0.898**	**0.988**	**0.048**	**0.188**	**0.264**
acidity - Chromium Reducible Sulfur (a-22B)	----	10	mole H+ / t	**560**	**616**	**30**	**117**	**165**
EA033-C: Acid Neutralising Capacity								
Acid Neutralising Capacity (19A2)	----	0.01	% CaCO3	**14.4**	**11.0**	**7.79**	**48.5**	**57.9**
acidity - Acid Neutralising Capacity (a-19A2)	----	10	mole H+ / t	**2880**	**2190**	**1560**	**9690**	**11600**
sulfidic - Acid Neutralising Capacity (s-19A2)	----	0.01	% pyrite S	**4.62**	**3.51**	**2.50**	**15.5**	**18.5**
EA033-E: Acid Base Accounting								
ANC Fineness Factor	----	0.5	-	**1.5**	**1.5**	**1.5**	**1.5**	**1.5**
Net Acidity (sulfur units)	----	0.02	% S	<0.02	<0.02	<0.02	<0.02	<0.02
Net Acidity (acidity units)	----	10	mole H+ / t	<10	<10	<10	<10	<10
Liming Rate	----	1	kg CaCO3/t	<1	<1	<1	<1	<1
Net Acidity excluding ANC (sulfur units)	----	0.02	% S	**0.90**	**0.99**	**0.05**	**0.19**	**0.26**
Net Acidity excluding ANC (acidity units)	----	10	mole H+ / t	**560**	**616**	**30**	**117**	**165**
Liming Rate excluding ANC	----	1	kg CaCO3/t	**42**	**46**	**2**	**9**	**12**
EA055: Moisture Content (Dried @ 105-110°C)								
Moisture Content	----	1.0	%	**----**	**----**	**16.9**	**24.8**	**----**
EA150: Particle Sizing								
+75µm	----	1	%	**4**	**3**	**92**	**74**	**61**
+150µm	----	1	%	**3**	**2**	**86**	**69**	**57**
+300µm	----	1	%	**3**	**2**	**73**	**61**	**48**
+425µm	----	1	%	**3**	**2**	**66**	**56**	**43**
+600µm	----	1	%	**2**	**2**	**62**	**51**	**38**

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Sample ID	SH5 1.5-2	SH5 2-2.5	SH4 0-0.5	SH4 0.5-1	SH4 1-1.5
				Sampling date / time	08-Feb-2026 00:00	08-Feb-2026 00:00	09-Feb-2026 00:00	09-Feb-2026 00:00	09-Feb-2026 00:00
Compound	CAS Number	LOR	Unit		EB2605255-031	EB2605255-032	EB2605255-033	EB2605255-034	EB2605255-035
					Result	Result	Result	Result	Result
EA150: Particle Sizing - Continued									
+1180µm	----	1	%		1	1	52	39	26
+2.36mm	----	1	%		<1	<1	42	27	14
+4.75mm	----	1	%		<1	<1	29	19	7
+9.5mm	----	1	%		<1	<1	18	15	<1
+19.0mm	----	1	%		<1	<1	<1	<1	<1
+37.5mm	----	1	%		<1	<1	<1	<1	<1
+75.0mm	----	1	%		<1	<1	<1	<1	<1
EA150: Soil Classification based on Particle Size									
Clay (<2 µm)	----	1	%		51	63	4	12	21
Silt (2-60 µm)	----	1	%		44	33	2	12	16
Sand (0.06-2.00 mm)	----	1	%		4	3	49	45	45
Gravel (>2mm)	----	1	%		1	1	45	31	18
Cobbles (>6cm)	----	1	%		<1	<1	<1	<1	<1
EA152: Soil Particle Density									
Soil Particle Density (Clay/Silt/Sand)	----	0.01	g/cm3		2.16	2.37	2.40	2.64	2.45
EG005(ED093)-SD: Total Metals in Sediments by ICP-AES									
Aluminium	7429-90-5	50	mg/kg		----	----	1280	3690	----
Iron	7439-89-6	50	mg/kg		----	----	1980	5220	----
EG020-SD: Total Metals in Sediments by ICPMS									
Antimony	7440-36-0	0.50	mg/kg		----	----	<0.50	<0.50	----
Arsenic	7440-38-2	1.00	mg/kg		----	----	1.98	4.87	----
Cadmium	7440-43-9	0.1	mg/kg		----	----	<0.1	<0.1	----
Chromium	7440-47-3	1.0	mg/kg		----	----	5.8	8.4	----
Copper	7440-50-8	1.0	mg/kg		----	----	1.6	2.0	----
Cobalt	7440-48-4	0.5	mg/kg		----	----	0.5	1.8	----
Lead	7439-92-1	1.0	mg/kg		----	----	2.8	2.7	----
Manganese	7439-96-5	10	mg/kg		----	----	18	81	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Sample ID	SH5 1.5-2	SH5 2-2.5	SH4 0-0.5	SH4 0.5-1	SH4 1-1.5
				Sampling date / time	08-Feb-2026 00:00	08-Feb-2026 00:00	09-Feb-2026 00:00	09-Feb-2026 00:00	09-Feb-2026 00:00
Compound	CAS Number	LOR	Unit		EB2605255-031	EB2605255-032	EB2605255-033	EB2605255-034	EB2605255-035
					Result	Result	Result	Result	Result
EG020-SD: Total Metals in Sediments by ICPMS - Continued									
Nickel	7440-02-0	1.0	mg/kg		----	----	**3.0**	**4.0**	----
Selenium	7782-49-2	0.1	mg/kg		----	----	**0.2**	**0.4**	----
Silver	7440-22-4	0.1	mg/kg		----	----	<0.1	<0.1	----
Vanadium	7440-62-2	2.0	mg/kg		----	----	**4.4**	**11.1**	----
Zinc	7440-66-6	1.0	mg/kg		----	----	**6.5**	**7.5**	----
EG035T: Total Recoverable Mercury by FIMS									
Mercury	7439-97-6	0.01	mg/kg		----	----	<0.01	<0.01	----
EP003: Total Organic Carbon (TOC) in Soil									
Total Organic Carbon	----	0.02	%		----	----	**0.13**	**0.27**	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions									
>C10 - C16 Fraction	----	3	mg/kg		----	----	<3	<3	----
>C16 - C34 Fraction	----	3	mg/kg		----	----	<3	<3	----
>C34 - C40 Fraction	----	5	mg/kg		----	----	<5	<5	----
>C10 - C40 Fraction (sum)	----	3	mg/kg		----	----	<3	<3	----
>C10 - C16 Fraction minus Naphthalene (F2)	----	3	mg/kg		----	----	<3	<3	----
EP080-SD / EP071-SD: Total Petroleum Hydrocarbons									
C6 - C9 Fraction	----	3	mg/kg		----	----	<3	<3	----
C10 - C14 Fraction	----	3	mg/kg		----	----	<3	<3	----
C15 - C28 Fraction	----	3	mg/kg		----	----	<3	<3	----
C29 - C36 Fraction	----	5	mg/kg		----	----	<5	<5	----
^ **C10 - C36 Fraction (sum)**	----	3	mg/kg		----	----	<3	<3	----
EP080-SD / EP071-SD: Total Recoverable Hydrocarbons									
C6 - C10 Fraction	C6_C10	3	mg/kg		----	----	<3	<3	----
C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	3.0	mg/kg		----	----	<3.0	<3.0	----
EP080-SD: BTEXN									
Benzene	71-43-2	0.2	mg/kg		----	----	<0.2	<0.2	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Sample ID	SH5 1.5-2	SH5 2-2.5	SH4 0-0.5	SH4 0.5-1	SH4 1-1.5
			Sampling date / time	08-Feb-2026 00:00	08-Feb-2026 00:00	09-Feb-2026 00:00	09-Feb-2026 00:00	09-Feb-2026 00:00
Compound	CAS Number	LOR	Unit	EB2605255-031	EB2605255-032	EB2605255-033	EB2605255-034	EB2605255-035
				Result	Result	Result	Result	Result
EP080-SD: BTEXN - Continued								
Toluene	108-88-3	0.2	mg/kg	----	----	<0.2	<0.2	----
Ethylbenzene	100-41-4	0.2	mg/kg	----	----	<0.2	<0.2	----
meta- & para-Xylene	108-38-3 106-42-3	0.2	mg/kg	----	----	<0.2	<0.2	----
ortho-Xylene	95-47-6	0.2	mg/kg	----	----	<0.2	<0.2	----
^ **Total Xylenes**	----	0.5	mg/kg	----	----	<0.5	<0.5	----
^ **Sum of BTEX**	----	0.2	mg/kg	----	----	<0.2	<0.2	----
Naphthalene	91-20-3	0.2	mg/kg	----	----	<0.2	<0.2	----
EP090: Organotin Compounds								
Monobutyltin	78763-54-9	1	µgSn/kg	----	----	<1	<1	----
Dibutyltin	1002-53-5	1	µgSn/kg	----	----	<1	<1	----
Tributyltin	56573-85-4	0.5	µgSn/kg	----	----	<0.5	<0.5	----
EP131A: Organochlorine Pesticides								
Aldrin	309-00-2	0.50	µg/kg	----	----	<0.50	<0.50	----
alpha-BHC	319-84-6	0.50	µg/kg	----	----	<0.50	<0.50	----
beta-BHC	319-85-7	0.50	µg/kg	----	----	<0.50	<0.50	----
delta-BHC	319-86-8	0.50	µg/kg	----	----	<0.50	<0.50	----
4.4`-DDD	72-54-8	0.50	µg/kg	----	----	<0.50	<0.50	----
4.4`-DDE	72-55-9	0.50	µg/kg	----	----	<0.50	<0.50	----
4.4`-DDT	50-29-3	0.50	µg/kg	----	----	<0.50	<0.50	----
^ **Sum of DDD + DDE + DDT**	72-54-8/72-55-9/50-2	0.50	µg/kg	----	----	<0.50	<0.50	----
Dieldrin	60-57-1	0.50	µg/kg	----	----	<0.50	<0.50	----
alpha-Endosulfan	959-98-8	0.50	µg/kg	----	----	<0.50	<0.50	----
beta-Endosulfan	33213-65-9	0.50	µg/kg	----	----	<0.50	<0.50	----
Endosulfan sulfate	1031-07-8	0.50	µg/kg	----	----	<0.50	<0.50	----
^ **Endosulfan (sum)**	115-29-7	0.50	µg/kg	----	----	<0.50	<0.50	----
Endrin	72-20-8	0.50	µg/kg	----	----	<0.50	<0.50	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Sample ID	SH5 1.5-2	SH5 2-2.5	SH4 0-0.5	SH4 0.5-1	SH4 1-1.5
				Sampling date / time	08-Feb-2026 00:00	08-Feb-2026 00:00	09-Feb-2026 00:00	09-Feb-2026 00:00	09-Feb-2026 00:00
Compound	CAS Number	LOR	Unit		EB2605255-031	EB2605255-032	EB2605255-033	EB2605255-034	EB2605255-035
					Result	Result	Result	Result	Result
EP131A: Organochlorine Pesticides - Continued									
Endrin aldehyde	7421-93-4	0.50	µg/kg		----	----	<0.50	<0.50	----
Endrin ketone	53494-70-5	0.50	µg/kg		----	----	<0.50	<0.50	----
Heptachlor	76-44-8	0.50	µg/kg		----	----	<0.50	<0.50	----
Heptachlor epoxide	1024-57-3	0.50	µg/kg		----	----	<0.50	<0.50	----
Hexachlorobenzene (HCB)	118-74-1	0.50	µg/kg		----	----	<0.50	<0.50	----
gamma-BHC - (Lindane)	58-89-9	0.25	µg/kg		----	----	<0.25	<0.25	----
Methoxychlor	72-43-5	0.50	µg/kg		----	----	<0.50	<0.50	----
cis-Chlordane	5103-71-9	0.50	µg/kg		----	----	<0.50	<0.50	----
trans-Chlordane	5103-74-2	0.50	µg/kg		----	----	<0.50	<0.50	----
^ **Total Chlordane (sum)**	----	0.50	µg/kg		----	----	<0.50	<0.50	----
Oxychlordane	27304-13-8	0.50	µg/kg		----	----	<0.50	<0.50	----
^ **Sum of Aldrin + Dieldrin**	309-00-2/60-57-1	0.50	µg/kg		----	----	<0.50	<0.50	----
EP131B: Polychlorinated Biphenyls (as Aroclors)									
^ **Total Polychlorinated biphenyls**	----	5.0	µg/kg		----	----	<5.0	<5.0	----
Aroclor 1016	12674-11-2	5.0	µg/kg		----	----	<5.0	<5.0	----
Aroclor 1221	11104-28-2	5.0	µg/kg		----	----	<5.0	<5.0	----
Aroclor 1232	11141-16-5	5.0	µg/kg		----	----	<5.0	<5.0	----
Aroclor 1242	53469-21-9	5.0	µg/kg		----	----	<5.0	<5.0	----
Aroclor 1248	12672-29-6	5.0	µg/kg		----	----	<5.0	<5.0	----
Aroclor 1254	11097-69-1	5.0	µg/kg		----	----	<5.0	<5.0	----
Aroclor 1260	11096-82-5	5.0	µg/kg		----	----	<5.0	<5.0	----
EP132B: Polynuclear Aromatic Hydrocarbons									
Naphthalene	91-20-3	5	µg/kg		----	----	<5	<5	----
2-Methylnaphthalene	91-57-6	5	µg/kg		----	----	<5	<5	----
Acenaphthylene	208-96-8	4	µg/kg		----	----	<4	<4	----
Acenaphthene	83-32-9	4	µg/kg		----	----	<4	<4	----
Fluorene	86-73-7	4	µg/kg		----	----	<4	<4	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Sample ID	SH5 1.5-2	SH5 2-2.5	SH4 0-0.5	SH4 0.5-1	SH4 1-1.5
				Sampling date / time	08-Feb-2026 00:00	08-Feb-2026 00:00	09-Feb-2026 00:00	09-Feb-2026 00:00	09-Feb-2026 00:00
Compound	CAS Number	LOR	Unit		EB2605255-031	EB2605255-032	EB2605255-033	EB2605255-034	EB2605255-035
					Result	Result	Result	Result	Result
EP132B: Polynuclear Aromatic Hydrocarbons - Continued									
Phenanthrene	85-01-8	4	µg/kg		----	----	<4	<4	----
Anthracene	120-12-7	4	µg/kg		----	----	<4	<4	----
Fluoranthene	206-44-0	4	µg/kg		----	----	<4	<4	----
Pyrene	129-00-0	4	µg/kg		----	----	<4	<4	----
Benz(a)anthracene	56-55-3	4	µg/kg		----	----	<4	<4	----
Chrysene	218-01-9	4	µg/kg		----	----	<4	<4	----
Benzo(b+j)fluoranthene	205-99-2 205-82-3	4	µg/kg		----	----	<4	<4	----
Benzo(k)fluoranthene	207-08-9	4	µg/kg		----	----	<4	<4	----
Benzo(e)pyrene	192-97-2	4	µg/kg		----	----	<4	<4	----
Benzo(a)pyrene	50-32-8	4	µg/kg		----	----	<4	<4	----
Perylene	198-55-0	4	µg/kg		----	----	<4	<4	----
Benzo(g.h.i)perylene	191-24-2	4	µg/kg		----	----	<4	<4	----
Dibenz(a.h)anthracene	53-70-3	4	µg/kg		----	----	<4	<4	----
Indeno(1.2.3.cd)pyrene	193-39-5	4	µg/kg		----	----	<4	<4	----
Coronene	191-07-1	5	µg/kg		----	----	<5	<5	----
^ Sum of PAHs	----	4	µg/kg		----	----	<4	<4	----
^ Benzo(a)pyrene TEQ (zero)	----	4	µg/kg		----	----	<4	<4	----
^ Benzo(a)pyrene TEQ (half LOR)	----	4	µg/kg		----	----	5	5	----
^ Benzo(a)pyrene TEQ (LOR)	----	4	µg/kg		----	----	10	10	----
EP080-SD: TPH(V)/BTEX Surrogates									
1.2-Dichloroethane-D4	17060-07-0	0.2	%		----	----	66.7	81.1	----
Toluene-D8	2037-26-5	0.2	%		----	----	72.5	82.5	----
4-Bromofluorobenzene	460-00-4	0.2	%		----	----	81.2	92.7	----
EP090S: Organotin Surrogate									
Tripropyltin	----	0.5	%		----	----	104	109	----
EP131S: OC Pesticide Surrogate									
Dibromo-DDE	21655-73-2	0.50	%		----	----	79.1	87.1	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Sample ID	SH5 1.5-2	SH5 2-2.5	SH4 0-0.5	SH4 0.5-1	SH4 1-1.5
				Sampling date / time	08-Feb-2026 00:00	08-Feb-2026 00:00	09-Feb-2026 00:00	09-Feb-2026 00:00	09-Feb-2026 00:00
Compound	CAS Number	LOR	Unit		EB2605255-031	EB2605255-032	EB2605255-033	EB2605255-034	EB2605255-035
					Result	Result	Result	Result	Result
EP131T: PCB Surrogate									
Decachlorobiphenyl	2051-24-3	0.5	%		**----**	**----**	**45.5**	**62.2**	**----**
EP132T: Base/Neutral Extractable Surrogates - SD									
2-Fluorobiphenyl	321-60-8	10	%		**----**	**----**	**78.4**	**64.7**	**----**
Anthracene-d10	1719-06-8	10	%		**----**	**----**	**99.0**	**107**	**----**
4-Terphenyl-d14	1718-51-0	10	%		**----**	**----**	**72.9**	**76.6**	**----**

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Sample ID	SH1 0-0.5	SH1 0.5-1	SH1 1-1.5	SH1 1.5-2	SH11A 0-0.5
			Sampling date / time	09-Feb-2026 00:00	09-Feb-2026 00:00	09-Feb-2026 00:00	09-Feb-2026 00:00	09-Feb-2026 00:00
Compound	CAS Number	LOR	Unit	EB2605255-036	EB2605255-037	EB2605255-038	EB2605255-039	EB2605255-040
				Result	Result	Result	Result	Result
EA033-A: Actual Acidity								
pH KCl (23A)	----	0.1	pH Unit	**9.3**	**9.1**	**8.7**	**8.7**	**9.3**
Titratable Actual Acidity (23F)	----	2	mole H+ / t	<2	<2	<2	<2	<2
sulfidic - Titratable Actual Acidity (s-23F)	----	0.02	% pyrite S	<0.02	<0.02	<0.02	<0.02	<0.02
EA033-B: Potential Acidity								
Chromium Reducible Sulfur (22B)	----	0.005	% S	**0.177**	**0.381**	**0.977**	**0.798**	**0.242**
acidity - Chromium Reducible Sulfur (a-22B)	----	10	mole H+ / t	**110**	**238**	**609**	**498**	**151**
EA033-C: Acid Neutralising Capacity								
Acid Neutralising Capacity (19A2)	----	0.01	% CaCO3	**48.5**	**39.6**	**18.8**	**18.9**	**57.6**
acidity - Acid Neutralising Capacity (a-19A2)	----	10	mole H+ / t	**9680**	**7920**	**3750**	**3780**	**11500**
sulfidic - Acid Neutralising Capacity (s-19A2)	----	0.01	% pyrite S	**15.5**	**12.7**	**6.02**	**6.06**	**18.5**
EA033-E: Acid Base Accounting								
ANC Fineness Factor	----	0.5	-	**1.5**	**1.5**	**1.5**	**1.5**	**1.5**
Net Acidity (sulfur units)	----	0.02	% S	<0.02	<0.02	<0.02	<0.02	<0.02
Net Acidity (acidity units)	----	10	mole H+ / t	<10	<10	<10	<10	<10
Liming Rate	----	1	kg CaCO3/t	<1	<1	<1	<1	<1
Net Acidity excluding ANC (sulfur units)	----	0.02	% S	**0.18**	**0.38**	**0.98**	**0.80**	**0.24**
Net Acidity excluding ANC (acidity units)	----	10	mole H+ / t	**110**	**238**	**609**	**498**	**151**
Liming Rate excluding ANC	----	1	kg CaCO3/t	**8**	**18**	**46**	**37**	**11**
EA055: Moisture Content (Dried @ 105-110°C)								
Moisture Content	----	1.0	%	**32.8**	**38.1**	**----**	**----**	**37.2**
EA150: Particle Sizing								
+75µm	----	1	%	**58**	**48**	**15**	**21**	**54**
+150µm	----	1	%	**50**	**45**	**15**	**20**	**47**
+300µm	----	1	%	**40**	**39**	**14**	**20**	**39**
+425µm	----	1	%	**34**	**34**	**14**	**19**	**34**
+600µm	----	1	%	**29**	**31**	**13**	**19**	**29**

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Sample ID	SH1 0-0.5	SH1 0.5-1	SH1 1-1.5	SH1 1.5-2	SH11A 0-0.5
			Sampling date / time	09-Feb-2026 00:00	09-Feb-2026 00:00	09-Feb-2026 00:00	09-Feb-2026 00:00	09-Feb-2026 00:00
Compound	CAS Number	LOR	Unit	EB2605255-036	EB2605255-037	EB2605255-038	EB2605255-039	EB2605255-040
				Result	Result	Result	Result	Result
EA150: Particle Sizing - Continued								
+1180µm	----	1	%	18	20	11	17	19
+2.36mm	----	1	%	8	10	6	13	9
+4.75mm	----	1	%	4	3	2	8	4
+9.5mm	----	1	%	<1	<1	<1	<1	1
+19.0mm	----	1	%	<1	<1	<1	<1	<1
+37.5mm	----	1	%	<1	<1	<1	<1	<1
+75.0mm	----	1	%	<1	<1	<1	<1	<1
EA150: Soil Classification based on Particle Size								
Clay (<2 µm)	----	1	%	19	30	45	41	19
Silt (2-60 µm)	----	1	%	21	21	39	37	26
Sand (0.06-2.00 mm)	----	1	%	49	36	8	8	43
Gravel (>2mm)	----	1	%	11	13	8	14	12
Cobbles (>6cm)	----	1	%	<1	<1	<1	<1	<1
EA152: Soil Particle Density								
Soil Particle Density (Clay/Silt/Sand)	----	0.01	g/cm3	2.40	2.38	2.26	2.34	2.39
EG005(ED093)-SD: Total Metals in Sediments by ICP-AES								
Aluminium	7429-90-5	50	mg/kg	3920	5510	----	----	5330
Iron	7439-89-6	50	mg/kg	6380	9300	----	----	8310
EG020-SD: Total Metals in Sediments by ICPMS								
Antimony	7440-36-0	0.50	mg/kg	<0.50	<0.50	----	----	<0.50
Arsenic	7440-38-2	1.00	mg/kg	4.62	8.30	----	----	6.82
Cadmium	7440-43-9	0.1	mg/kg	<0.1	<0.1	----	----	<0.1
Chromium	7440-47-3	1.0	mg/kg	9.5	12.5	----	----	13.2
Copper	7440-50-8	1.0	mg/kg	3.3	3.5	----	----	3.5
Cobalt	7440-48-4	0.5	mg/kg	2.2	3.3	----	----	3.2
Lead	7439-92-1	1.0	mg/kg	3.6	5.0	----	----	4.8
Manganese	7439-96-5	10	mg/kg	91	155	----	----	165

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Sample ID	SH1 0-0.5	SH1 0.5-1	SH1 1-1.5	SH1 1.5-2	SH11A 0-0.5
				Sampling date / time	09-Feb-2026 00:00	09-Feb-2026 00:00	09-Feb-2026 00:00	09-Feb-2026 00:00	09-Feb-2026 00:00
Compound	CAS Number	LOR	Unit		EB2605255-036	EB2605255-037	EB2605255-038	EB2605255-039	EB2605255-040
					Result	Result	Result	Result	Result
EG020-SD: Total Metals in Sediments by ICPMS - Continued									
Nickel	7440-02-0	1.0	mg/kg		**4.7**	**6.2**	----	----	**6.3**
Selenium	7782-49-2	0.1	mg/kg		**0.4**	**0.6**	----	----	**0.6**
Silver	7440-22-4	0.1	mg/kg		<0.1	<0.1	----	----	<0.1
Vanadium	7440-62-2	2.0	mg/kg		**11.6**	**17.3**	----	----	**17.2**
Zinc	7440-66-6	1.0	mg/kg		**11.6**	**13.5**	----	----	**12.9**
EG035T: Total Recoverable Mercury by FIMS									
Mercury	7439-97-6	0.01	mg/kg		<0.01	<0.01	----	----	<0.01
EP003: Total Organic Carbon (TOC) in Soil									
Total Organic Carbon	----	0.02	%		**0.40**	**0.41**	----	----	**0.43**
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions									
>C10 - C16 Fraction	----	3	mg/kg		<3	<3	----	----	<3
>C16 - C34 Fraction	----	3	mg/kg		<3	<3	----	----	<3
>C34 - C40 Fraction	----	5	mg/kg		<5	<5	----	----	<5
>C10 - C40 Fraction (sum)	----	3	mg/kg		<3	<3	----	----	<3
>C10 - C16 Fraction minus Naphthalene (F2)	----	3	mg/kg		<3	<3	----	----	<3
EP080-SD / EP071-SD: Total Petroleum Hydrocarbons									
C6 - C9 Fraction	----	3	mg/kg		<3	<3	----	----	<3
C10 - C14 Fraction	----	3	mg/kg		<3	<3	----	----	<3
C15 - C28 Fraction	----	3	mg/kg		<3	<3	----	----	<3
C29 - C36 Fraction	----	5	mg/kg		<5	<5	----	----	<5
^ **C10 - C36 Fraction (sum)**	----	3	mg/kg		<3	<3	----	----	<3
EP080-SD / EP071-SD: Total Recoverable Hydrocarbons									
C6 - C10 Fraction	C6_C10	3	mg/kg		<3	<3	----	----	<3
C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	3.0	mg/kg		<3.0	<3.0	----	----	<3.0
EP080-SD: BTEXN									
Benzene	71-43-2	0.2	mg/kg		<0.2	<0.2	----	----	<0.2

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Sample ID	SH1 0-0.5	SH1 0.5-1	SH1 1-1.5	SH1 1.5-2	SH11A 0-0.5
				Sampling date / time	09-Feb-2026 00:00	09-Feb-2026 00:00	09-Feb-2026 00:00	09-Feb-2026 00:00	09-Feb-2026 00:00
Compound	CAS Number	LOR	Unit		EB2605255-036	EB2605255-037	EB2605255-038	EB2605255-039	EB2605255-040
					Result	Result	Result	Result	Result
EP080-SD: BTEXN - Continued									
Toluene	108-88-3	0.2	mg/kg		<0.2	<0.2	----	----	<0.2
Ethylbenzene	100-41-4	0.2	mg/kg		<0.2	<0.2	----	----	<0.2
meta- & para-Xylene	108-38-3 106-42-3	0.2	mg/kg		<0.2	<0.2	----	----	<0.2
ortho-Xylene	95-47-6	0.2	mg/kg		<0.2	<0.2	----	----	<0.2
^ **Total Xylenes**	----	0.5	mg/kg		<0.5	<0.5	----	----	<0.5
^ **Sum of BTEX**	----	0.2	mg/kg		<0.2	<0.2	----	----	<0.2
Naphthalene	91-20-3	0.2	mg/kg		<0.2	<0.2	----	----	<0.2
EP090: Organotin Compounds									
Monobutyltin	78763-54-9	1	µgSn/kg		<1	<1	----	----	<1
Dibutyltin	1002-53-5	1	µgSn/kg		<1	<1	----	----	<1
Tributyltin	56573-85-4	0.5	µgSn/kg		<0.5	<0.5	----	----	<0.5
EP131A: Organochlorine Pesticides									
Aldrin	309-00-2	0.50	µg/kg		<0.50	<0.50	----	----	<0.50
alpha-BHC	319-84-6	0.50	µg/kg		<0.50	<0.50	----	----	<0.50
beta-BHC	319-85-7	0.50	µg/kg		<0.50	<0.50	----	----	<0.50
delta-BHC	319-86-8	0.50	µg/kg		<0.50	<0.50	----	----	<0.50
4.4`-DDD	72-54-8	0.50	µg/kg		<0.50	<0.50	----	----	<0.50
4.4`-DDE	72-55-9	0.50	µg/kg		<0.50	<0.50	----	----	<0.50
4.4`-DDT	50-29-3	0.50	µg/kg		<0.50	<0.50	----	----	<0.50
^ **Sum of DDD + DDE + DDT**	72-54-8/72-55-9/50-2	0.50	µg/kg		<0.50	<0.50	----	----	<0.50
Dieldrin	60-57-1	0.50	µg/kg		<0.50	<0.50	----	----	<0.50
alpha-Endosulfan	959-98-8	0.50	µg/kg		<0.50	<0.50	----	----	<0.50
beta-Endosulfan	33213-65-9	0.50	µg/kg		<0.50	<0.50	----	----	<0.50
Endosulfan sulfate	1031-07-8	0.50	µg/kg		<0.50	<0.50	----	----	<0.50
^ **Endosulfan (sum)**	115-29-7	0.50	µg/kg		<0.50	<0.50	----	----	<0.50
Endrin	72-20-8	0.50	µg/kg		<0.50	<0.50	----	----	<0.50

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Sample ID	SH1 0-0.5	SH1 0.5-1	SH1 1-1.5	SH1 1.5-2	SH11A 0-0.5
				Sampling date / time	09-Feb-2026 00:00	09-Feb-2026 00:00	09-Feb-2026 00:00	09-Feb-2026 00:00	09-Feb-2026 00:00
Compound	CAS Number	LOR	Unit		EB2605255-036	EB2605255-037	EB2605255-038	EB2605255-039	EB2605255-040
					Result	Result	Result	Result	Result
EP131A: Organochlorine Pesticides - Continued									
Endrin aldehyde	7421-93-4	0.50	µg/kg		<0.50	<0.50	----	----	<0.50
Endrin ketone	53494-70-5	0.50	µg/kg		<0.50	<0.50	----	----	<0.50
Heptachlor	76-44-8	0.50	µg/kg		<0.50	<0.50	----	----	<0.50
Heptachlor epoxide	1024-57-3	0.50	µg/kg		<0.50	<0.50	----	----	<0.50
Hexachlorobenzene (HCB)	118-74-1	0.50	µg/kg		<0.50	<0.50	----	----	<0.50
gamma-BHC - (Lindane)	58-89-9	0.25	µg/kg		<0.25	<0.25	----	----	<0.25
Methoxychlor	72-43-5	0.50	µg/kg		<0.50	<0.50	----	----	<0.50
cis-Chlordane	5103-71-9	0.50	µg/kg		<0.50	<0.50	----	----	<0.50
trans-Chlordane	5103-74-2	0.50	µg/kg		<0.50	<0.50	----	----	<0.50
^ **Total Chlordane (sum)**	----	0.50	µg/kg		<0.50	<0.50	----	----	<0.50
Oxychlordane	27304-13-8	0.50	µg/kg		<0.50	<0.50	----	----	<0.50
^ **Sum of Aldrin + Dieldrin**	309-00-2/60-57-1	0.50	µg/kg		<0.50	<0.50	----	----	<0.50
EP132B: Polynuclear Aromatic Hydrocarbons									
Naphthalene	91-20-3	5	µg/kg		<5	<5	----	----	<5
2-Methylnaphthalene	91-57-6	5	µg/kg		<5	<5	----	----	<5
Acenaphthylene	208-96-8	4	µg/kg		<4	<4	----	----	<4
Acenaphthene	83-32-9	4	µg/kg		<4	<4	----	----	<4
Fluorene	86-73-7	4	µg/kg		<4	<4	----	----	<4
Phenanthrene	85-01-8	4	µg/kg		<4	<4	----	----	<4
Anthracene	120-12-7	4	µg/kg		<4	<4	----	----	<4
Fluoranthene	206-44-0	4	µg/kg		**7**	<4	----	----	<4
Pyrene	129-00-0	4	µg/kg		**6**	<4	----	----	<4
Benz(a)anthracene	56-55-3	4	µg/kg		<4	<4	----	----	<4
Chrysene	218-01-9	4	µg/kg		**5**	<4	----	----	<4
Benzo(b+j)fluoranthene	205-99-2 205-82-3	4	µg/kg		**5**	<4	----	----	<4
Benzo(k)fluoranthene	207-08-9	4	µg/kg		<4	<4	----	----	<4
Benzo(e)pyrene	192-97-2	4	µg/kg		<4	<4	----	----	<4

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Sample ID	SH1 0-0.5	SH1 0.5-1	SH1 1-1.5	SH1 1.5-2	SH11A 0-0.5
				Sampling date / time	09-Feb-2026 00:00	09-Feb-2026 00:00	09-Feb-2026 00:00	09-Feb-2026 00:00	09-Feb-2026 00:00
Compound	CAS Number	LOR	Unit		EB2605255-036	EB2605255-037	EB2605255-038	EB2605255-039	EB2605255-040
					Result	Result	Result	Result	Result
EP132B: Polynuclear Aromatic Hydrocarbons - Continued									
Benzo(a)pyrene	50-32-8	4	µg/kg		<4	<4	----	----	<4
Perylene	198-55-0	4	µg/kg		<4	<4	----	----	<4
Benzo(g.h.i)perylene	191-24-2	4	µg/kg		<4	<4	----	----	<4
Dibenz(a.h)anthracene	53-70-3	4	µg/kg		<4	<4	----	----	<4
Indeno(1.2.3.cd)pyrene	193-39-5	4	µg/kg		<4	<4	----	----	<4
Coronene	191-07-1	5	µg/kg		<5	<5	----	----	<5
^ Sum of PAHs	----	4	µg/kg		**23**	<4	----	----	<4
^ Benzo(a)pyrene TEQ (zero)	----	4	µg/kg		<4	<4	----	----	<4
^ Benzo(a)pyrene TEQ (half LOR)	----	4	µg/kg		**5**	**5**	----	----	**5**
^ Benzo(a)pyrene TEQ (LOR)	----	4	µg/kg		**10**	**10**	----	----	**10**
EP080-SD: TPH(V)/BTEX Surrogates									
1.2-Dichloroethane-D4	17060-07-0	0.2	%		**79.5**	**81.4**	----	----	**76.4**
Toluene-D8	2037-26-5	0.2	%		**78.8**	**81.9**	----	----	**74.2**
4-Bromofluorobenzene	460-00-4	0.2	%		**87.6**	**96.8**	----	----	**88.8**
EP090S: Organotin Surrogate									
Tripropyltin	----	0.5	%		**92.2**	**38.9**	----	----	**106**
EP131S: OC Pesticide Surrogate									
Dibromo-DDE	21655-73-2	0.50	%		**72.7**	**73.2**	----	----	**76.6**
EP132T: Base/Neutral Extractable Surrogates - SD									
2-Fluorobiphenyl	321-60-8	10	%		**73.3**	**71.9**	----	----	**65.3**
Anthracene-d10	1719-06-8	10	%		**107**	**96.8**	----	----	**80.6**
4-Terphenyl-d14	1718-51-0	10	%		**80.1**	**73.5**	----	----	**69.0**

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Sample ID	SH11 0.5-1	SH11 1-1.5	SH11 1.5-2	SH11C 0-0.5	SH11 0-1
			Sampling date / time	09-Feb-2026 00:00	09-Feb-2026 00:00	09-Feb-2026 00:00	09-Feb-2026 00:00	09-Feb-2026 00:00
Compound	CAS Number	LOR	Unit	EB2605255-041	EB2605255-042	EB2605255-043	EB2605255-044	EB2605255-045
				Result	Result	Result	Result	Result
EA033-A: Actual Acidity								
pH KCl (23A)	----	0.1	pH Unit	8.8	8.9	8.6	9.2	----
Titratable Actual Acidity (23F)	----	2	mole H+ / t	<2	<2	<2	<2	----
sulfidic - Titratable Actual Acidity (s-23F)	----	0.02	% pyrite S	<0.02	<0.02	<0.02	<0.02	----
EA033-B: Potential Acidity								
Chromium Reducible Sulfur (22B)	----	0.005	% S	0.784	0.579	0.817	0.325	----
acidity - Chromium Reducible Sulfur (a-22B)	----	10	mole H+ / t	489	361	509	202	----
EA033-C: Acid Neutralising Capacity								
Acid Neutralising Capacity (19A2)	----	0.01	% CaCO3	22.3	27.2	13.9	54.1	----
acidity - Acid Neutralising Capacity (a-19A2)	----	10	mole H+ / t	4460	5430	2770	10800	----
sulfidic - Acid Neutralising Capacity (s-19A2)	----	0.01	% pyrite S	7.15	8.70	4.44	17.3	----
EA033-E: Acid Base Accounting								
ANC Fineness Factor	----	0.5	-	1.5	1.5	1.5	1.5	----
Net Acidity (sulfur units)	----	0.02	% S	<0.02	<0.02	<0.02	<0.02	----
Net Acidity (acidity units)	----	10	mole H+ / t	<10	<10	<10	<10	----
Liming Rate	----	1	kg CaCO3/t	<1	<1	<1	<1	----
Net Acidity excluding ANC (sulfur units)	----	0.02	% S	0.78	0.58	0.82	0.32	----
Net Acidity excluding ANC (acidity units)	----	10	mole H+ / t	489	361	509	202	----
Liming Rate excluding ANC	----	1	kg CaCO3/t	37	27	38	15	----
EA055: Moisture Content (Dried @ 105-110°C)								
Moisture Content	----	1.0	%	44.8	----	----	34.2	----
EA150: Particle Sizing								
+75µm	----	1	%	20	20	6	43	----
+150µm	----	1	%	16	16	6	37	----
+300µm	----	1	%	14	12	6	30	----
+425µm	----	1	%	12	10	5	27	----
+600µm	----	1	%	10	8	5	23	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Sample ID	SH11 0.5-1	SH11 1-1.5	SH11 1.5-2	SH11C 0-0.5	SH11 0-1
			Sampling date / time	09-Feb-2026 00:00	09-Feb-2026 00:00	09-Feb-2026 00:00	09-Feb-2026 00:00	09-Feb-2026 00:00
Compound	CAS Number	LOR	Unit	EB2605255-041	EB2605255-042	EB2605255-043	EB2605255-044	EB2605255-045
				Result	Result	Result	Result	Result
EA150: Particle Sizing - Continued								
+1180µm	----	1	%	6	4	4	14	----
+2.36mm	----	1	%	3	2	3	6	----
+4.75mm	----	1	%	1	<1	1	2	----
+9.5mm	----	1	%	<1	<1	<1	<1	----
+19.0mm	----	1	%	<1	<1	<1	<1	----
+37.5mm	----	1	%	<1	<1	<1	<1	----
+75.0mm	----	1	%	<1	<1	<1	<1	----
EA150: Soil Classification based on Particle Size								
Clay (<2 µm)	----	1	%	46	48	60	30	----
Silt (2-60 µm)	----	1	%	34	31	34	26	----
Sand (0.06-2.00 mm)	----	1	%	16	18	3	35	----
Gravel (>2mm)	----	1	%	4	3	3	9	----
Cobbles (>6cm)	----	1	%	<1	<1	<1	<1	----
EA151: Settleability 10%								
ø Underflow Density	----	0.01	g/cm3	----	----	----	----	1.20
ø Underflow Solids	----	0.1	%	----	----	----	----	32.1
ø Settling Rate @ 50% of Settlement	----	0.001	mm/min	----	----	----	----	3.00
ø Settling Rate @ 90% of Settlement	----	0.001	mm/min	----	----	----	----	0.100
ø Clarity	----	-	-	----	----	----	----	Transparent
EA152: Soil Particle Density								
Soil Particle Density (Clay/Silt/Sand)	----	0.01	g/cm3	2.28	2.56	2.52	2.38	----
EG005(ED093)-SD: Total Metals in Sediments by ICP-AES								
Aluminium	7429-90-5	50	mg/kg	9340	----	----	5750	----
Iron	7439-89-6	50	mg/kg	18300	----	----	8390	----
EG020-SD: Total Metals in Sediments by ICPMS								
Antimony	7440-36-0	0.50	mg/kg	<0.50	----	----	<0.50	----
Arsenic	7440-38-2	1.00	mg/kg	9.50	----	----	6.41	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Sample ID	SH11 0.5-1	SH11 1-1.5	SH11 1.5-2	SH11C 0-0.5	SH11 0-1
				Sampling date / time	09-Feb-2026 00:00	09-Feb-2026 00:00	09-Feb-2026 00:00	09-Feb-2026 00:00	09-Feb-2026 00:00
Compound	CAS Number	LOR	Unit		EB2605255-041	EB2605255-042	EB2605255-043	EB2605255-044	EB2605255-045
					Result	Result	Result	Result	Result
EG020-SD: Total Metals in Sediments by ICPMS - Continued									
Cadmium	7440-43-9	0.1	mg/kg		<0.1	----	----	<0.1	----
Chromium	7440-47-3	1.0	mg/kg		**19.3**	----	----	**13.4**	----
Copper	7440-50-8	1.0	mg/kg		**6.3**	----	----	**3.5**	----
Cobalt	7440-48-4	0.5	mg/kg		**5.9**	----	----	**3.2**	----
Lead	7439-92-1	1.0	mg/kg		**7.9**	----	----	**4.8**	----
Manganese	7439-96-5	10	mg/kg		**202**	----	----	**153**	----
Nickel	7440-02-0	1.0	mg/kg		**9.8**	----	----	**6.4**	----
Selenium	7782-49-2	0.1	mg/kg		**0.7**	----	----	**0.6**	----
Silver	7440-22-4	0.1	mg/kg		<0.1	----	----	<0.1	----
Vanadium	7440-62-2	2.0	mg/kg		**25.9**	----	----	**17.2**	----
Zinc	7440-66-6	1.0	mg/kg		**21.6**	----	----	**13.5**	----
EG035T: Total Recoverable Mercury by FIMS									
Mercury	7439-97-6	0.01	mg/kg		<0.01	----	----	<0.01	----
EP003: Total Organic Carbon (TOC) in Soil									
Total Organic Carbon	----	0.02	%		**0.73**	----	----	**0.45**	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions									
>C10 - C16 Fraction	----	3	mg/kg		<3	----	----	<3	----
>C16 - C34 Fraction	----	3	mg/kg		<3	----	----	<3	----
>C34 - C40 Fraction	----	5	mg/kg		<5	----	----	<5	----
>C10 - C40 Fraction (sum)	----	3	mg/kg		<3	----	----	<3	----
>C10 - C16 Fraction minus Naphthalene (F2)	----	3	mg/kg		<3	----	----	<3	----
EP080-SD / EP071-SD: Total Petroleum Hydrocarbons									
C6 - C9 Fraction	----	3	mg/kg		<3	----	----	<3	----
C10 - C14 Fraction	----	3	mg/kg		<3	----	----	<3	----
C15 - C28 Fraction	----	3	mg/kg		<3	----	----	<3	----
C29 - C36 Fraction	----	5	mg/kg		<5	----	----	<5	----
^ C10 - C36 Fraction (sum)	----	3	mg/kg		<3	----	----	<3	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Sample ID	SH11 0.5-1	SH11 1-1.5	SH11 1.5-2	SH11C 0-0.5	SH11 0-1
				Sampling date / time	09-Feb-2026 00:00	09-Feb-2026 00:00	09-Feb-2026 00:00	09-Feb-2026 00:00	09-Feb-2026 00:00
Compound	CAS Number	LOR	Unit		EB2605255-041	EB2605255-042	EB2605255-043	EB2605255-044	EB2605255-045
					Result	Result	Result	Result	Result
EP080-SD / EP071-SD: Total Petroleum Hydrocarbons - Continued									
EP080-SD / EP071-SD: Total Recoverable Hydrocarbons									
C6 - C10 Fraction	C6_C10	3	mg/kg		<3	----	----	<3	----
C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	3.0	mg/kg		<3.0	----	----	<3.0	----
EP080-SD: BTEXN									
Benzene	71-43-2	0.2	mg/kg		<0.2	----	----	<0.2	----
Toluene	108-88-3	0.2	mg/kg		<0.2	----	----	<0.2	----
Ethylbenzene	100-41-4	0.2	mg/kg		<0.2	----	----	<0.2	----
meta- & para-Xylene	108-38-3 106-42-3	0.2	mg/kg		<0.2	----	----	<0.2	----
ortho-Xylene	95-47-6	0.2	mg/kg		<0.2	----	----	<0.2	----
^ **Total Xylenes**	----	0.5	mg/kg		<0.5	----	----	<0.5	----
^ **Sum of BTEX**	----	0.2	mg/kg		<0.2	----	----	<0.2	----
Naphthalene	91-20-3	0.2	mg/kg		<0.2	----	----	<0.2	----
EP090: Organotin Compounds									
Monobutyltin	78763-54-9	1	µgSn/kg		<1	----	----	<1	----
Dibutyltin	1002-53-5	1	µgSn/kg		<1	----	----	<1	----
Tributyltin	56573-85-4	0.5	µgSn/kg		<0.5	----	----	<0.5	----
EP131A: Organochlorine Pesticides									
Aldrin	309-00-2	0.50	µg/kg		<0.50	----	----	<0.50	----
alpha-BHC	319-84-6	0.50	µg/kg		<0.50	----	----	<0.50	----
beta-BHC	319-85-7	0.50	µg/kg		<0.50	----	----	<0.50	----
delta-BHC	319-86-8	0.50	µg/kg		<0.50	----	----	<0.50	----
4.4`-DDD	72-54-8	0.50	µg/kg		<0.50	----	----	<0.50	----
4.4`-DDE	72-55-9	0.50	µg/kg		<0.50	----	----	<0.50	----
4.4`-DDT	50-29-3	0.50	µg/kg		<0.50	----	----	<0.50	----
^ **Sum of DDD + DDE + DDT**	72-54-8/72-55-9/50-2	0.50	µg/kg		<0.50	----	----	<0.50	----
Dieldrin	60-57-1	0.50	µg/kg		<0.50	----	----	<0.50	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Sample ID	SH11 0.5-1	SH11 1-1.5	SH11 1.5-2	SH11C 0-0.5	SH11 0-1
				Sampling date / time	09-Feb-2026 00:00	09-Feb-2026 00:00	09-Feb-2026 00:00	09-Feb-2026 00:00	09-Feb-2026 00:00
Compound	CAS Number	LOR	Unit		EB2605255-041	EB2605255-042	EB2605255-043	EB2605255-044	EB2605255-045
					Result	Result	Result	Result	Result
EP131A: Organochlorine Pesticides - Continued									
alpha-Endosulfan	959-98-8	0.50	µg/kg		<0.50	----	----	<0.50	----
beta-Endosulfan	33213-65-9	0.50	µg/kg		<0.50	----	----	<0.50	----
Endosulfan sulfate	1031-07-8	0.50	µg/kg		<0.50	----	----	<0.50	----
^ Endosulfan (sum)	115-29-7	0.50	µg/kg		<0.50	----	----	<0.50	----
Endrin	72-20-8	0.50	µg/kg		<0.50	----	----	<0.50	----
Endrin aldehyde	7421-93-4	0.50	µg/kg		<0.50	----	----	<0.50	----
Endrin ketone	53494-70-5	0.50	µg/kg		<0.50	----	----	<0.50	----
Heptachlor	76-44-8	0.50	µg/kg		<0.50	----	----	<0.50	----
Heptachlor epoxide	1024-57-3	0.50	µg/kg		<0.50	----	----	<0.50	----
Hexachlorobenzene (HCB)	118-74-1	0.50	µg/kg		<0.50	----	----	<0.50	----
gamma-BHC - (Lindane)	58-89-9	0.25	µg/kg		<0.25	----	----	<0.25	----
Methoxychlor	72-43-5	0.50	µg/kg		<0.50	----	----	<0.50	----
cis-Chlordane	5103-71-9	0.50	µg/kg		<0.50	----	----	<0.50	----
trans-Chlordane	5103-74-2	0.50	µg/kg		<0.50	----	----	<0.50	----
^ Total Chlordane (sum)	----	0.50	µg/kg		<0.50	----	----	<0.50	----
Oxychlordane	27304-13-8	0.50	µg/kg		<0.50	----	----	<0.50	----
^ Sum of Aldrin + Dieldrin	309-00-2/60-57-1	0.50	µg/kg		<0.50	----	----	<0.50	----
EP132B: Polynuclear Aromatic Hydrocarbons									
Naphthalene	91-20-3	5	µg/kg		<5	----	----	<5	----
2-Methylnaphthalene	91-57-6	5	µg/kg		<5	----	----	<5	----
Acenaphthylene	208-96-8	4	µg/kg		<4	----	----	<4	----
Acenaphthene	83-32-9	4	µg/kg		<4	----	----	<4	----
Fluorene	86-73-7	4	µg/kg		<4	----	----	<4	----
Phenanthrene	85-01-8	4	µg/kg		<4	----	----	<4	----
Anthracene	120-12-7	4	µg/kg		<4	----	----	<4	----
Fluoranthene	206-44-0	4	µg/kg		<4	----	----	<4	----
Pyrene	129-00-0	4	µg/kg		<4	----	----	<4	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Sample ID	SH11 0.5-1	SH11 1-1.5	SH11 1.5-2	SH11C 0-0.5	SH11 0-1
				Sampling date / time	09-Feb-2026 00:00	09-Feb-2026 00:00	09-Feb-2026 00:00	09-Feb-2026 00:00	09-Feb-2026 00:00
Compound	CAS Number	LOR	Unit		EB2605255-041	EB2605255-042	EB2605255-043	EB2605255-044	EB2605255-045
					Result	Result	Result	Result	Result
EP132B: Polynuclear Aromatic Hydrocarbons - Continued									
Benz(a)anthracene	56-55-3	4	µg/kg		<4	----	----	<4	----
Chrysene	218-01-9	4	µg/kg		<4	----	----	<4	----
Benzo(b+j)fluoranthene	205-99-2 205-82-3	4	µg/kg		<4	----	----	<4	----
Benzo(k)fluoranthene	207-08-9	4	µg/kg		<4	----	----	<4	----
Benzo(e)pyrene	192-97-2	4	µg/kg		<4	----	----	<4	----
Benzo(a)pyrene	50-32-8	4	µg/kg		<4	----	----	<4	----
Perylene	198-55-0	4	µg/kg		<4	----	----	<4	----
Benzo(g.h.i)perylene	191-24-2	4	µg/kg		<4	----	----	<4	----
Dibenz(a.h)anthracene	53-70-3	4	µg/kg		<4	----	----	<4	----
Indeno(1.2.3.cd)pyrene	193-39-5	4	µg/kg		<4	----	----	<4	----
Coronene	191-07-1	5	µg/kg		<5	----	----	<5	----
^ Sum of PAHs	----	4	µg/kg		<4	----	----	<4	----
^ Benzo(a)pyrene TEQ (zero)	----	4	µg/kg		<4	----	----	<4	----
^ Benzo(a)pyrene TEQ (half LOR)	----	4	µg/kg		**5**	----	----	**5**	----
^ Benzo(a)pyrene TEQ (LOR)	----	4	µg/kg		**10**	----	----	**10**	----
EP080-SD: TPH(V)/BTEX Surrogates									
1.2-Dichloroethane-D4	17060-07-0	0.2	%		**62.3**	----	----	**78.7**	----
Toluene-D8	2037-26-5	0.2	%		**59.8**	----	----	**78.0**	----
4-Bromofluorobenzene	460-00-4	0.2	%		**70.3**	----	----	**92.3**	----
EP090S: Organotin Surrogate									
Tripropyltin	----	0.5	%		**109**	----	----	**99.7**	----
EP131S: OC Pesticide Surrogate									
Dibromo-DDE	21655-73-2	0.50	%		**91.5**	----	----	**66.1**	----
EP132T: Base/Neutral Extractable Surrogates - SD									
2-Fluorobiphenyl	321-60-8	10	%		**79.9**	----	----	**74.0**	----
Anthracene-d10	1719-06-8	10	%		**109**	----	----	**90.7**	----
4-Terphenyl-d14	1718-51-0	10	%		**83.2**	----	----	**80.9**	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Sample ID	SH11 1-2	SH3 0-0.5	SH3 0.5-1	SH3 1-1.5	SH3 1.5-2
			Sampling date / time	09-Feb-2026 00:00	09-Feb-2026 00:00	09-Feb-2026 00:00	09-Feb-2026 00:00	09-Feb-2026 00:00
Compound	CAS Number	LOR	Unit	EB2605255-046	EB2605255-047	EB2605255-048	EB2605255-049	EB2605255-050
				Result	Result	Result	Result	Result
EA033-A: Actual Acidity								
pH KCl (23A)	----	0.1	pH Unit	----	9.1	8.8	8.6	8.6
Titratable Actual Acidity (23F)	----	2	mole H+ / t	----	<2	<2	<2	<2
sulfidic - Titratable Actual Acidity (s-23F)	----	0.02	% pyrite S	----	<0.02	<0.02	<0.02	<0.02
EA033-B: Potential Acidity								
Chromium Reducible Sulfur (22B)	----	0.005	% S	----	0.378	0.799	1.08	1.24
acidity - Chromium Reducible Sulfur (a-22B)	----	10	mole H+ / t	----	236	498	671	773
EA033-C: Acid Neutralising Capacity								
Acid Neutralising Capacity (19A2)	----	0.01	% CaCO3	----	44.9	25.8	14.3	13.6
acidity - Acid Neutralising Capacity (a-19A2)	----	10	mole H+ / t	----	8970	5160	2860	2720
sulfidic - Acid Neutralising Capacity (s-19A2)	----	0.01	% pyrite S	----	14.4	8.27	4.59	4.36
EA033-E: Acid Base Accounting								
ANC Fineness Factor	----	0.5	-	----	1.5	1.5	1.5	1.5
Net Acidity (sulfur units)	----	0.02	% S	----	<0.02	<0.02	<0.02	<0.02
Net Acidity (acidity units)	----	10	mole H+ / t	----	<10	<10	<10	<10
Liming Rate	----	1	kg CaCO3/t	----	<1	<1	<1	<1
Net Acidity excluding ANC (sulfur units)	----	0.02	% S	----	0.38	0.80	1.08	1.24
Net Acidity excluding ANC (acidity units)	----	10	mole H+ / t	----	236	498	671	773
Liming Rate excluding ANC	----	1	kg CaCO3/t	----	18	37	50	58
EA055: Moisture Content (Dried @ 105-110°C)								
Moisture Content	----	1.0	%	----	36.5	45.3	----	----
EA150: Particle Sizing								
+75µm	----	1	%	----	47	14	7	10
+150µm	----	1	%	----	40	12	6	9
+300µm	----	1	%	----	32	9	5	8
+425µm	----	1	%	----	28	8	4	7
+600µm	----	1	%	----	24	6	3	6

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Sample ID	SH11 1-2	SH3 0-0.5	SH3 0.5-1	SH3 1-1.5	SH3 1.5-2
				Sampling date / time	09-Feb-2026 00:00	09-Feb-2026 00:00	09-Feb-2026 00:00	09-Feb-2026 00:00	09-Feb-2026 00:00
Compound	CAS Number	LOR	Unit		EB2605255-046	EB2605255-047	EB2605255-048	EB2605255-049	EB2605255-050
					Result	Result	Result	Result	Result
EA150: Particle Sizing - Continued									
+1180µm	----	1	%		----	14	3	2	2
+2.36mm	----	1	%		----	6	<1	<1	<1
+4.75mm	----	1	%		----	1	<1	<1	<1
+9.5mm	----	1	%		----	<1	<1	<1	<1
+19.0mm	----	1	%		----	<1	<1	<1	<1
+37.5mm	----	1	%		----	<1	<1	<1	<1
+75.0mm	----	1	%		----	<1	<1	<1	<1
EA150: Soil Classification based on Particle Size									
Clay (<2 µm)	----	1	%		----	26	46	56	56
Silt (2-60 µm)	----	1	%		----	24	39	36	33
Sand (0.06-2.00 mm)	----	1	%		----	41	14	7	10
Gravel (>2mm)	----	1	%		----	9	1	1	1
Cobbles (>6cm)	----	1	%		----	<1	<1	<1	<1
EA151: Settleability 10%									
ø Underflow Density	----	0.01	g/cm3		1.26	----	----	----	----
ø Underflow Solids	----	0.1	%		27.8	----	----	----	----
ø Settling Rate @ 50% of Settlement	----	0.001	mm/min		3.20	----	----	----	----
ø Settling Rate @ 90% of Settlement	----	0.001	mm/min		0.100	----	----	----	----
ø Clarity	----	-	-		Transparent	----	----	----	----
EA152: Soil Particle Density									
Soil Particle Density (Clay/Silt/Sand)	----	0.01	g/cm3		----	2.35	2.20	2.46	2.53
EG005(ED093)-SD: Total Metals in Sediments by ICP-AES									
Aluminium	7429-90-5	50	mg/kg		----	5640	9700	----	----
Iron	7439-89-6	50	mg/kg		----	9120	20200	----	----
EG020-SD: Total Metals in Sediments by ICPMS									
Antimony	7440-36-0	0.50	mg/kg		----	<0.50	<0.50	----	----
Arsenic	7440-38-2	1.00	mg/kg		----	7.23	9.46	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Sample ID	SH11 1-2	SH3 0-0.5	SH3 0.5-1	SH3 1-1.5	SH3 1.5-2
				Sampling date / time	09-Feb-2026 00:00	09-Feb-2026 00:00	09-Feb-2026 00:00	09-Feb-2026 00:00	09-Feb-2026 00:00
Compound	CAS Number	LOR	Unit		EB2605255-046	EB2605255-047	EB2605255-048	EB2605255-049	EB2605255-050
					Result	Result	Result	Result	Result
EG020-SD: Total Metals in Sediments by ICPMS - Continued									
Cadmium	7440-43-9	0.1	mg/kg		----	<0.1	<0.1	----	----
Chromium	7440-47-3	1.0	mg/kg		----	**13.6**	**20.1**	----	----
Copper	7440-50-8	1.0	mg/kg		----	**4.1**	**6.8**	----	----
Cobalt	7440-48-4	0.5	mg/kg		----	**3.5**	**6.7**	----	----
Lead	7439-92-1	1.0	mg/kg		----	**5.2**	**8.7**	----	----
Manganese	7439-96-5	10	mg/kg		----	**165**	**235**	----	----
Nickel	7440-02-0	1.0	mg/kg		----	**6.6**	**10.6**	----	----
Selenium	7782-49-2	0.1	mg/kg		----	**0.6**	**0.8**	----	----
Silver	7440-22-4	0.1	mg/kg		----	<0.1	<0.1	----	----
Vanadium	7440-62-2	2.0	mg/kg		----	**17.5**	**26.4**	----	----
Zinc	7440-66-6	1.0	mg/kg		----	**15.0**	**23.6**	----	----
EG035T: Total Recoverable Mercury by FIMS									
Mercury	7439-97-6	0.01	mg/kg		----	<0.01	<0.01	----	----
EP003: Total Organic Carbon (TOC) in Soil									
Total Organic Carbon	----	0.02	%		----	**0.44**	**0.73**	----	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions									
>C10 - C16 Fraction	----	3	mg/kg		----	<3	<3	----	----
>C16 - C34 Fraction	----	3	mg/kg		----	<3	<3	----	----
>C34 - C40 Fraction	----	5	mg/kg		----	<5	<5	----	----
>C10 - C40 Fraction (sum)	----	3	mg/kg		----	<3	<3	----	----
>C10 - C16 Fraction minus Naphthalene (F2)	----	3	mg/kg		----	<3	<3	----	----
EP080-SD / EP071-SD: Total Petroleum Hydrocarbons									
C6 - C9 Fraction	----	3	mg/kg		----	<3	<3	----	----
C10 - C14 Fraction	----	3	mg/kg		----	<3	<3	----	----
C15 - C28 Fraction	----	3	mg/kg		----	<3	<3	----	----
C29 - C36 Fraction	----	5	mg/kg		----	<5	<5	----	----
^ C10 - C36 Fraction (sum)	----	3	mg/kg		----	<3	<3	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Sample ID	SH11 1-2	SH3 0-0.5	SH3 0.5-1	SH3 1-1.5	SH3 1.5-2
				Sampling date / time	09-Feb-2026 00:00	09-Feb-2026 00:00	09-Feb-2026 00:00	09-Feb-2026 00:00	09-Feb-2026 00:00
Compound	CAS Number	LOR	Unit		EB2605255-046	EB2605255-047	EB2605255-048	EB2605255-049	EB2605255-050
					Result	Result	Result	Result	Result
EP080-SD / EP071-SD: Total Petroleum Hydrocarbons - Continued									
EP080-SD / EP071-SD: Total Recoverable Hydrocarbons									
C6 - C10 Fraction	C6_C10	3	mg/kg		----	<3	<3	----	----
C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	3.0	mg/kg		----	<3.0	<3.0	----	----
EP080-SD: BTEXN									
Benzene	71-43-2	0.2	mg/kg		----	<0.2	<0.2	----	----
Toluene	108-88-3	0.2	mg/kg		----	<0.2	<0.2	----	----
Ethylbenzene	100-41-4	0.2	mg/kg		----	<0.2	<0.2	----	----
meta- & para-Xylene	108-38-3 106-42-3	0.2	mg/kg		----	<0.2	<0.2	----	----
ortho-Xylene	95-47-6	0.2	mg/kg		----	<0.2	<0.2	----	----
^ **Total Xylenes**	----	0.5	mg/kg		----	<0.5	<0.5	----	----
^ **Sum of BTEX**	----	0.2	mg/kg		----	<0.2	<0.2	----	----
Naphthalene	91-20-3	0.2	mg/kg		----	<0.2	<0.2	----	----
EP090: Organotin Compounds									
Monobutyltin	78763-54-9	1	µgSn/kg		----	<1	<1	----	----
Dibutyltin	1002-53-5	1	µgSn/kg		----	<1	<1	----	----
Tributyltin	56573-85-4	0.5	µgSn/kg		----	<0.5	<0.5	----	----
EP131A: Organochlorine Pesticides									
Aldrin	309-00-2	0.50	µg/kg		----	<0.50	<0.50	----	----
alpha-BHC	319-84-6	0.50	µg/kg		----	<0.50	<0.50	----	----
beta-BHC	319-85-7	0.50	µg/kg		----	<0.50	<0.50	----	----
delta-BHC	319-86-8	0.50	µg/kg		----	<0.50	<0.50	----	----
4.4`-DDD	72-54-8	0.50	µg/kg		----	<0.50	<0.50	----	----
4.4`-DDE	72-55-9	0.50	µg/kg		----	<0.50	<0.50	----	----
4.4`-DDT	50-29-3	0.50	µg/kg		----	<0.50	<0.50	----	----
^ **Sum of DDD + DDE + DDT**	72-54-8/72-55-9/50-2	0.50	µg/kg		----	<0.50	<0.50	----	----
Dieldrin	60-57-1	0.50	µg/kg		----	<0.50	<0.50	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Sample ID	SH11 1-2	SH3 0-0.5	SH3 0.5-1	SH3 1-1.5	SH3 1.5-2
			Sampling date / time	09-Feb-2026 00:00	09-Feb-2026 00:00	09-Feb-2026 00:00	09-Feb-2026 00:00	09-Feb-2026 00:00
Compound	CAS Number	LOR	Unit	EB2605255-046	EB2605255-047	EB2605255-048	EB2605255-049	EB2605255-050
				Result	Result	Result	Result	Result
EP131A: Organochlorine Pesticides - Continued								
alpha-Endosulfan	959-98-8	0.50	µg/kg	----	<0.50	<0.50	----	----
beta-Endosulfan	33213-65-9	0.50	µg/kg	----	<0.50	<0.50	----	----
Endosulfan sulfate	1031-07-8	0.50	µg/kg	----	<0.50	<0.50	----	----
^ **Endosulfan (sum)**	115-29-7	0.50	µg/kg	----	<0.50	<0.50	----	----
Endrin	72-20-8	0.50	µg/kg	----	<0.50	<0.50	----	----
Endrin aldehyde	7421-93-4	0.50	µg/kg	----	<0.50	<0.50	----	----
Endrin ketone	53494-70-5	0.50	µg/kg	----	<0.50	<0.50	----	----
Heptachlor	76-44-8	0.50	µg/kg	----	<0.50	<0.50	----	----
Heptachlor epoxide	1024-57-3	0.50	µg/kg	----	<0.50	<0.50	----	----
Hexachlorobenzene (HCB)	118-74-1	0.50	µg/kg	----	<0.50	<0.50	----	----
gamma-BHC - (Lindane)	58-89-9	0.25	µg/kg	----	<0.25	<0.25	----	----
Methoxychlor	72-43-5	0.50	µg/kg	----	<0.50	<0.50	----	----
cis-Chlordane	5103-71-9	0.50	µg/kg	----	<0.50	<0.50	----	----
trans-Chlordane	5103-74-2	0.50	µg/kg	----	<0.50	<0.50	----	----
^ **Total Chlordane (sum)**	----	0.50	µg/kg	----	<0.50	<0.50	----	----
Oxychlordane	27304-13-8	0.50	µg/kg	----	<0.50	<0.50	----	----
^ **Sum of Aldrin + Dieldrin**	309-00-2/60-57-1	0.50	µg/kg	----	<0.50	<0.50	----	----
EP131B: Polychlorinated Biphenyls (as Aroclors)								
^ **Total Polychlorinated biphenyls**	----	5.0	µg/kg	----	<5.0	<5.0	----	----
Aroclor 1016	12674-11-2	5.0	µg/kg	----	<5.0	<5.0	----	----
Aroclor 1221	11104-28-2	5.0	µg/kg	----	<5.0	<5.0	----	----
Aroclor 1232	11141-16-5	5.0	µg/kg	----	<5.0	<5.0	----	----
Aroclor 1242	53469-21-9	5.0	µg/kg	----	<5.0	<5.0	----	----
Aroclor 1248	12672-29-6	5.0	µg/kg	----	<5.0	<5.0	----	----
Aroclor 1254	11097-69-1	5.0	µg/kg	----	<5.0	<5.0	----	----
Aroclor 1260	11096-82-5	5.0	µg/kg	----	<5.0	<5.0	----	----
EP132B: Polynuclear Aromatic Hydrocarbons								

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Sample ID	SH11 1-2	SH3 0-0.5	SH3 0.5-1	SH3 1-1.5	SH3 1.5-2
				Sampling date / time	09-Feb-2026 00:00	09-Feb-2026 00:00	09-Feb-2026 00:00	09-Feb-2026 00:00	09-Feb-2026 00:00
Compound	CAS Number	LOR	Unit		EB2605255-046	EB2605255-047	EB2605255-048	EB2605255-049	EB2605255-050
					Result	Result	Result	Result	Result
EP132B: Polynuclear Aromatic Hydrocarbons - Continued									
Naphthalene	91-20-3	5	µg/kg		----	<5	<5	----	----
2-Methylnaphthalene	91-57-6	5	µg/kg		----	<5	<5	----	----
Acenaphthylene	208-96-8	4	µg/kg		----	<4	<4	----	----
Acenaphthene	83-32-9	4	µg/kg		----	<4	<4	----	----
Fluorene	86-73-7	4	µg/kg		----	<4	<4	----	----
Phenanthrene	85-01-8	4	µg/kg		----	<4	<4	----	----
Anthracene	120-12-7	4	µg/kg		----	<4	<4	----	----
Fluoranthene	206-44-0	4	µg/kg		----	<4	<4	----	----
Pyrene	129-00-0	4	µg/kg		----	<4	<4	----	----
Benz(a)anthracene	56-55-3	4	µg/kg		----	<4	<4	----	----
Chrysene	218-01-9	4	µg/kg		----	<4	<4	----	----
Benzo(b+j)fluoranthene	205-99-2 205-82-3	4	µg/kg		----	<4	<4	----	----
Benzo(k)fluoranthene	207-08-9	4	µg/kg		----	<4	<4	----	----
Benzo(e)pyrene	192-97-2	4	µg/kg		----	<4	<4	----	----
Benzo(a)pyrene	50-32-8	4	µg/kg		----	<4	<4	----	----
Perylene	198-55-0	4	µg/kg		----	<4	<4	----	----
Benzo(g.h.i)perylene	191-24-2	4	µg/kg		----	<4	<4	----	----
Dibenz(a.h)anthracene	53-70-3	4	µg/kg		----	<4	<4	----	----
Indeno(1.2.3.cd)pyrene	193-39-5	4	µg/kg		----	<4	<4	----	----
Coronene	191-07-1	5	µg/kg		----	<5	<5	----	----
^ Sum of PAHs	----	4	µg/kg		----	<4	<4	----	----
^ Benzo(a)pyrene TEQ (zero)	----	4	µg/kg		----	<4	<4	----	----
^ Benzo(a)pyrene TEQ (half LOR)	----	4	µg/kg		----	5	5	----	----
^ Benzo(a)pyrene TEQ (LOR)	----	4	µg/kg		----	10	10	----	----
EP080-SD: TPH(V)/BTEX Surrogates									
1.2-Dichloroethane-D4	17060-07-0	0.2	%		----	74.9	74.2	----	----
Toluene-D8	2037-26-5	0.2	%		----	71.6	72.5	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Sample ID	SH11 1-2	SH3 0-0.5	SH3 0.5-1	SH3 1-1.5	SH3 1.5-2
				Sampling date / time	09-Feb-2026 00:00	09-Feb-2026 00:00	09-Feb-2026 00:00	09-Feb-2026 00:00	09-Feb-2026 00:00
Compound	CAS Number	LOR	Unit		EB2605255-046	EB2605255-047	EB2605255-048	EB2605255-049	EB2605255-050
					Result	Result	Result	Result	Result
EP080-SD: TPH(V)/BTEX Surrogates - Continued									
4-Bromofluorobenzene	460-00-4	0.2	%		----	84.6	80.0	----	----
EP090S: Organotin Surrogate									
Tripropyltin	----	0.5	%		----	96.5	126	----	----
EP131S: OC Pesticide Surrogate									
Dibromo-DDE	21655-73-2	0.50	%		----	71.5	77.6	----	----
EP131T: PCB Surrogate									
Decachlorobiphenyl	2051-24-3	0.5	%		----	53.8	58.9	----	----
EP132T: Base/Neutral Extractable Surrogates - SD									
2-Fluorobiphenyl	321-60-8	10	%		----	73.1	73.0	----	----
Anthracene-d10	1719-06-8	10	%		----	126	109	----	----
4-Terphenyl-d14	1718-51-0	10	%		----	97.7	81.7	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Sample ID	SH3 0-1	SH3 1-2	SH16 0-0.5	SH16 0.5-1	SH16 1-1.5
			Sampling date / time	10-Feb-2026 00:00	10-Feb-2026 00:00	09-Feb-2026 00:00	09-Feb-2026 00:00	09-Feb-2026 00:00
Compound	CAS Number	LOR	Unit	EB2605255-051	EB2605255-052	EB2605255-053	EB2605255-054	EB2605255-055
				Result	Result	Result	Result	Result
EA033-A: Actual Acidity								
pH KCl (23A)	----	0.1	pH Unit	----	----	**9.2**	**9.0**	**8.6**
Titratable Actual Acidity (23F)	----	2	mole H+ / t	----	----	<2	<2	<2
sulfidic - Titratable Actual Acidity (s-23F)	----	0.02	% pyrite S	----	----	<0.02	<0.02	<0.02
EA033-B: Potential Acidity								
Chromium Reducible Sulfur (22B)	----	0.005	% S	----	----	**0.288**	**0.671**	**0.935**
acidity - Chromium Reducible Sulfur (a-22B)	----	10	mole H+ / t	----	----	**180**	**418**	**583**
EA033-C: Acid Neutralising Capacity								
Acid Neutralising Capacity (19A2)	----	0.01	% CaCO3	----	----	**45.6**	**34.8**	**15.1**
acidity - Acid Neutralising Capacity (a-19A2)	----	10	mole H+ / t	----	----	**9110**	**6960**	**3020**
sulfidic - Acid Neutralising Capacity (s-19A2)	----	0.01	% pyrite S	----	----	**14.6**	**11.2**	**4.84**
EA033-E: Acid Base Accounting								
ANC Fineness Factor	----	0.5	-	----	----	**1.5**	**1.5**	**1.5**
Net Acidity (sulfur units)	----	0.02	% S	----	----	<0.02	<0.02	<0.02
Net Acidity (acidity units)	----	10	mole H+ / t	----	----	<10	<10	<10
Liming Rate	----	1	kg CaCO3/t	----	----	<1	<1	<1
Net Acidity excluding ANC (sulfur units)	----	0.02	% S	----	----	**0.29**	**0.67**	**0.93**
Net Acidity excluding ANC (acidity units)	----	10	mole H+ / t	----	----	**180**	**418**	**583**
Liming Rate excluding ANC	----	1	kg CaCO3/t	----	----	**13**	**31**	**44**
EA055: Moisture Content (Dried @ 105-110°C)								
Moisture Content	----	1.0	%	----	----	**39.7**	**40.1**	----
EA150: Particle Sizing								
+75µm	----	1	%	----	----	**50**	**20**	**5**
+150µm	----	1	%	----	----	**43**	**18**	**5**
+300µm	----	1	%	----	----	**34**	**15**	**5**
+425µm	----	1	%	----	----	**29**	**13**	**4**
+600µm	----	1	%	----	----	**26**	**12**	**4**

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Sample ID	SH3 0-1	SH3 1-2	SH16 0-0.5	SH16 0.5-1	SH16 1-1.5
			Sampling date / time	10-Feb-2026 00:00	10-Feb-2026 00:00	09-Feb-2026 00:00	09-Feb-2026 00:00	09-Feb-2026 00:00
Compound	CAS Number	LOR	Unit	EB2605255-051	EB2605255-052	EB2605255-053	EB2605255-054	EB2605255-055
				Result	Result	Result	Result	Result
EA150: Particle Sizing - Continued								
+1180µm	----	1	%	----	----	16	7	3
+2.36mm	----	1	%	----	----	7	3	2
+4.75mm	----	1	%	----	----	1	<1	1
+9.5mm	----	1	%	----	----	<1	<1	<1
+19.0mm	----	1	%	----	----	<1	<1	<1
+37.5mm	----	1	%	----	----	<1	<1	<1
+75.0mm	----	1	%	----	----	<1	<1	<1
EA150: Soil Classification based on Particle Size								
Clay (<2 µm)	----	1	%	----	----	23	42	57
Silt (2-60 µm)	----	1	%	----	----	23	37	37
Sand (0.06-2.00 mm)	----	1	%	----	----	45	17	3
Gravel (>2mm)	----	1	%	----	----	9	4	3
Cobbles (>6cm)	----	1	%	----	----	<1	<1	<1
EA151: Settleability 10%								
ø Underflow Density	----	0.01	g/cm3	1.22	1.18	----	----	----
ø Underflow Solids	----	0.1	%	26.1	22.4	----	----	----
ø Settling Rate @ 50% of Settlement	----	0.001	mm/min	3.20	3.00	----	----	----
ø Settling Rate @ 90% of Settlement	----	0.001	mm/min	0.100	0.100	----	----	----
ø Clarity	----	-	-	Transparent	Transparent	----	----	----
EA152: Soil Particle Density								
Soil Particle Density (Clay/Silt/Sand)	----	0.01	g/cm3	----	----	2.33	2.27	2.07
EG005(ED093)-SD: Total Metals in Sediments by ICP-AES								
Aluminium	7429-90-5	50	mg/kg	----	----	6650	7610	----
Iron	7439-89-6	50	mg/kg	----	----	9920	14200	----
EG020-SD: Total Metals in Sediments by ICPMS								
Antimony	7440-36-0	0.50	mg/kg	----	----	<0.50	<0.50	----
Arsenic	7440-38-2	1.00	mg/kg	----	----	6.84	8.29	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Sample ID	SH3 0-1	SH3 1-2	SH16 0-0.5	SH16 0.5-1	SH16 1-1.5
				Sampling date / time	10-Feb-2026 00:00	10-Feb-2026 00:00	09-Feb-2026 00:00	09-Feb-2026 00:00	09-Feb-2026 00:00
Compound	CAS Number	LOR	Unit		EB2605255-051	EB2605255-052	EB2605255-053	EB2605255-054	EB2605255-055
					Result	Result	Result	Result	Result
EG020-SD: Total Metals in Sediments by ICPMS - Continued									
Cadmium	7440-43-9	0.1	mg/kg		----	----	<0.1	<0.1	----
Chromium	7440-47-3	1.0	mg/kg		----	----	**14.7**	**16.6**	----
Copper	7440-50-8	1.0	mg/kg		----	----	**4.1**	**5.1**	----
Cobalt	7440-48-4	0.5	mg/kg		----	----	**3.6**	**4.8**	----
Lead	7439-92-1	1.0	mg/kg		----	----	**5.4**	**6.7**	----
Manganese	7439-96-5	10	mg/kg		----	----	**167**	**188**	----
Nickel	7440-02-0	1.0	mg/kg		----	----	**7.3**	**8.3**	----
Selenium	7782-49-2	0.1	mg/kg		----	----	**0.6**	**0.7**	----
Silver	7440-22-4	0.1	mg/kg		----	----	<0.1	<0.1	----
Vanadium	7440-62-2	2.0	mg/kg		----	----	**18.1**	**22.4**	----
Zinc	7440-66-6	1.0	mg/kg		----	----	**15.2**	**17.7**	----
EG035T: Total Recoverable Mercury by FIMS									
Mercury	7439-97-6	0.01	mg/kg		----	----	<0.01	<0.01	----
EP003: Total Organic Carbon (TOC) in Soil									
Total Organic Carbon	----	0.02	%		----	----	**0.45**	**0.57**	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions									
>C10 - C16 Fraction	----	3	mg/kg		----	----	<3	<3	----
>C16 - C34 Fraction	----	3	mg/kg		----	----	<3	<3	----
>C34 - C40 Fraction	----	5	mg/kg		----	----	<5	<5	----
>C10 - C40 Fraction (sum)	----	3	mg/kg		----	----	<3	<3	----
>C10 - C16 Fraction minus Naphthalene (F2)	----	3	mg/kg		----	----	<3	<3	----
EP080-SD / EP071-SD: Total Petroleum Hydrocarbons									
C6 - C9 Fraction	----	3	mg/kg		----	----	<3	<3	----
C10 - C14 Fraction	----	3	mg/kg		----	----	<3	<3	----
C15 - C28 Fraction	----	3	mg/kg		----	----	<3	<3	----
C29 - C36 Fraction	----	5	mg/kg		----	----	<5	<5	----
^ C10 - C36 Fraction (sum)	----	3	mg/kg		----	----	<3	<3	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Sample ID	SH3 0-1	SH3 1-2	SH16 0-0.5	SH16 0.5-1	SH16 1-1.5
				Sampling date / time	10-Feb-2026 00:00	10-Feb-2026 00:00	09-Feb-2026 00:00	09-Feb-2026 00:00	09-Feb-2026 00:00
Compound	CAS Number	LOR	Unit		EB2605255-051	EB2605255-052	EB2605255-053	EB2605255-054	EB2605255-055
					Result	Result	Result	Result	Result
EP080-SD / EP071-SD: Total Petroleum Hydrocarbons - Continued									
EP080-SD / EP071-SD: Total Recoverable Hydrocarbons									
C6 - C10 Fraction	C6_C10	3	mg/kg		----	----	<3	<3	----
C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	3.0	mg/kg		----	----	<3.0	<3.0	----
EP080-SD: BTEXN									
Benzene	71-43-2	0.2	mg/kg		----	----	<0.2	<0.2	----
Toluene	108-88-3	0.2	mg/kg		----	----	<0.2	<0.2	----
Ethylbenzene	100-41-4	0.2	mg/kg		----	----	<0.2	<0.2	----
meta- & para-Xylene	108-38-3 106-42-3	0.2	mg/kg		----	----	<0.2	<0.2	----
ortho-Xylene	95-47-6	0.2	mg/kg		----	----	<0.2	<0.2	----
^ **Total Xylenes**	----	0.5	mg/kg		----	----	<0.5	<0.5	----
^ **Sum of BTEX**	----	0.2	mg/kg		----	----	<0.2	<0.2	----
Naphthalene	91-20-3	0.2	mg/kg		----	----	<0.2	<0.2	----
EP090: Organotin Compounds									
Monobutyltin	78763-54-9	1	µgSn/kg		----	----	<1	<1	----
Dibutyltin	1002-53-5	1	µgSn/kg		----	----	<1	<1	----
Tributyltin	56573-85-4	0.5	µgSn/kg		----	----	<0.5	<0.5	----
EP131A: Organochlorine Pesticides									
Aldrin	309-00-2	0.50	µg/kg		----	----	<0.50	<0.50	----
alpha-BHC	319-84-6	0.50	µg/kg		----	----	<0.50	<0.50	----
beta-BHC	319-85-7	0.50	µg/kg		----	----	<0.50	<0.50	----
delta-BHC	319-86-8	0.50	µg/kg		----	----	<0.50	<0.50	----
4.4`-DDD	72-54-8	0.50	µg/kg		----	----	<0.50	<0.50	----
4.4`-DDE	72-55-9	0.50	µg/kg		----	----	<0.50	<0.50	----
4.4`-DDT	50-29-3	0.50	µg/kg		----	----	<0.50	<0.50	----
^ **Sum of DDD + DDE + DDT**	72-54-8/72-55-9/50-2	0.50	µg/kg		----	----	<0.50	<0.50	----
Dieldrin	60-57-1	0.50	µg/kg		----	----	<0.50	<0.50	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Sample ID	SH3 0-1	SH3 1-2	SH16 0-0.5	SH16 0.5-1	SH16 1-1.5
				Sampling date / time	10-Feb-2026 00:00	10-Feb-2026 00:00	09-Feb-2026 00:00	09-Feb-2026 00:00	09-Feb-2026 00:00
Compound	CAS Number	LOR	Unit		EB2605255-051	EB2605255-052	EB2605255-053	EB2605255-054	EB2605255-055
					Result	Result	Result	Result	Result
EP131A: Organochlorine Pesticides - Continued									
alpha-Endosulfan	959-98-8	0.50	µg/kg		----	----	<0.50	<0.50	----
beta-Endosulfan	33213-65-9	0.50	µg/kg		----	----	<0.50	<0.50	----
Endosulfan sulfate	1031-07-8	0.50	µg/kg		----	----	<0.50	<0.50	----
^ Endosulfan (sum)	115-29-7	0.50	µg/kg		----	----	<0.50	<0.50	----
Endrin	72-20-8	0.50	µg/kg		----	----	<0.50	<0.50	----
Endrin aldehyde	7421-93-4	0.50	µg/kg		----	----	<0.50	<0.50	----
Endrin ketone	53494-70-5	0.50	µg/kg		----	----	<0.50	<0.50	----
Heptachlor	76-44-8	0.50	µg/kg		----	----	<0.50	<0.50	----
Heptachlor epoxide	1024-57-3	0.50	µg/kg		----	----	<0.50	<0.50	----
Hexachlorobenzene (HCB)	118-74-1	0.50	µg/kg		----	----	<0.50	<0.50	----
gamma-BHC - (Lindane)	58-89-9	0.25	µg/kg		----	----	<0.25	<0.25	----
Methoxychlor	72-43-5	0.50	µg/kg		----	----	<0.50	<0.50	----
cis-Chlordane	5103-71-9	0.50	µg/kg		----	----	<0.50	<0.50	----
trans-Chlordane	5103-74-2	0.50	µg/kg		----	----	<0.50	<0.50	----
^ Total Chlordane (sum)	----	0.50	µg/kg		----	----	<0.50	<0.50	----
Oxychlordane	27304-13-8	0.50	µg/kg		----	----	<0.50	<0.50	----
^ Sum of Aldrin + Dieldrin	309-00-2/60-57-1	0.50	µg/kg		----	----	<0.50	<0.50	----
EP132B: Polynuclear Aromatic Hydrocarbons									
Naphthalene	91-20-3	5	µg/kg		----	----	<5	<5	----
2-Methylnaphthalene	91-57-6	5	µg/kg		----	----	<5	<5	----
Acenaphthylene	208-96-8	4	µg/kg		----	----	<4	<4	----
Acenaphthene	83-32-9	4	µg/kg		----	----	<4	<4	----
Fluorene	86-73-7	4	µg/kg		----	----	<4	<4	----
Phenanthrene	85-01-8	4	µg/kg		----	----	<4	<4	----
Anthracene	120-12-7	4	µg/kg		----	----	<4	<4	----
Fluoranthene	206-44-0	4	µg/kg		----	----	<4	<4	----
Pyrene	129-00-0	4	µg/kg		----	----	<4	<4	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Sample ID	SH3 0-1	SH3 1-2	SH16 0-0.5	SH16 0.5-1	SH16 1-1.5
				Sampling date / time	10-Feb-2026 00:00	10-Feb-2026 00:00	09-Feb-2026 00:00	09-Feb-2026 00:00	09-Feb-2026 00:00
Compound	CAS Number	LOR	Unit		EB2605255-051	EB2605255-052	EB2605255-053	EB2605255-054	EB2605255-055
					Result	Result	Result	Result	Result
EP132B: Polynuclear Aromatic Hydrocarbons - Continued									
Benz(a)anthracene	56-55-3	4	µg/kg		----	----	<4	<4	----
Chrysene	218-01-9	4	µg/kg		----	----	<4	<4	----
Benzo(b+j)fluoranthene	205-99-2 205-82-3	4	µg/kg		----	----	<4	<4	----
Benzo(k)fluoranthene	207-08-9	4	µg/kg		----	----	<4	<4	----
Benzo(e)pyrene	192-97-2	4	µg/kg		----	----	<4	<4	----
Benzo(a)pyrene	50-32-8	4	µg/kg		----	----	<4	<4	----
Perylene	198-55-0	4	µg/kg		----	----	<4	<4	----
Benzo(g.h.i)perylene	191-24-2	4	µg/kg		----	----	<4	<4	----
Dibenz(a.h)anthracene	53-70-3	4	µg/kg		----	----	<4	<4	----
Indeno(1.2.3.cd)pyrene	193-39-5	4	µg/kg		----	----	<4	<4	----
Coronene	191-07-1	5	µg/kg		----	----	<5	<5	----
^ Sum of PAHs	----	4	µg/kg		----	----	<4	<4	----
^ Benzo(a)pyrene TEQ (zero)	----	4	µg/kg		----	----	<4	<4	----
^ Benzo(a)pyrene TEQ (half LOR)	----	4	µg/kg		----	----	5	5	----
^ Benzo(a)pyrene TEQ (LOR)	----	4	µg/kg		----	----	10	10	----
EP080-SD: TPH(V)/BTEX Surrogates									
1.2-Dichloroethane-D4	17060-07-0	0.2	%		----	----	73.6	63.8	----
Toluene-D8	2037-26-5	0.2	%		----	----	72.6	62.5	----
4-Bromofluorobenzene	460-00-4	0.2	%		----	----	83.0	68.8	----
EP090S: Organotin Surrogate									
Tripropyltin	----	0.5	%		----	----	91.1	103	----
EP131S: OC Pesticide Surrogate									
Dibromo-DDE	21655-73-2	0.50	%		----	----	86.7	102	----
EP132T: Base/Neutral Extractable Surrogates - SD									
2-Fluorobiphenyl	321-60-8	10	%		----	----	74.0	80.2	----
Anthracene-d10	1719-06-8	10	%		----	----	136	135	----
4-Terphenyl-d14	1718-51-0	10	%		----	----	115	120	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Sample ID	SH16 1.5-2	SH9 0-0.5	SH9 0.5-1	SH9 1-1.5	SH9 1.5-2
			Sampling date / time	09-Feb-2026 00:00	09-Feb-2026 00:00	09-Feb-2026 00:00	09-Feb-2026 00:00	09-Feb-2026 00:00
Compound	CAS Number	LOR	Unit	EB2605255-056	EB2605255-057	EB2605255-058	EB2605255-059	EB2605255-060
				Result	Result	Result	Result	Result
EA033-A: Actual Acidity								
pH KCl (23A)	----	0.1	pH Unit	**8.6**	**9.0**	**8.7**	**8.6**	**8.5**
Titratable Actual Acidity (23F)	----	2	mole H+ / t	<2	<2	<2	<2	<2
sulfidic - Titratable Actual Acidity (s-23F)	----	0.02	% pyrite S	<0.02	<0.02	<0.02	<0.02	<0.02
EA033-B: Potential Acidity								
Chromium Reducible Sulfur (22B)	----	0.005	% S	**0.920**	**0.233**	**0.544**	**0.482**	**1.15**
acidity - Chromium Reducible Sulfur (a-22B)	----	10	mole H+ / t	**574**	**145**	**339**	**301**	**715**
EA033-C: Acid Neutralising Capacity								
Acid Neutralising Capacity (19A2)	----	0.01	% CaCO3	**13.6**	**51.6**	**21.9**	**13.1**	**12.8**
acidity - Acid Neutralising Capacity (a-19A2)	----	10	mole H+ / t	**2710**	**10300**	**4370**	**2610**	**2560**
sulfidic - Acid Neutralising Capacity (s-19A2)	----	0.01	% pyrite S	**4.34**	**16.5**	**7.00**	**4.18**	**4.10**
EA033-E: Acid Base Accounting								
ANC Fineness Factor	----	0.5	-	**1.5**	**1.5**	**1.5**	**1.5**	**1.5**
Net Acidity (sulfur units)	----	0.02	% S	<0.02	<0.02	<0.02	<0.02	<0.02
Net Acidity (acidity units)	----	10	mole H+ / t	<10	<10	<10	<10	<10
Liming Rate	----	1	kg CaCO3/t	<1	<1	<1	<1	<1
Net Acidity excluding ANC (sulfur units)	----	0.02	% S	**0.92**	**0.23**	**0.54**	**0.48**	**1.15**
Net Acidity excluding ANC (acidity units)	----	10	mole H+ / t	**574**	**145**	**339**	**301**	**715**
Liming Rate excluding ANC	----	1	kg CaCO3/t	**43**	**11**	**25**	**23**	**54**
EA055: Moisture Content (Dried @ 105-110°C)								
Moisture Content	----	1.0	%	**----**	**36.4**	**45.7**	**----**	**----**
EA150: Particle Sizing								
+75µm	----	1	%	**5**	**42**	**11**	**10**	**7**
+150µm	----	1	%	**4**	**35**	**10**	**9**	**6**
+300µm	----	1	%	**4**	**27**	**8**	**7**	**5**
+425µm	----	1	%	**3**	**23**	**6**	**6**	**4**
+600µm	----	1	%	**2**	**19**	**5**	**5**	**3**

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Sample ID	SH16 1.5-2	SH9 0-0.5	SH9 0.5-1	SH9 1-1.5	SH9 1.5-2
			Sampling date / time	09-Feb-2026 00:00	09-Feb-2026 00:00	09-Feb-2026 00:00	09-Feb-2026 00:00	09-Feb-2026 00:00
Compound	CAS Number	LOR	Unit	EB2605255-056	EB2605255-057	EB2605255-058	EB2605255-059	EB2605255-060
				Result	Result	Result	Result	Result
EA150: Particle Sizing - Continued								
+1180µm	----	1	%	1	10	2	3	2
+2.36mm	----	1	%	<1	4	<1	<1	<1
+4.75mm	----	1	%	<1	1	<1	<1	<1
+9.5mm	----	1	%	<1	<1	<1	<1	<1
+19.0mm	----	1	%	<1	<1	<1	<1	<1
+37.5mm	----	1	%	<1	<1	<1	<1	<1
+75.0mm	----	1	%	<1	<1	<1	<1	<1
EA150: Soil Classification based on Particle Size								
Clay (<2 µm)	----	1	%	59	26	50	54	56
Silt (2-60 µm)	----	1	%	35	29	38	35	36
Sand (0.06-2.00 mm)	----	1	%	5	39	11	10	7
Gravel (>2mm)	----	1	%	1	6	1	1	1
Cobbles (>6cm)	----	1	%	<1	<1	<1	<1	<1
EA152: Soil Particle Density								
Soil Particle Density (Clay/Silt/Sand)	----	0.01	g/cm3	2.51	2.37	2.46	2.61	2.25
EG005(ED093)-SD: Total Metals in Sediments by ICP-AES								
Aluminium	7429-90-5	50	mg/kg	----	4340	9500	----	----
Iron	7439-89-6	50	mg/kg	----	6700	19000	----	----
EG020-SD: Total Metals in Sediments by ICPMS								
Antimony	7440-36-0	0.50	mg/kg	----	<0.50	<0.50	----	----
Arsenic	7440-38-2	1.00	mg/kg	----	4.96	9.38	----	----
Cadmium	7440-43-9	0.1	mg/kg	----	<0.1	<0.1	----	----
Chromium	7440-47-3	1.0	mg/kg	----	9.7	19.6	----	----
Copper	7440-50-8	1.0	mg/kg	----	2.7	6.5	----	----
Cobalt	7440-48-4	0.5	mg/kg	----	2.2	6.1	----	----
Lead	7439-92-1	1.0	mg/kg	----	4.6	8.6	----	----
Manganese	7439-96-5	10	mg/kg	----	151	225	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Sample ID	SH16 1.5-2	SH9 0-0.5	SH9 0.5-1	SH9 1-1.5	SH9 1.5-2
			Sampling date / time	09-Feb-2026 00:00	09-Feb-2026 00:00	09-Feb-2026 00:00	09-Feb-2026 00:00	09-Feb-2026 00:00
Compound	CAS Number	LOR	Unit	EB2605255-056	EB2605255-057	EB2605255-058	EB2605255-059	EB2605255-060
				Result	Result	Result	Result	Result
EG020-SD: Total Metals in Sediments by ICPMS - Continued								
Nickel	7440-02-0	1.0	mg/kg	----	**4.3**	**10.0**	----	----
Selenium	7782-49-2	0.1	mg/kg	----	**0.5**	**0.7**	----	----
Silver	7440-22-4	0.1	mg/kg	----	<0.1	<0.1	----	----
Vanadium	7440-62-2	2.0	mg/kg	----	**12.2**	**27.2**	----	----
Zinc	7440-66-6	1.0	mg/kg	----	**10.7**	**21.7**	----	----
EG035T: Total Recoverable Mercury by FIMS								
Mercury	7439-97-6	0.01	mg/kg	----	<0.01	<0.01	----	----
EP003: Total Organic Carbon (TOC) in Soil								
Total Organic Carbon	----	0.02	%	----	**0.44**	**0.82**	----	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions								
>C10 - C16 Fraction	----	3	mg/kg	----	<3	<3	----	----
>C16 - C34 Fraction	----	3	mg/kg	----	<3	<3	----	----
>C34 - C40 Fraction	----	5	mg/kg	----	<5	<5	----	----
>C10 - C40 Fraction (sum)	----	3	mg/kg	----	<3	<3	----	----
>C10 - C16 Fraction minus Naphthalene (F2)	----	3	mg/kg	----	<3	<3	----	----
EP080-SD / EP071-SD: Total Petroleum Hydrocarbons								
C6 - C9 Fraction	----	3	mg/kg	----	<3	<3	----	----
C10 - C14 Fraction	----	3	mg/kg	----	<3	<3	----	----
C15 - C28 Fraction	----	3	mg/kg	----	<3	<3	----	----
C29 - C36 Fraction	----	5	mg/kg	----	<5	<5	----	----
^ **C10 - C36 Fraction (sum)**	----	3	mg/kg	----	<3	<3	----	----
EP080-SD / EP071-SD: Total Recoverable Hydrocarbons								
C6 - C10 Fraction	C6_C10	3	mg/kg	----	<3	<3	----	----
C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	3.0	mg/kg	----	<3.0	<3.0	----	----
EP080-SD: BTEXN								
Benzene	71-43-2	0.2	mg/kg	----	<0.2	<0.2	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Sample ID	SH16 1.5-2	SH9 0-0.5	SH9 0.5-1	SH9 1-1.5	SH9 1.5-2
			Sampling date / time	09-Feb-2026 00:00	09-Feb-2026 00:00	09-Feb-2026 00:00	09-Feb-2026 00:00	09-Feb-2026 00:00
Compound	CAS Number	LOR	Unit	EB2605255-056	EB2605255-057	EB2605255-058	EB2605255-059	EB2605255-060
				Result	Result	Result	Result	Result
EP080-SD: BTEXN - Continued								
Toluene	108-88-3	0.2	mg/kg	----	<0.2	<0.2	----	----
Ethylbenzene	100-41-4	0.2	mg/kg	----	<0.2	<0.2	----	----
meta- & para-Xylene	108-38-3 106-42-3	0.2	mg/kg	----	<0.2	<0.2	----	----
ortho-Xylene	95-47-6	0.2	mg/kg	----	<0.2	<0.2	----	----
^ **Total Xylenes**	----	0.5	mg/kg	----	<0.5	<0.5	----	----
^ **Sum of BTEX**	----	0.2	mg/kg	----	<0.2	<0.2	----	----
Naphthalene	91-20-3	0.2	mg/kg	----	<0.2	<0.2	----	----
EP090: Organotin Compounds								
Monobutyltin	78763-54-9	1	µgSn/kg	----	<1	<1	----	----
Dibutyltin	1002-53-5	1	µgSn/kg	----	<1	<1	----	----
Tributyltin	56573-85-4	0.5	µgSn/kg	----	<0.5	<0.5	----	----
EP131A: Organochlorine Pesticides								
Aldrin	309-00-2	0.50	µg/kg	----	<0.50	<0.50	----	----
alpha-BHC	319-84-6	0.50	µg/kg	----	<0.50	<0.50	----	----
beta-BHC	319-85-7	0.50	µg/kg	----	<0.50	<0.50	----	----
delta-BHC	319-86-8	0.50	µg/kg	----	<0.50	<0.50	----	----
4.4`-DDD	72-54-8	0.50	µg/kg	----	<0.50	<0.50	----	----
4.4`-DDE	72-55-9	0.50	µg/kg	----	<0.50	<0.50	----	----
4.4`-DDT	50-29-3	0.50	µg/kg	----	<0.50	<0.50	----	----
^ **Sum of DDD + DDE + DDT**	72-54-8/72-55-9/50-2	0.50	µg/kg	----	<0.50	<0.50	----	----
Dieldrin	60-57-1	0.50	µg/kg	----	<0.50	<0.50	----	----
alpha-Endosulfan	959-98-8	0.50	µg/kg	----	<0.50	<0.50	----	----
beta-Endosulfan	33213-65-9	0.50	µg/kg	----	<0.50	<0.50	----	----
Endosulfan sulfate	1031-07-8	0.50	µg/kg	----	<0.50	<0.50	----	----
^ **Endosulfan (sum)**	115-29-7	0.50	µg/kg	----	<0.50	<0.50	----	----
Endrin	72-20-8	0.50	µg/kg	----	<0.50	<0.50	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Sample ID	SH16 1.5-2	SH9 0-0.5	SH9 0.5-1	SH9 1-1.5	SH9 1.5-2
				Sampling date / time	09-Feb-2026 00:00	09-Feb-2026 00:00	09-Feb-2026 00:00	09-Feb-2026 00:00	09-Feb-2026 00:00
Compound	CAS Number	LOR	Unit		EB2605255-056	EB2605255-057	EB2605255-058	EB2605255-059	EB2605255-060
					Result	Result	Result	Result	Result
EP131A: Organochlorine Pesticides - Continued									
Endrin aldehyde	7421-93-4	0.50	µg/kg		----	<0.50	<0.50	----	----
Endrin ketone	53494-70-5	0.50	µg/kg		----	<0.50	<0.50	----	----
Heptachlor	76-44-8	0.50	µg/kg		----	<0.50	<0.50	----	----
Heptachlor epoxide	1024-57-3	0.50	µg/kg		----	<0.50	<0.50	----	----
Hexachlorobenzene (HCB)	118-74-1	0.50	µg/kg		----	<0.50	<0.50	----	----
gamma-BHC - (Lindane)	58-89-9	0.25	µg/kg		----	<0.25	<0.25	----	----
Methoxychlor	72-43-5	0.50	µg/kg		----	<0.50	<0.50	----	----
cis-Chlordane	5103-71-9	0.50	µg/kg		----	<0.50	<0.50	----	----
trans-Chlordane	5103-74-2	0.50	µg/kg		----	<0.50	<0.50	----	----
^ **Total Chlordane (sum)**	----	0.50	µg/kg		----	<0.50	<0.50	----	----
Oxychlordane	27304-13-8	0.50	µg/kg		----	<0.50	<0.50	----	----
^ **Sum of Aldrin + Dieldrin**	309-00-2/60-57-1	0.50	µg/kg		----	<0.50	<0.50	----	----
EP131B: Polychlorinated Biphenyls (as Aroclors)									
^ **Total Polychlorinated biphenyls**	----	5.0	µg/kg		----	<5.0	<5.0	----	----
Aroclor 1016	12674-11-2	5.0	µg/kg		----	<5.0	<5.0	----	----
Aroclor 1221	11104-28-2	5.0	µg/kg		----	<5.0	<5.0	----	----
Aroclor 1232	11141-16-5	5.0	µg/kg		----	<5.0	<5.0	----	----
Aroclor 1242	53469-21-9	5.0	µg/kg		----	<5.0	<5.0	----	----
Aroclor 1248	12672-29-6	5.0	µg/kg		----	<5.0	<5.0	----	----
Aroclor 1254	11097-69-1	5.0	µg/kg		----	<5.0	<5.0	----	----
Aroclor 1260	11096-82-5	5.0	µg/kg		----	<5.0	<5.0	----	----
EP132B: Polynuclear Aromatic Hydrocarbons									
Naphthalene	91-20-3	5	µg/kg		----	<5	<5	----	----
2-Methylnaphthalene	91-57-6	5	µg/kg		----	<5	<5	----	----
Acenaphthylene	208-96-8	4	µg/kg		----	<4	<4	----	----
Acenaphthene	83-32-9	4	µg/kg		----	<4	<4	----	----
Fluorene	86-73-7	4	µg/kg		----	<4	<4	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Sample ID	SH16 1.5-2	SH9 0-0.5	SH9 0.5-1	SH9 1-1.5	SH9 1.5-2
				Sampling date / time	09-Feb-2026 00:00	09-Feb-2026 00:00	09-Feb-2026 00:00	09-Feb-2026 00:00	09-Feb-2026 00:00
Compound	CAS Number	LOR	Unit		EB2605255-056	EB2605255-057	EB2605255-058	EB2605255-059	EB2605255-060
					Result	Result	Result	Result	Result
EP132B: Polynuclear Aromatic Hydrocarbons - Continued									
Phenanthrene	85-01-8	4	µg/kg		----	<4	<4	----	----
Anthracene	120-12-7	4	µg/kg		----	<4	<4	----	----
Fluoranthene	206-44-0	4	µg/kg		----	<4	<4	----	----
Pyrene	129-00-0	4	µg/kg		----	<4	<4	----	----
Benz(a)anthracene	56-55-3	4	µg/kg		----	<4	<4	----	----
Chrysene	218-01-9	4	µg/kg		----	<4	<4	----	----
Benzo(b+j)fluoranthene	205-99-2 205-82-3	4	µg/kg		----	<4	<4	----	----
Benzo(k)fluoranthene	207-08-9	4	µg/kg		----	<4	<4	----	----
Benzo(e)pyrene	192-97-2	4	µg/kg		----	<4	<4	----	----
Benzo(a)pyrene	50-32-8	4	µg/kg		----	<4	<4	----	----
Perylene	198-55-0	4	µg/kg		----	<4	<4	----	----
Benzo(g.h.i)perylene	191-24-2	4	µg/kg		----	<4	<4	----	----
Dibenz(a.h)anthracene	53-70-3	4	µg/kg		----	<4	<4	----	----
Indeno(1.2.3.cd)pyrene	193-39-5	4	µg/kg		----	<4	<4	----	----
Coronene	191-07-1	5	µg/kg		----	<5	<5	----	----
^ Sum of PAHs	----	4	µg/kg		----	<4	<4	----	----
^ Benzo(a)pyrene TEQ (zero)	----	4	µg/kg		----	<4	<4	----	----
^ Benzo(a)pyrene TEQ (half LOR)	----	4	µg/kg		----	5	5	----	----
^ Benzo(a)pyrene TEQ (LOR)	----	4	µg/kg		----	10	10	----	----
EP080-SD: TPH(V)/BTEX Surrogates									
1.2-Dichloroethane-D4	17060-07-0	0.2	%		----	75.5	73.9	----	----
Toluene-D8	2037-26-5	0.2	%		----	71.8	72.8	----	----
4-Bromofluorobenzene	460-00-4	0.2	%		----	85.5	87.6	----	----
EP090S: Organotin Surrogate									
Tripropyltin	----	0.5	%		----	98.7	96.5	----	----
EP131S: OC Pesticide Surrogate									
Dibromo-DDE	21655-73-2	0.50	%		----	69.5	76.2	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Sample ID	SH16 1.5-2	SH9 0-0.5	SH9 0.5-1	SH9 1-1.5	SH9 1.5-2
				Sampling date / time	09-Feb-2026 00:00	09-Feb-2026 00:00	09-Feb-2026 00:00	09-Feb-2026 00:00	09-Feb-2026 00:00
Compound	CAS Number	LOR	Unit		EB2605255-056	EB2605255-057	EB2605255-058	EB2605255-059	EB2605255-060
					Result	Result	Result	Result	Result
EP131T: PCB Surrogate									
Decachlorobiphenyl	2051-24-3	0.5	%		----	**45.9**	**50.2**	----	----
EP132T: Base/Neutral Extractable Surrogates - SD									
2-Fluorobiphenyl	321-60-8	10	%		----	**68.3**	**79.0**	----	----
Anthracene-d10	1719-06-8	10	%		----	**90.3**	**112**	----	----
4-Terphenyl-d14	1718-51-0	10	%		----	**68.7**	**80.5**	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Sample ID	SH6 0-0.5	SH6 0.5-1	SH6 1-1.5	SH6 1.5-2	SH16B 0-0.5
			Sampling date / time	10-Feb-2026 00:00	10-Feb-2026 00:00	10-Feb-2026 00:00	10-Feb-2026 00:00	10-Feb-2026 00:00
Compound	CAS Number	LOR	Unit	EB2605255-061	EB2605255-062	EB2605255-063	EB2605255-064	EB2605255-065
				Result	Result	Result	Result	Result
EA033-A: Actual Acidity								
pH KCl (23A)	----	0.1	pH Unit	**9.2**	**9.0**	**8.9**	**8.6**	**9.1**
Titratable Actual Acidity (23F)	----	2	mole H+ / t	<2	<2	<2	<2	<2
sulfidic - Titratable Actual Acidity (s-23F)	----	0.02	% pyrite S	<0.02	<0.02	<0.02	<0.02	<0.02
EA033-B: Potential Acidity								
Chromium Reducible Sulfur (22B)	----	0.005	% S	**0.211**	**0.500**	**0.559**	**1.07**	**0.440**
acidity - Chromium Reducible Sulfur (a-22B)	----	10	mole H+ / t	**132**	**312**	**349**	**665**	**274**
EA033-C: Acid Neutralising Capacity								
Acid Neutralising Capacity (19A2)	----	0.01	% CaCO3	**56.9**	**33.5**	**26.9**	**13.8**	**46.2**
acidity - Acid Neutralising Capacity (a-19A2)	----	10	mole H+ / t	**11400**	**6690**	**5380**	**2760**	**9230**
sulfidic - Acid Neutralising Capacity (s-19A2)	----	0.01	% pyrite S	**18.2**	**10.7**	**8.62**	**4.43**	**14.8**
EA033-E: Acid Base Accounting								
ANC Fineness Factor	----	0.5	-	**1.5**	**1.5**	**1.5**	**1.5**	**1.5**
Net Acidity (sulfur units)	----	0.02	% S	<0.02	<0.02	<0.02	<0.02	<0.02
Net Acidity (acidity units)	----	10	mole H+ / t	<10	<10	<10	<10	<10
Liming Rate	----	1	kg CaCO3/t	<1	<1	<1	<1	<1
Net Acidity excluding ANC (sulfur units)	----	0.02	% S	**0.21**	**0.50**	**0.56**	**1.07**	**0.44**
Net Acidity excluding ANC (acidity units)	----	10	mole H+ / t	**132**	**312**	**349**	**665**	**274**
Liming Rate excluding ANC	----	1	kg CaCO3/t	**10**	**23**	**26**	**50**	**21**
EA055: Moisture Content (Dried @ 105-110°C)								
Moisture Content	----	1.0	%	**36.9**	**43.7**	**----**	**----**	**39.1**
EA150: Particle Sizing								
+75µm	----	1	%	**52**	**25**	**13**	**6**	**40**
+150µm	----	1	%	**45**	**22**	**11**	**6**	**36**
+300µm	----	1	%	**34**	**18**	**9**	**5**	**30**
+425µm	----	1	%	**28**	**15**	**7**	**4**	**26**
+600µm	----	1	%	**23**	**13**	**6**	**3**	**23**

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Sample ID	SH6 0-0.5	SH6 0.5-1	SH6 1-1.5	SH6 1.5-2	SH16B 0-0.5
			Sampling date / time	10-Feb-2026 00:00	10-Feb-2026 00:00	10-Feb-2026 00:00	10-Feb-2026 00:00	10-Feb-2026 00:00
Compound	CAS Number	LOR	Unit	EB2605255-061	EB2605255-062	EB2605255-063	EB2605255-064	EB2605255-065
				Result	Result	Result	Result	Result
EA150: Particle Sizing - Continued								
+1180µm	----	1	%	9	6	3	2	14
+2.36mm	----	1	%	2	2	<1	<1	7
+4.75mm	----	1	%	<1	<1	<1	<1	2
+9.5mm	----	1	%	<1	<1	<1	<1	<1
+19.0mm	----	1	%	<1	<1	<1	<1	<1
+37.5mm	----	1	%	<1	<1	<1	<1	<1
+75.0mm	----	1	%	<1	<1	<1	<1	<1
EA150: Soil Classification based on Particle Size								
Clay (<2 µm)	----	1	%	23	26	35	40	24
Silt (2-60 µm)	----	1	%	24	47	50	53	34
Sand (0.06-2.00 mm)	----	1	%	49	24	14	6	33
Gravel (>2mm)	----	1	%	4	3	1	1	9
Cobbles (>6cm)	----	1	%	<1	<1	<1	<1	<1
EA152: Soil Particle Density								
Soil Particle Density (Clay/Silt/Sand)	----	0.01	g/cm3	2.42	2.33	2.40	2.46	2.42
EG005(ED093)-SD: Total Metals in Sediments by ICP-AES								
Aluminium	7429-90-5	50	mg/kg	5690	9310	----	----	6360
Iron	7439-89-6	50	mg/kg	8340	18300	----	----	9560
EG020-SD: Total Metals in Sediments by ICPMS								
Antimony	7440-36-0	0.50	mg/kg	<0.50	<0.50	----	----	<0.50
Arsenic	7440-38-2	1.00	mg/kg	6.57	8.86	----	----	6.40
Cadmium	7440-43-9	0.1	mg/kg	<0.1	<0.1	----	----	<0.1
Chromium	7440-47-3	1.0	mg/kg	12.2	19.2	----	----	14.6
Copper	7440-50-8	1.0	mg/kg	3.2	5.8	----	----	3.9
Cobalt	7440-48-4	0.5	mg/kg	3.1	5.6	----	----	3.6
Lead	7439-92-1	1.0	mg/kg	4.4	7.3	----	----	5.1
Manganese	7439-96-5	10	mg/kg	151	192	----	----	154

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Sample ID	SH6 0-0.5	SH6 0.5-1	SH6 1-1.5	SH6 1.5-2	SH16B 0-0.5
				Sampling date / time	10-Feb-2026 00:00	10-Feb-2026 00:00	10-Feb-2026 00:00	10-Feb-2026 00:00	10-Feb-2026 00:00
Compound	CAS Number	LOR	Unit		EB2605255-061	EB2605255-062	EB2605255-063	EB2605255-064	EB2605255-065
					Result	Result	Result	Result	Result
EG020-SD: Total Metals in Sediments by ICPMS - Continued									
Nickel	7440-02-0	1.0	mg/kg		**5.6**	**9.6**	----	----	**7.0**
Selenium	7782-49-2	0.1	mg/kg		**0.5**	**0.7**	----	----	**0.5**
Silver	7440-22-4	0.1	mg/kg		<0.1	<0.1	----	----	<0.1
Vanadium	7440-62-2	2.0	mg/kg		**14.6**	**23.9**	----	----	**17.7**
Zinc	7440-66-6	1.0	mg/kg		**12.2**	**20.8**	----	----	**15.1**
EG035T: Total Recoverable Mercury by FIMS									
Mercury	7439-97-6	0.01	mg/kg		<0.01	<0.01	----	----	<0.01
EP003: Total Organic Carbon (TOC) in Soil									
Total Organic Carbon	----	0.02	%		**0.41**	**0.57**	----	----	**0.50**
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions									
>C10 - C16 Fraction	----	3	mg/kg		<3	<3	----	----	<3
>C16 - C34 Fraction	----	3	mg/kg		<3	<3	----	----	<3
>C34 - C40 Fraction	----	5	mg/kg		<5	<5	----	----	<5
>C10 - C40 Fraction (sum)	----	3	mg/kg		<3	<3	----	----	<3
>C10 - C16 Fraction minus Naphthalene (F2)	----	3	mg/kg		<3	<3	----	----	<3
EP080-SD / EP071-SD: Total Petroleum Hydrocarbons									
C6 - C9 Fraction	----	3	mg/kg		<3	<3	----	----	<3
C10 - C14 Fraction	----	3	mg/kg		<3	<3	----	----	<3
C15 - C28 Fraction	----	3	mg/kg		<3	<3	----	----	<3
C29 - C36 Fraction	----	5	mg/kg		<5	<5	----	----	<5
^ **C10 - C36 Fraction (sum)**	----	3	mg/kg		<3	<3	----	----	<3
EP080-SD / EP071-SD: Total Recoverable Hydrocarbons									
C6 - C10 Fraction	C6_C10	3	mg/kg		<3	<3	----	----	<3
C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	3.0	mg/kg		<3.0	<3.0	----	----	<3.0
EP080-SD: BTEXN									
Benzene	71-43-2	0.2	mg/kg		<0.2	<0.2	----	----	<0.2

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Sample ID	SH6 0-0.5	SH6 0.5-1	SH6 1-1.5	SH6 1.5-2	SH16B 0-0.5
			Sampling date / time	10-Feb-2026 00:00	10-Feb-2026 00:00	10-Feb-2026 00:00	10-Feb-2026 00:00	10-Feb-2026 00:00
Compound	CAS Number	LOR	Unit	EB2605255-061	EB2605255-062	EB2605255-063	EB2605255-064	EB2605255-065
				Result	Result	Result	Result	Result
EP080-SD: BTEXN - Continued								
Toluene	108-88-3	0.2	mg/kg	<0.2	<0.2	----	----	<0.2
Ethylbenzene	100-41-4	0.2	mg/kg	<0.2	<0.2	----	----	<0.2
meta- & para-Xylene	108-38-3 106-42-3	0.2	mg/kg	<0.2	<0.2	----	----	<0.2
ortho-Xylene	95-47-6	0.2	mg/kg	<0.2	<0.2	----	----	<0.2
^ **Total Xylenes**	----	0.5	mg/kg	<0.5	<0.5	----	----	<0.5
^ **Sum of BTEX**	----	0.2	mg/kg	<0.2	<0.2	----	----	<0.2
Naphthalene	91-20-3	0.2	mg/kg	<0.2	<0.2	----	----	<0.2
EP090: Organotin Compounds								
Monobutyltin	78763-54-9	1	µgSn/kg	<1	<1	----	----	<1
Dibutyltin	1002-53-5	1	µgSn/kg	<1	<1	----	----	<1
Tributyltin	56573-85-4	0.5	µgSn/kg	<0.5	<0.5	----	----	<0.5
EP131A: Organochlorine Pesticides								
Aldrin	309-00-2	0.50	µg/kg	<0.50	<0.50	----	----	<0.50
alpha-BHC	319-84-6	0.50	µg/kg	<0.50	<0.50	----	----	<0.50
beta-BHC	319-85-7	0.50	µg/kg	<0.50	<0.50	----	----	<0.50
delta-BHC	319-86-8	0.50	µg/kg	<0.50	<0.50	----	----	<0.50
4.4`-DDD	72-54-8	0.50	µg/kg	<0.50	<0.50	----	----	<0.50
4.4`-DDE	72-55-9	0.50	µg/kg	<0.50	<0.50	----	----	<0.50
4.4`-DDT	50-29-3	0.50	µg/kg	<0.50	<0.50	----	----	<0.50
^ **Sum of DDD + DDE + DDT**	72-54-8/72-55-9/50-2	0.50	µg/kg	<0.50	<0.50	----	----	<0.50
Dieldrin	60-57-1	0.50	µg/kg	<0.50	<0.50	----	----	<0.50
alpha-Endosulfan	959-98-8	0.50	µg/kg	<0.50	<0.50	----	----	<0.50
beta-Endosulfan	33213-65-9	0.50	µg/kg	<0.50	<0.50	----	----	<0.50
Endosulfan sulfate	1031-07-8	0.50	µg/kg	<0.50	<0.50	----	----	<0.50
^ **Endosulfan (sum)**	115-29-7	0.50	µg/kg	<0.50	<0.50	----	----	<0.50
Endrin	72-20-8	0.50	µg/kg	<0.50	<0.50	----	----	<0.50

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Sample ID	SH6 0-0.5	SH6 0.5-1	SH6 1-1.5	SH6 1.5-2	SH16B 0-0.5
				Sampling date / time	10-Feb-2026 00:00	10-Feb-2026 00:00	10-Feb-2026 00:00	10-Feb-2026 00:00	10-Feb-2026 00:00
Compound	CAS Number	LOR	Unit		EB2605255-061	EB2605255-062	EB2605255-063	EB2605255-064	EB2605255-065
					Result	Result	Result	Result	Result
EP131A: Organochlorine Pesticides - Continued									
Endrin aldehyde	7421-93-4	0.50	µg/kg		<0.50	<0.50	----	----	<0.50
Endrin ketone	53494-70-5	0.50	µg/kg		<0.50	<0.50	----	----	<0.50
Heptachlor	76-44-8	0.50	µg/kg		<0.50	<0.50	----	----	<0.50
Heptachlor epoxide	1024-57-3	0.50	µg/kg		<0.50	<0.50	----	----	<0.50
Hexachlorobenzene (HCB)	118-74-1	0.50	µg/kg		<0.50	<0.50	----	----	<0.50
gamma-BHC - (Lindane)	58-89-9	0.25	µg/kg		<0.25	<0.25	----	----	<0.25
Methoxychlor	72-43-5	0.50	µg/kg		<0.50	<0.50	----	----	<0.50
cis-Chlordane	5103-71-9	0.50	µg/kg		<0.50	<0.50	----	----	<0.50
trans-Chlordane	5103-74-2	0.50	µg/kg		<0.50	<0.50	----	----	<0.50
^ Total Chlordane (sum)	----	0.50	µg/kg		<0.50	<0.50	----	----	<0.50
Oxychlordane	27304-13-8	0.50	µg/kg		<0.50	<0.50	----	----	<0.50
^ Sum of Aldrin + Dieldrin	309-00-2/60-57-1	0.50	µg/kg		<0.50	<0.50	----	----	<0.50
EP132B: Polynuclear Aromatic Hydrocarbons									
Naphthalene	91-20-3	5	µg/kg		<5	<5	----	----	<5
2-Methylnaphthalene	91-57-6	5	µg/kg		<5	<5	----	----	<5
Acenaphthylene	208-96-8	4	µg/kg		<4	<4	----	----	<4
Acenaphthene	83-32-9	4	µg/kg		<4	<4	----	----	<4
Fluorene	86-73-7	4	µg/kg		<4	<4	----	----	<4
Phenanthrene	85-01-8	4	µg/kg		<4	<4	----	----	<4
Anthracene	120-12-7	4	µg/kg		<4	<4	----	----	<4
Fluoranthene	206-44-0	4	µg/kg		<4	<4	----	----	<4
Pyrene	129-00-0	4	µg/kg		<4	<4	----	----	<4
Benz(a)anthracene	56-55-3	4	µg/kg		<4	<4	----	----	<4
Chrysene	218-01-9	4	µg/kg		<4	<4	----	----	<4
Benzo(b+j)fluoranthene	205-99-2 205-82-3	4	µg/kg		<4	<4	----	----	<4
Benzo(k)fluoranthene	207-08-9	4	µg/kg		<4	<4	----	----	<4
Benzo(e)pyrene	192-97-2	4	µg/kg		<4	<4	----	----	<4

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Sample ID	SH6 0-0.5	SH6 0.5-1	SH6 1-1.5	SH6 1.5-2	SH16B 0-0.5
				Sampling date / time	10-Feb-2026 00:00	10-Feb-2026 00:00	10-Feb-2026 00:00	10-Feb-2026 00:00	10-Feb-2026 00:00
Compound	CAS Number	LOR	Unit		EB2605255-061	EB2605255-062	EB2605255-063	EB2605255-064	EB2605255-065
					Result	Result	Result	Result	Result
EP132B: Polynuclear Aromatic Hydrocarbons - Continued									
Benzo(a)pyrene	50-32-8	4	µg/kg		<4	<4	----	----	<4
Perylene	198-55-0	4	µg/kg		<4	<4	----	----	<4
Benzo(g.h.i)perylene	191-24-2	4	µg/kg		<4	<4	----	----	<4
Dibenz(a.h)anthracene	53-70-3	4	µg/kg		<4	<4	----	----	<4
Indeno(1.2.3.cd)pyrene	193-39-5	4	µg/kg		<4	<4	----	----	<4
Coronene	191-07-1	5	µg/kg		<5	<5	----	----	<5
^ Sum of PAHs	----	4	µg/kg		<4	<4	----	----	<4
^ Benzo(a)pyrene TEQ (zero)	----	4	µg/kg		<4	<4	----	----	<4
^ Benzo(a)pyrene TEQ (half LOR)	----	4	µg/kg		5	5	----	----	5
^ Benzo(a)pyrene TEQ (LOR)	----	4	µg/kg		10	10	----	----	10
EP080-SD: TPH(V)/BTEX Surrogates									
1.2-Dichloroethane-D4	17060-07-0	0.2	%		74.1	83.2	----	----	68.0
Toluene-D8	2037-26-5	0.2	%		73.0	81.5	----	----	64.5
4-Bromofluorobenzene	460-00-4	0.2	%		87.5	91.8	----	----	71.6
EP090S: Organotin Surrogate									
Tripropyltin	----	0.5	%		96.3	106	----	----	106
EP131S: OC Pesticide Surrogate									
Dibromo-DDE	21655-73-2	0.50	%		77.3	89.4	----	----	94.7
EP132T: Base/Neutral Extractable Surrogates - SD									
2-Fluorobiphenyl	321-60-8	10	%		72.9	74.5	----	----	69.7
Anthracene-d10	1719-06-8	10	%		122	102	----	----	118
4-Terphenyl-d14	1718-51-0	10	%		101	78.2	----	----	87.4

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Sample ID	SH16B 0.5-1	SH16B 1-1.5	SH16C 0-0.5	SH16C 0.5-1	SH16C 1-1.5
			Sampling date / time	10-Feb-2026 00:00	10-Feb-2026 00:00	10-Feb-2026 00:00	10-Feb-2026 00:00	10-Feb-2026 00:00
Compound	CAS Number	LOR	Unit	EB2605255-066	EB2605255-067	EB2605255-068	EB2605255-069	EB2605255-070
				Result	Result	Result	Result	Result
EA033-A: Actual Acidity								
pH KCl (23A)	----	0.1	pH Unit	**8.8**	**8.7**	**9.1**	**9.1**	**8.7**
Titratable Actual Acidity (23F)	----	2	mole H+ / t	<2	<2	<2	<2	<2
sulfidic - Titratable Actual Acidity (s-23F)	----	0.02	% pyrite S	<0.02	<0.02	<0.02	<0.02	<0.02
EA033-B: Potential Acidity								
Chromium Reducible Sulfur (22B)	----	0.005	% S	**0.714**	**0.844**	**0.325**	**0.696**	**0.196**
acidity - Chromium Reducible Sulfur (a-22B)	----	10	mole H+ / t	**445**	**527**	**203**	**434**	**122**
EA033-C: Acid Neutralising Capacity								
Acid Neutralising Capacity (19A2)	----	0.01	% CaCO3	**28.5**	**13.0**	**41.0**	**23.0**	**12.8**
acidity - Acid Neutralising Capacity (a-19A2)	----	10	mole H+ / t	**5690**	**2600**	**8190**	**4600**	**2550**
sulfidic - Acid Neutralising Capacity (s-19A2)	----	0.01	% pyrite S	**9.13**	**4.16**	**13.1**	**7.38**	**4.09**
EA033-E: Acid Base Accounting								
ANC Fineness Factor	----	0.5	-	**1.5**	**1.5**	**1.5**	**1.5**	**1.5**
Net Acidity (sulfur units)	----	0.02	% S	<0.02	<0.02	<0.02	<0.02	<0.02
Net Acidity (acidity units)	----	10	mole H+ / t	<10	<10	<10	<10	<10
Liming Rate	----	1	kg CaCO3/t	<1	<1	<1	<1	<1
Net Acidity excluding ANC (sulfur units)	----	0.02	% S	**0.71**	**0.84**	**0.33**	**0.70**	**0.20**
Net Acidity excluding ANC (acidity units)	----	10	mole H+ / t	**445**	**527**	**203**	**434**	**122**
Liming Rate excluding ANC	----	1	kg CaCO3/t	**33**	**40**	**15**	**33**	**9**
EA055: Moisture Content (Dried @ 105-110°C)								
Moisture Content	----	1.0	%	**42.3**	**----**	**33.5**	**46.9**	**----**
EA150: Particle Sizing								
+75µm	----	1	%	**22**	**8**	**40**	**10**	**8**
+150µm	----	1	%	**19**	**7**	**35**	**9**	**7**
+300µm	----	1	%	**16**	**6**	**28**	**7**	**5**
+425µm	----	1	%	**14**	**5**	**24**	**6**	**4**
+600µm	----	1	%	**12**	**4**	**20**	**6**	**3**

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Sample ID	SH16B 0.5-1	SH16B 1-1.5	SH16C 0-0.5	SH16C 0.5-1	SH16C 1-1.5
			Sampling date / time	10-Feb-2026 00:00	10-Feb-2026 00:00	10-Feb-2026 00:00	10-Feb-2026 00:00	10-Feb-2026 00:00
Compound	CAS Number	LOR	Unit	EB2605255-066	EB2605255-067	EB2605255-068	EB2605255-069	EB2605255-070
				Result	Result	Result	Result	Result
EA150: Particle Sizing - Continued								
+1180µm	----	1	%	8	2	11	4	2
+2.36mm	----	1	%	3	1	4	2	<1
+4.75mm	----	1	%	<1	<1	1	<1	<1
+9.5mm	----	1	%	<1	<1	<1	<1	<1
+19.0mm	----	1	%	<1	<1	<1	<1	<1
+37.5mm	----	1	%	<1	<1	<1	<1	<1
+75.0mm	----	1	%	<1	<1	<1	<1	<1
EA150: Soil Classification based on Particle Size								
Clay (<2 µm)	----	1	%	32	48	23	49	30
Silt (2-60 µm)	----	1	%	45	43	36	41	61
Sand (0.06-2.00 mm)	----	1	%	18	7	35	8	8
Gravel (>2mm)	----	1	%	5	2	6	2	1
Cobbles (>6cm)	----	1	%	<1	<1	<1	<1	<1
EA152: Soil Particle Density								
Soil Particle Density (Clay/Silt/Sand)	----	0.01	g/cm3	2.45	1.96	2.41	2.71	2.40
EG005(ED093)-SD: Total Metals in Sediments by ICP-AES								
Aluminium	7429-90-5	50	mg/kg	8770	----	5310	10700	----
Iron	7439-89-6	50	mg/kg	15100	----	8360	23200	----
EG020-SD: Total Metals in Sediments by ICPMS								
Antimony	7440-36-0	0.50	mg/kg	<0.50	----	<0.50	<0.50	----
Arsenic	7440-38-2	1.00	mg/kg	8.20	----	6.27	9.14	----
Cadmium	7440-43-9	0.1	mg/kg	<0.1	----	<0.1	<0.1	----
Chromium	7440-47-3	1.0	mg/kg	17.0	----	11.4	20.7	----
Copper	7440-50-8	1.0	mg/kg	4.5	----	3.0	7.6	----
Cobalt	7440-48-4	0.5	mg/kg	4.5	----	2.7	7.0	----
Lead	7439-92-1	1.0	mg/kg	6.4	----	4.4	9.6	----
Manganese	7439-96-5	10	mg/kg	189	----	142	228	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Sample ID	SH16B 0.5-1	SH16B 1-1.5	SH16C 0-0.5	SH16C 0.5-1	SH16C 1-1.5
				Sampling date / time	10-Feb-2026 00:00	10-Feb-2026 00:00	10-Feb-2026 00:00	10-Feb-2026 00:00	10-Feb-2026 00:00
Compound	CAS Number	LOR	Unit		EB2605255-066	EB2605255-067	EB2605255-068	EB2605255-069	EB2605255-070
					Result	Result	Result	Result	Result
EG020-SD: Total Metals in Sediments by ICPMS - Continued									
Nickel	7440-02-0	1.0	mg/kg		**8.1**	----	**5.4**	**11.2**	----
Selenium	7782-49-2	0.1	mg/kg		**0.7**	----	**0.6**	**0.7**	----
Silver	7440-22-4	0.1	mg/kg		<0.1	----	<0.1	<0.1	----
Vanadium	7440-62-2	2.0	mg/kg		**19.9**	----	**14.7**	**29.1**	----
Zinc	7440-66-6	1.0	mg/kg		**17.7**	----	**11.2**	**24.4**	----
EG035T: Total Recoverable Mercury by FIMS									
Mercury	7439-97-6	0.01	mg/kg		<0.01	----	<0.01	<0.01	----
EP003: Total Organic Carbon (TOC) in Soil									
Total Organic Carbon	----	0.02	%		**0.65**	----	**0.41**	**0.74**	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions									
>C10 - C16 Fraction	----	3	mg/kg		<3	----	<3	<3	----
>C16 - C34 Fraction	----	3	mg/kg		<3	----	<3	<3	----
>C34 - C40 Fraction	----	5	mg/kg		<5	----	<5	<5	----
>C10 - C40 Fraction (sum)	----	3	mg/kg		<3	----	<3	<3	----
>C10 - C16 Fraction minus Naphthalene (F2)	----	3	mg/kg		<3	----	<3	<3	----
EP080-SD / EP071-SD: Total Petroleum Hydrocarbons									
C6 - C9 Fraction	----	3	mg/kg		<3	----	<3	<3	----
C10 - C14 Fraction	----	3	mg/kg		<3	----	<3	<3	----
C15 - C28 Fraction	----	3	mg/kg		<3	----	<3	<3	----
C29 - C36 Fraction	----	5	mg/kg		<5	----	<5	<5	----
^ **C10 - C36 Fraction (sum)**	----	3	mg/kg		<3	----	<3	<3	----
EP080-SD / EP071-SD: Total Recoverable Hydrocarbons									
C6 - C10 Fraction	C6_C10	3	mg/kg		<3	----	<3	<3	----
C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	3.0	mg/kg		<3.0	----	<3.0	<3.0	----
EP080-SD: BTEXN									
Benzene	71-43-2	0.2	mg/kg		<0.2	----	<0.2	<0.2	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Sample ID	SH16B 0.5-1	SH16B 1-1.5	SH16C 0-0.5	SH16C 0.5-1	SH16C 1-1.5
				Sampling date / time	10-Feb-2026 00:00	10-Feb-2026 00:00	10-Feb-2026 00:00	10-Feb-2026 00:00	10-Feb-2026 00:00
Compound	CAS Number	LOR	Unit		EB2605255-066	EB2605255-067	EB2605255-068	EB2605255-069	EB2605255-070
					Result	Result	Result	Result	Result
EP080-SD: BTEXN - Continued									
Toluene	108-88-3	0.2	mg/kg		<0.2	----	<0.2	<0.2	----
Ethylbenzene	100-41-4	0.2	mg/kg		<0.2	----	<0.2	<0.2	----
meta- & para-Xylene	108-38-3 106-42-3	0.2	mg/kg		<0.2	----	<0.2	<0.2	----
ortho-Xylene	95-47-6	0.2	mg/kg		<0.2	----	<0.2	<0.2	----
^ **Total Xylenes**	----	0.5	mg/kg		<0.5	----	<0.5	<0.5	----
^ **Sum of BTEX**	----	0.2	mg/kg		<0.2	----	<0.2	<0.2	----
Naphthalene	91-20-3	0.2	mg/kg		<0.2	----	<0.2	<0.2	----
EP090: Organotin Compounds									
Monobutyltin	78763-54-9	1	µgSn/kg		<1	----	<1	<1	----
Dibutyltin	1002-53-5	1	µgSn/kg		<1	----	<1	<1	----
Tributyltin	56573-85-4	0.5	µgSn/kg		<0.5	----	<0.5	<0.5	----
EP131A: Organochlorine Pesticides									
Aldrin	309-00-2	0.50	µg/kg		<0.50	----	<0.50	<0.50	----
alpha-BHC	319-84-6	0.50	µg/kg		<0.50	----	<0.50	<0.50	----
beta-BHC	319-85-7	0.50	µg/kg		<0.50	----	<0.50	<0.50	----
delta-BHC	319-86-8	0.50	µg/kg		<0.50	----	<0.50	<0.50	----
4.4`-DDD	72-54-8	0.50	µg/kg		<0.50	----	<0.50	<0.50	----
4.4`-DDE	72-55-9	0.50	µg/kg		<0.50	----	<0.50	<0.50	----
4.4`-DDT	50-29-3	0.50	µg/kg		<0.50	----	<0.50	<0.50	----
^ **Sum of DDD + DDE + DDT**	72-54-8/72-55-9/50-2	0.50	µg/kg		<0.50	----	<0.50	<0.50	----
Dieldrin	60-57-1	0.50	µg/kg		<0.50	----	<0.50	<0.50	----
alpha-Endosulfan	959-98-8	0.50	µg/kg		<0.50	----	<0.50	<0.50	----
beta-Endosulfan	33213-65-9	0.50	µg/kg		<0.50	----	<0.50	<0.50	----
Endosulfan sulfate	1031-07-8	0.50	µg/kg		<0.50	----	<0.50	<0.50	----
^ **Endosulfan (sum)**	115-29-7	0.50	µg/kg		<0.50	----	<0.50	<0.50	----
Endrin	72-20-8	0.50	µg/kg		<0.50	----	<0.50	<0.50	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Sample ID	SH16B 0.5-1	SH16B 1-1.5	SH16C 0-0.5	SH16C 0.5-1	SH16C 1-1.5
				Sampling date / time	10-Feb-2026 00:00	10-Feb-2026 00:00	10-Feb-2026 00:00	10-Feb-2026 00:00	10-Feb-2026 00:00
Compound	CAS Number	LOR	Unit		EB2605255-066	EB2605255-067	EB2605255-068	EB2605255-069	EB2605255-070
					Result	Result	Result	Result	Result
EP131A: Organochlorine Pesticides - Continued									
Endrin aldehyde	7421-93-4	0.50	µg/kg		<0.50	----	<0.50	<0.50	----
Endrin ketone	53494-70-5	0.50	µg/kg		<0.50	----	<0.50	<0.50	----
Heptachlor	76-44-8	0.50	µg/kg		<0.50	----	<0.50	<0.50	----
Heptachlor epoxide	1024-57-3	0.50	µg/kg		<0.50	----	<0.50	<0.50	----
Hexachlorobenzene (HCB)	118-74-1	0.50	µg/kg		<0.50	----	<0.50	<0.50	----
gamma-BHC - (Lindane)	58-89-9	0.25	µg/kg		<0.25	----	<0.25	<0.25	----
Methoxychlor	72-43-5	0.50	µg/kg		<0.50	----	<0.50	<0.50	----
cis-Chlordane	5103-71-9	0.50	µg/kg		<0.50	----	<0.50	<0.50	----
trans-Chlordane	5103-74-2	0.50	µg/kg		<0.50	----	<0.50	<0.50	----
^ **Total Chlordane (sum)**	----	0.50	µg/kg		<0.50	----	<0.50	<0.50	----
Oxychlordane	27304-13-8	0.50	µg/kg		<0.50	----	<0.50	<0.50	----
^ **Sum of Aldrin + Dieldrin**	309-00-2/60-57-1	0.50	µg/kg		<0.50	----	<0.50	<0.50	----
EP132B: Polynuclear Aromatic Hydrocarbons									
Naphthalene	91-20-3	5	µg/kg		<5	----	<5	<5	----
2-Methylnaphthalene	91-57-6	5	µg/kg		<5	----	<5	<5	----
Acenaphthylene	208-96-8	4	µg/kg		<4	----	<4	<4	----
Acenaphthene	83-32-9	4	µg/kg		<4	----	<4	<4	----
Fluorene	86-73-7	4	µg/kg		<4	----	<4	<4	----
Phenanthrene	85-01-8	4	µg/kg		<4	----	<4	<4	----
Anthracene	120-12-7	4	µg/kg		<4	----	<4	<4	----
Fluoranthene	206-44-0	4	µg/kg		<4	----	<4	<4	----
Pyrene	129-00-0	4	µg/kg		<4	----	<4	<4	----
Benz(a)anthracene	56-55-3	4	µg/kg		<4	----	<4	<4	----
Chrysene	218-01-9	4	µg/kg		<4	----	<4	<4	----
Benzo(b+j)fluoranthene	205-99-2 205-82-3	4	µg/kg		<4	----	<4	<4	----
Benzo(k)fluoranthene	207-08-9	4	µg/kg		<4	----	<4	<4	----
Benzo(e)pyrene	192-97-2	4	µg/kg		<4	----	<4	<4	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Sample ID	SH16B 0.5-1	SH16B 1-1.5	SH16C 0-0.5	SH16C 0.5-1	SH16C 1-1.5
				Sampling date / time	10-Feb-2026 00:00	10-Feb-2026 00:00	10-Feb-2026 00:00	10-Feb-2026 00:00	10-Feb-2026 00:00
Compound	CAS Number	LOR	Unit		EB2605255-066	EB2605255-067	EB2605255-068	EB2605255-069	EB2605255-070
					Result	Result	Result	Result	Result
EP132B: Polynuclear Aromatic Hydrocarbons - Continued									
Benzo(a)pyrene	50-32-8	4	µg/kg		<4	----	<4	<4	----
Perylene	198-55-0	4	µg/kg		<4	----	<4	<4	----
Benzo(g.h.i)perylene	191-24-2	4	µg/kg		<4	----	<4	<4	----
Dibenz(a.h)anthracene	53-70-3	4	µg/kg		<4	----	<4	<4	----
Indeno(1.2.3.cd)pyrene	193-39-5	4	µg/kg		<4	----	<4	<4	----
Coronene	191-07-1	5	µg/kg		<5	----	<5	<5	----
^ Sum of PAHs	----	4	µg/kg		<4	----	<4	<4	----
^ Benzo(a)pyrene TEQ (zero)	----	4	µg/kg		<4	----	<4	<4	----
^ Benzo(a)pyrene TEQ (half LOR)	----	4	µg/kg		5	----	5	5	----
^ Benzo(a)pyrene TEQ (LOR)	----	4	µg/kg		10	----	10	10	----
EP080-SD: TPH(V)/BTEX Surrogates									
1.2-Dichloroethane-D4	17060-07-0	0.2	%		91.2	----	80.6	47.1	----
Toluene-D8	2037-26-5	0.2	%		88.4	----	76.0	45.1	----
4-Bromofluorobenzene	460-00-4	0.2	%		109	----	88.3	55.5	----
EP090S: Organotin Surrogate									
Tripropyltin	----	0.5	%		121	----	103	85.7	----
EP131S: OC Pesticide Surrogate									
Dibromo-DDE	21655-73-2	0.50	%		75.4	----	70.6	61.4	----
EP132T: Base/Neutral Extractable Surrogates - SD									
2-Fluorobiphenyl	321-60-8	10	%		67.0	----	73.0	70.2	----
Anthracene-d10	1719-06-8	10	%		108	----	119	121	----
4-Terphenyl-d14	1718-51-0	10	%		81.0	----	101	99.1	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Sample ID	SH7 0-0.5	SH7 0.5-1	SH7 1-1.5	SH7 1.5-2	SH7 2-2.5
			Sampling date / time	11-Feb-2026 00:00	11-Feb-2026 00:00	11-Feb-2026 00:00	11-Feb-2026 00:00	11-Feb-2026 00:00
Compound	CAS Number	LOR	Unit	EB2605255-071	EB2605255-072	EB2605255-073	EB2605255-074	EB2605255-075
				Result	Result	Result	Result	Result
EA033-A: Actual Acidity								
pH KCl (23A)	----	0.1	pH Unit	**9.0**	**8.6**	**8.7**	**8.6**	**8.5**
Titratable Actual Acidity (23F)	----	2	mole H+ / t	<2	<2	<2	<2	<2
sulfidic - Titratable Actual Acidity (s-23F)	----	0.02	% pyrite S	<0.02	<0.02	<0.02	<0.02	<0.02
EA033-B: Potential Acidity								
Chromium Reducible Sulfur (22B)	----	0.005	% S	**0.455**	**0.331**	**0.830**	**0.823**	**1.04**
acidity - Chromium Reducible Sulfur (a-22B)	----	10	mole H+ / t	**284**	**207**	**518**	**513**	**650**
EA033-C: Acid Neutralising Capacity								
Acid Neutralising Capacity (19A2)	----	0.01	% CaCO3	**46.8**	**11.4**	**12.6**	**8.63**	**11.5**
acidity - Acid Neutralising Capacity (a-19A2)	----	10	mole H+ / t	**9350**	**2280**	**2520**	**1720**	**2300**
sulfidic - Acid Neutralising Capacity (s-19A2)	----	0.01	% pyrite S	**15.0**	**3.66**	**4.05**	**2.76**	**3.69**
EA033-E: Acid Base Accounting								
ANC Fineness Factor	----	0.5	-	**1.5**	**1.5**	**1.5**	**1.5**	**1.5**
Net Acidity (sulfur units)	----	0.02	% S	<0.02	<0.02	<0.02	<0.02	<0.02
Net Acidity (acidity units)	----	10	mole H+ / t	<10	<10	<10	<10	<10
Liming Rate	----	1	kg CaCO3/t	<1	<1	<1	<1	<1
Net Acidity excluding ANC (sulfur units)	----	0.02	% S	**0.46**	**0.33**	**0.83**	**0.82**	**1.04**
Net Acidity excluding ANC (acidity units)	----	10	mole H+ / t	**284**	**207**	**518**	**513**	**650**
Liming Rate excluding ANC	----	1	kg CaCO3/t	**21**	**16**	**39**	**39**	**49**
EA055: Moisture Content (Dried @ 105-110°C)								
Moisture Content	----	1.0	%	**45.1**	**44.4**	**----**	**----**	**----**
EA150: Particle Sizing								
+75µm	----	1	%	**14**	**6**	**4**	**3**	**3**
+150µm	----	1	%	**12**	**6**	**3**	**3**	**3**
+300µm	----	1	%	**10**	**5**	**2**	**2**	**2**
+425µm	----	1	%	**8**	**4**	**2**	**2**	**2**
+600µm	----	1	%	**6**	**3**	**1**	**1**	**2**

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Sample ID	SH7 0-0.5	SH7 0.5-1	SH7 1-1.5	SH7 1.5-2	SH7 2-2.5
			Sampling date / time	11-Feb-2026 00:00	11-Feb-2026 00:00	11-Feb-2026 00:00	11-Feb-2026 00:00	11-Feb-2026 00:00
Compound	CAS Number	LOR	Unit	EB2605255-071	EB2605255-072	EB2605255-073	EB2605255-074	EB2605255-075
				Result	Result	Result	Result	Result
EA150: Particle Sizing - Continued								
+1180µm	----	1	%	2	2	<1	<1	<1
+2.36mm	----	1	%	<1	<1	<1	<1	<1
+4.75mm	----	1	%	<1	<1	<1	<1	<1
+9.5mm	----	1	%	<1	<1	<1	<1	<1
+19.0mm	----	1	%	<1	<1	<1	<1	<1
+37.5mm	----	1	%	<1	<1	<1	<1	<1
+75.0mm	----	1	%	<1	<1	<1	<1	<1
EA150: Soil Classification based on Particle Size								
Clay (<2 µm)	----	1	%	31	43	53	41	40
Silt (2-60 µm)	----	1	%	54	50	43	55	56
Sand (0.06-2.00 mm)	----	1	%	14	6	4	4	4
Gravel (>2mm)	----	1	%	1	1	<1	<1	<1
Cobbles (>6cm)	----	1	%	<1	<1	<1	<1	<1
EA152: Soil Particle Density								
Soil Particle Density (Clay/Silt/Sand)	----	0.01	g/cm3	2.54	2.46	2.18	2.33	2.45
EG005(ED093)-SD: Total Metals in Sediments by ICP-AES								
Aluminium	7429-90-5	50	mg/kg	10400	9720	----	----	----
Iron	7439-89-6	50	mg/kg	19200	22200	----	----	----
EG020-SD: Total Metals in Sediments by ICPMS								
Antimony	7440-36-0	0.50	mg/kg	<0.50	<0.50	----	----	----
Arsenic	7440-38-2	1.00	mg/kg	9.20	11.7	----	----	----
Cadmium	7440-43-9	0.1	mg/kg	<0.1	<0.1	----	----	----
Chromium	7440-47-3	1.0	mg/kg	18.8	18.8	----	----	----
Copper	7440-50-8	1.0	mg/kg	6.9	7.5	----	----	----
Cobalt	7440-48-4	0.5	mg/kg	6.5	7.4	----	----	----
Lead	7439-92-1	1.0	mg/kg	8.8	9.3	----	----	----
Manganese	7439-96-5	10	mg/kg	201	224	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Sample ID	SH7 0-0.5	SH7 0.5-1	SH7 1-1.5	SH7 1.5-2	SH7 2-2.5
				Sampling date / time	11-Feb-2026 00:00	11-Feb-2026 00:00	11-Feb-2026 00:00	11-Feb-2026 00:00	11-Feb-2026 00:00
Compound	CAS Number	LOR	Unit		EB2605255-071	EB2605255-072	EB2605255-073	EB2605255-074	EB2605255-075
					Result	Result	Result	Result	Result
EG020-SD: Total Metals in Sediments by ICPMS - Continued									
Nickel	7440-02-0	1.0	mg/kg		**10.0**	**10.4**	----	----	----
Selenium	7782-49-2	0.1	mg/kg		**0.6**	**0.6**	----	----	----
Silver	7440-22-4	0.1	mg/kg		<0.1	<0.1	----	----	----
Vanadium	7440-62-2	2.0	mg/kg		**26.2**	**29.2**	----	----	----
Zinc	7440-66-6	1.0	mg/kg		**22.9**	**22.9**	----	----	----
EG035T: Total Recoverable Mercury by FIMS									
Mercury	7439-97-6	0.01	mg/kg		<0.01	<0.01	----	----	----
EP003: Total Organic Carbon (TOC) in Soil									
Total Organic Carbon	----	0.02	%		**0.48**	**0.75**	----	----	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions									
>C10 - C16 Fraction	----	3	mg/kg		<3	<3	----	----	----
>C16 - C34 Fraction	----	3	mg/kg		<3	<3	----	----	----
>C34 - C40 Fraction	----	5	mg/kg		<5	<5	----	----	----
>C10 - C40 Fraction (sum)	----	3	mg/kg		<3	<3	----	----	----
>C10 - C16 Fraction minus Naphthalene (F2)	----	3	mg/kg		<3	<3	----	----	----
EP080-SD / EP071-SD: Total Petroleum Hydrocarbons									
C6 - C9 Fraction	----	3	mg/kg		<3	<3	----	----	----
C10 - C14 Fraction	----	3	mg/kg		<3	<3	----	----	----
C15 - C28 Fraction	----	3	mg/kg		<3	<3	----	----	----
C29 - C36 Fraction	----	5	mg/kg		<5	<5	----	----	----
^ **C10 - C36 Fraction (sum)**	----	3	mg/kg		<3	<3	----	----	----
EP080-SD / EP071-SD: Total Recoverable Hydrocarbons									
C6 - C10 Fraction	C6_C10	3	mg/kg		<3	<3	----	----	----
C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	3.0	mg/kg		<3.0	<3.0	----	----	----
EP080-SD: BTEXN									
Benzene	71-43-2	0.2	mg/kg		<0.2	<0.2	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Sample ID	SH7 0-0.5	SH7 0.5-1	SH7 1-1.5	SH7 1.5-2	SH7 2-2.5
			Sampling date / time	11-Feb-2026 00:00	11-Feb-2026 00:00	11-Feb-2026 00:00	11-Feb-2026 00:00	11-Feb-2026 00:00
Compound	CAS Number	LOR	Unit	EB2605255-071	EB2605255-072	EB2605255-073	EB2605255-074	EB2605255-075
				Result	Result	Result	Result	Result
EP080-SD: BTEXN - Continued								
Toluene	108-88-3	0.2	mg/kg	<0.2	<0.2	----	----	----
Ethylbenzene	100-41-4	0.2	mg/kg	<0.2	<0.2	----	----	----
meta- & para-Xylene	108-38-3 106-42-3	0.2	mg/kg	<0.2	<0.2	----	----	----
ortho-Xylene	95-47-6	0.2	mg/kg	<0.2	<0.2	----	----	----
^ **Total Xylenes**	----	0.5	mg/kg	<0.5	<0.5	----	----	----
^ **Sum of BTEX**	----	0.2	mg/kg	<0.2	<0.2	----	----	----
Naphthalene	91-20-3	0.2	mg/kg	<0.2	<0.2	----	----	----
EP090: Organotin Compounds								
Monobutyltin	78763-54-9	1	µgSn/kg	<1	<1	----	----	----
Dibutyltin	1002-53-5	1	µgSn/kg	<1	<1	----	----	----
Tributyltin	56573-85-4	0.5	µgSn/kg	<0.5	<0.5	----	----	----
EP131A: Organochlorine Pesticides								
Aldrin	309-00-2	0.50	µg/kg	<0.50	<0.50	----	----	----
alpha-BHC	319-84-6	0.50	µg/kg	<0.50	<0.50	----	----	----
beta-BHC	319-85-7	0.50	µg/kg	<0.50	<0.50	----	----	----
delta-BHC	319-86-8	0.50	µg/kg	<0.50	<0.50	----	----	----
4.4`-DDD	72-54-8	0.50	µg/kg	<0.50	<0.50	----	----	----
4.4`-DDE	72-55-9	0.50	µg/kg	<0.50	<0.50	----	----	----
4.4`-DDT	50-29-3	0.50	µg/kg	<0.50	<0.50	----	----	----
^ **Sum of DDD + DDE + DDT**	72-54-8/72-55-9/50-2	0.50	µg/kg	<0.50	<0.50	----	----	----
Dieldrin	60-57-1	0.50	µg/kg	<0.50	<0.50	----	----	----
alpha-Endosulfan	959-98-8	0.50	µg/kg	<0.50	<0.50	----	----	----
beta-Endosulfan	33213-65-9	0.50	µg/kg	<0.50	<0.50	----	----	----
Endosulfan sulfate	1031-07-8	0.50	µg/kg	<0.50	<0.50	----	----	----
^ **Endosulfan (sum)**	115-29-7	0.50	µg/kg	<0.50	<0.50	----	----	----
Endrin	72-20-8	0.50	µg/kg	<0.50	<0.50	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Sample ID	SH7 0-0.5	SH7 0.5-1	SH7 1-1.5	SH7 1.5-2	SH7 2-2.5
				Sampling date / time	11-Feb-2026 00:00	11-Feb-2026 00:00	11-Feb-2026 00:00	11-Feb-2026 00:00	11-Feb-2026 00:00
Compound	CAS Number	LOR	Unit		EB2605255-071	EB2605255-072	EB2605255-073	EB2605255-074	EB2605255-075
					Result	Result	Result	Result	Result
EP131A: Organochlorine Pesticides - Continued									
Endrin aldehyde	7421-93-4	0.50	µg/kg		<0.50	<0.50	----	----	----
Endrin ketone	53494-70-5	0.50	µg/kg		<0.50	<0.50	----	----	----
Heptachlor	76-44-8	0.50	µg/kg		<0.50	<0.50	----	----	----
Heptachlor epoxide	1024-57-3	0.50	µg/kg		<0.50	<0.50	----	----	----
Hexachlorobenzene (HCB)	118-74-1	0.50	µg/kg		<0.50	<0.50	----	----	----
gamma-BHC - (Lindane)	58-89-9	0.25	µg/kg		<0.25	<0.25	----	----	----
Methoxychlor	72-43-5	0.50	µg/kg		<0.50	<0.50	----	----	----
cis-Chlordane	5103-71-9	0.50	µg/kg		<0.50	<0.50	----	----	----
trans-Chlordane	5103-74-2	0.50	µg/kg		<0.50	<0.50	----	----	----
^ Total Chlordane (sum)	----	0.50	µg/kg		<0.50	<0.50	----	----	----
Oxychlordane	27304-13-8	0.50	µg/kg		<0.50	<0.50	----	----	----
^ Sum of Aldrin + Dieldrin	309-00-2/60-57-1	0.50	µg/kg		<0.50	<0.50	----	----	----
EP132B: Polynuclear Aromatic Hydrocarbons									
Naphthalene	91-20-3	5	µg/kg		<5	<5	----	----	----
2-Methylnaphthalene	91-57-6	5	µg/kg		<5	<5	----	----	----
Acenaphthylene	208-96-8	4	µg/kg		<4	<4	----	----	----
Acenaphthene	83-32-9	4	µg/kg		<4	<4	----	----	----
Fluorene	86-73-7	4	µg/kg		<4	<4	----	----	----
Phenanthrene	85-01-8	4	µg/kg		<4	<4	----	----	----
Anthracene	120-12-7	4	µg/kg		<4	<4	----	----	----
Fluoranthene	206-44-0	4	µg/kg		<4	<4	----	----	----
Pyrene	129-00-0	4	µg/kg		<4	<4	----	----	----
Benz(a)anthracene	56-55-3	4	µg/kg		<4	<4	----	----	----
Chrysene	218-01-9	4	µg/kg		<4	<4	----	----	----
Benzo(b+j)fluoranthene	205-99-2 205-82-3	4	µg/kg		<4	<4	----	----	----
Benzo(k)fluoranthene	207-08-9	4	µg/kg		<4	<4	----	----	----
Benzo(e)pyrene	192-97-2	4	µg/kg		<4	<4	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Sample ID	SH7 0-0.5	SH7 0.5-1	SH7 1-1.5	SH7 1.5-2	SH7 2-2.5
				Sampling date / time	11-Feb-2026 00:00	11-Feb-2026 00:00	11-Feb-2026 00:00	11-Feb-2026 00:00	11-Feb-2026 00:00
Compound	CAS Number	LOR	Unit		EB2605255-071	EB2605255-072	EB2605255-073	EB2605255-074	EB2605255-075
					Result	Result	Result	Result	Result
EP132B: Polynuclear Aromatic Hydrocarbons - Continued									
Benzo(a)pyrene	50-32-8	4	µg/kg		<4	<4	----	----	----
Perylene	198-55-0	4	µg/kg		<4	<4	----	----	----
Benzo(g.h.i)perylene	191-24-2	4	µg/kg		<4	<4	----	----	----
Dibenz(a.h)anthracene	53-70-3	4	µg/kg		<4	<4	----	----	----
Indeno(1.2.3.cd)pyrene	193-39-5	4	µg/kg		<4	<4	----	----	----
Coronene	191-07-1	5	µg/kg		<5	<5	----	----	----
^ Sum of PAHs	----	4	µg/kg		<4	<4	----	----	----
^ Benzo(a)pyrene TEQ (zero)	----	4	µg/kg		<4	<4	----	----	----
^ Benzo(a)pyrene TEQ (half LOR)	----	4	µg/kg		5	5	----	----	----
^ Benzo(a)pyrene TEQ (LOR)	----	4	µg/kg		10	10	----	----	----
EP080-SD: TPH(V)/BTEX Surrogates									
1.2-Dichloroethane-D4	17060-07-0	0.2	%		45.4	60.7	----	----	----
Toluene-D8	2037-26-5	0.2	%		54.6	57.7	----	----	----
4-Bromofluorobenzene	460-00-4	0.2	%		57.5	69.5	----	----	----
EP090S: Organotin Surrogate									
Tripropyltin	----	0.5	%		98.8	112	----	----	----
EP131S: OC Pesticide Surrogate									
Dibromo-DDE	21655-73-2	0.50	%		103	71.4	----	----	----
EP132T: Base/Neutral Extractable Surrogates - SD									
2-Fluorobiphenyl	321-60-8	10	%		92.7	70.3	----	----	----
Anthracene-d10	1719-06-8	10	%		116	97.3	----	----	----
4-Terphenyl-d14	1718-51-0	10	%		85.6	73.4	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Sample ID	SH12 0-0.5	SH12 0.5-1	SH12 1-1.5	SH12 1.5-2	SH12 2-2.5
			Sampling date / time	11-Feb-2026 00:00	11-Feb-2026 00:00	11-Feb-2026 00:00	11-Feb-2026 00:00	11-Feb-2026 00:00
Compound	CAS Number	LOR	Unit	EB2605255-076	EB2605255-077	EB2605255-078	EB2605255-079	EB2605255-080
				Result	Result	Result	Result	Result
EA033-A: Actual Acidity								
pH KCl (23A)	----	0.1	pH Unit	**9.1**	**8.8**	**8.7**	**8.6**	**8.6**
Titratable Actual Acidity (23F)	----	2	mole H+ / t	<2	<2	<2	<2	<2
sulfidic - Titratable Actual Acidity (s-23F)	----	0.02	% pyrite S	<0.02	<0.02	<0.02	<0.02	<0.02
EA033-B: Potential Acidity								
Chromium Reducible Sulfur (22B)	----	0.005	% S	**0.330**	**0.690**	**1.17**	**0.600**	**1.19**
acidity - Chromium Reducible Sulfur (a-22B)	----	10	mole H+ / t	**206**	**430**	**728**	**374**	**742**
EA033-C: Acid Neutralising Capacity								
Acid Neutralising Capacity (19A2)	----	0.01	% CaCO3	**53.0**	**17.9**	**13.2**	**10.3**	**8.99**
acidity - Acid Neutralising Capacity (a-19A2)	----	10	mole H+ / t	**10600**	**3590**	**2630**	**2060**	**1800**
sulfidic - Acid Neutralising Capacity (s-19A2)	----	0.01	% pyrite S	**17.0**	**5.75**	**4.22**	**3.30**	**2.88**
EA033-E: Acid Base Accounting								
ANC Fineness Factor	----	0.5	-	**1.5**	**1.5**	**1.5**	**1.5**	**1.5**
Net Acidity (sulfur units)	----	0.02	% S	<0.02	<0.02	<0.02	<0.02	<0.02
Net Acidity (acidity units)	----	10	mole H+ / t	<10	<10	<10	<10	<10
Liming Rate	----	1	kg CaCO3/t	<1	<1	<1	<1	<1
Net Acidity excluding ANC (sulfur units)	----	0.02	% S	**0.33**	**0.69**	**1.17**	**0.60**	**1.19**
Net Acidity excluding ANC (acidity units)	----	10	mole H+ / t	**206**	**430**	**728**	**374**	**742**
Liming Rate excluding ANC	----	1	kg CaCO3/t	**15**	**32**	**55**	**28**	**56**
EA055: Moisture Content (Dried @ 105-110°C)								
Moisture Content	----	1.0	%	**35.8**	**----**	**----**	**----**	**----**
EA150: Particle Sizing								
+75µm	----	1	%	**46**	**9**	**6**	**4**	**3**
+150µm	----	1	%	**41**	**8**	**6**	**4**	**3**
+300µm	----	1	%	**32**	**6**	**5**	**3**	**2**
+425µm	----	1	%	**27**	**5**	**4**	**2**	**2**
+600µm	----	1	%	**23**	**4**	**3**	**2**	**1**

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Sample ID	SH12 0-0.5	SH12 0.5-1	SH12 1-1.5	SH12 1.5-2	SH12 2-2.5
			Sampling date / time	11-Feb-2026 00:00	11-Feb-2026 00:00	11-Feb-2026 00:00	11-Feb-2026 00:00	11-Feb-2026 00:00
Compound	CAS Number	LOR	Unit	EB2605255-076	EB2605255-077	EB2605255-078	EB2605255-079	EB2605255-080
				Result	Result	Result	Result	Result
EA150: Particle Sizing - Continued								
+1180µm	----	1	%	12	2	3	1	<1
+2.36mm	----	1	%	6	<1	<1	<1	<1
+4.75mm	----	1	%	3	<1	<1	<1	<1
+9.5mm	----	1	%	<1	<1	<1	<1	<1
+19.0mm	----	1	%	<1	<1	<1	<1	<1
+37.5mm	----	1	%	<1	<1	<1	<1	<1
+75.0mm	----	1	%	<1	<1	<1	<1	<1
EA150: Soil Classification based on Particle Size								
Clay (<2 µm)	----	1	%	23	33	54	32	54
Silt (2-60 µm)	----	1	%	31	56	40	62	43
Sand (0.06-2.00 mm)	----	1	%	38	10	5	5	3
Gravel (>2mm)	----	1	%	8	1	1	1	<1
Cobbles (>6cm)	----	1	%	<1	<1	<1	<1	<1
EA152: Soil Particle Density								
Soil Particle Density (Clay/Silt/Sand)	----	0.01	g/cm3	2.45	2.35	2.47	2.01	2.37
EG005(ED093)-SD: Total Metals in Sediments by ICP-AES								
Aluminium	7429-90-5	50	mg/kg	5220	----	----	----	----
Iron	7439-89-6	50	mg/kg	7270	----	----	----	----
EG020-SD: Total Metals in Sediments by ICPMS								
Antimony	7440-36-0	0.50	mg/kg	<0.50	----	----	----	----
Arsenic	7440-38-2	1.00	mg/kg	4.90	----	----	----	----
Cadmium	7440-43-9	0.1	mg/kg	<0.1	----	----	----	----
Chromium	7440-47-3	1.0	mg/kg	12.2	----	----	----	----
Copper	7440-50-8	1.0	mg/kg	3.0	----	----	----	----
Cobalt	7440-48-4	0.5	mg/kg	2.9	----	----	----	----
Lead	7439-92-1	1.0	mg/kg	4.6	----	----	----	----
Manganese	7439-96-5	10	mg/kg	163	----	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Sample ID	SH12 0-0.5	SH12 0.5-1	SH12 1-1.5	SH12 1.5-2	SH12 2-2.5
			Sampling date / time	11-Feb-2026 00:00	11-Feb-2026 00:00	11-Feb-2026 00:00	11-Feb-2026 00:00	11-Feb-2026 00:00
Compound	CAS Number	LOR	Unit	EB2605255-076	EB2605255-077	EB2605255-078	EB2605255-079	EB2605255-080
				Result	Result	Result	Result	Result
EG020-SD: Total Metals in Sediments by ICPMS - Continued								
Nickel	7440-02-0	1.0	mg/kg	**5.8**	----	----	----	----
Selenium	7782-49-2	0.1	mg/kg	**0.5**	----	----	----	----
Silver	7440-22-4	0.1	mg/kg	<0.1	----	----	----	----
Vanadium	7440-62-2	2.0	mg/kg	**14.9**	----	----	----	----
Zinc	7440-66-6	1.0	mg/kg	**11.5**	----	----	----	----
EG035T: Total Recoverable Mercury by FIMS								
Mercury	7439-97-6	0.01	mg/kg	<0.01	----	----	----	----
EP003: Total Organic Carbon (TOC) in Soil								
Total Organic Carbon	----	0.02	%	**0.46**	----	----	----	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions								
>C10 - C16 Fraction	----	3	mg/kg	<3	----	----	----	----
>C16 - C34 Fraction	----	3	mg/kg	**4**	----	----	----	----
>C34 - C40 Fraction	----	5	mg/kg	<5	----	----	----	----
>C10 - C40 Fraction (sum)	----	3	mg/kg	**4**	----	----	----	----
>C10 - C16 Fraction minus Naphthalene (F2)	----	3	mg/kg	<3	----	----	----	----
EP080-SD / EP071-SD: Total Petroleum Hydrocarbons								
C6 - C9 Fraction	----	3	mg/kg	<3	----	----	----	----
C10 - C14 Fraction	----	3	mg/kg	<3	----	----	----	----
C15 - C28 Fraction	----	3	mg/kg	<3	----	----	----	----
C29 - C36 Fraction	----	5	mg/kg	<5	----	----	----	----
^ **C10 - C36 Fraction (sum)**	----	3	mg/kg	<3	----	----	----	----
EP080-SD / EP071-SD: Total Recoverable Hydrocarbons								
C6 - C10 Fraction	C6_C10	3	mg/kg	<3	----	----	----	----
C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	3.0	mg/kg	<3.0	----	----	----	----
EP080-SD: BTEXN								
Benzene	71-43-2	0.2	mg/kg	<0.2	----	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Sample ID	SH12 0-0.5	SH12 0.5-1	SH12 1-1.5	SH12 1.5-2	SH12 2-2.5
				Sampling date / time	11-Feb-2026 00:00	11-Feb-2026 00:00	11-Feb-2026 00:00	11-Feb-2026 00:00	11-Feb-2026 00:00
Compound	CAS Number	LOR	Unit		EB2605255-076	EB2605255-077	EB2605255-078	EB2605255-079	EB2605255-080
					Result	Result	Result	Result	Result
EP080-SD: BTEXN - Continued									
Toluene	108-88-3	0.2	mg/kg		<0.2	----	----	----	----
Ethylbenzene	100-41-4	0.2	mg/kg		<0.2	----	----	----	----
meta- & para-Xylene	108-38-3 106-42-3	0.2	mg/kg		<0.2	----	----	----	----
ortho-Xylene	95-47-6	0.2	mg/kg		<0.2	----	----	----	----
^ **Total Xylenes**	----	0.5	mg/kg		<0.5	----	----	----	----
^ **Sum of BTEX**	----	0.2	mg/kg		<0.2	----	----	----	----
Naphthalene	91-20-3	0.2	mg/kg		<0.2	----	----	----	----
EP090: Organotin Compounds									
Monobutyltin	78763-54-9	1	µgSn/kg		<1	----	----	----	----
Dibutyltin	1002-53-5	1	µgSn/kg		<1	----	----	----	----
Tributyltin	56573-85-4	0.5	µgSn/kg		<0.5	----	----	----	----
EP131A: Organochlorine Pesticides									
Aldrin	309-00-2	0.50	µg/kg		<0.50	----	----	----	----
alpha-BHC	319-84-6	0.50	µg/kg		<0.50	----	----	----	----
beta-BHC	319-85-7	0.50	µg/kg		<0.50	----	----	----	----
delta-BHC	319-86-8	0.50	µg/kg		<0.50	----	----	----	----
4.4`-DDD	72-54-8	0.50	µg/kg		<0.50	----	----	----	----
4.4`-DDE	72-55-9	0.50	µg/kg		<0.50	----	----	----	----
4.4`-DDT	50-29-3	0.50	µg/kg		<0.50	----	----	----	----
^ **Sum of DDD + DDE + DDT**	72-54-8/72-55-9/50-2	0.50	µg/kg		<0.50	----	----	----	----
Dieldrin	60-57-1	0.50	µg/kg		<0.50	----	----	----	----
alpha-Endosulfan	959-98-8	0.50	µg/kg		<0.50	----	----	----	----
beta-Endosulfan	33213-65-9	0.50	µg/kg		<0.50	----	----	----	----
Endosulfan sulfate	1031-07-8	0.50	µg/kg		<0.50	----	----	----	----
^ **Endosulfan (sum)**	115-29-7	0.50	µg/kg		<0.50	----	----	----	----
Endrin	72-20-8	0.50	µg/kg		<0.50	----	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Sample ID	SH12 0-0.5	SH12 0.5-1	SH12 1-1.5	SH12 1.5-2	SH12 2-2.5
				Sampling date / time	11-Feb-2026 00:00	11-Feb-2026 00:00	11-Feb-2026 00:00	11-Feb-2026 00:00	11-Feb-2026 00:00
Compound	CAS Number	LOR	Unit		EB2605255-076	EB2605255-077	EB2605255-078	EB2605255-079	EB2605255-080
					Result	Result	Result	Result	Result
EP131A: Organochlorine Pesticides - Continued									
Endrin aldehyde	7421-93-4	0.50	µg/kg		<0.50	----	----	----	----
Endrin ketone	53494-70-5	0.50	µg/kg		<0.50	----	----	----	----
Heptachlor	76-44-8	0.50	µg/kg		<0.50	----	----	----	----
Heptachlor epoxide	1024-57-3	0.50	µg/kg		<0.50	----	----	----	----
Hexachlorobenzene (HCB)	118-74-1	0.50	µg/kg		<0.50	----	----	----	----
gamma-BHC - (Lindane)	58-89-9	0.25	µg/kg		<0.25	----	----	----	----
Methoxychlor	72-43-5	0.50	µg/kg		<0.50	----	----	----	----
cis-Chlordane	5103-71-9	0.50	µg/kg		<0.50	----	----	----	----
trans-Chlordane	5103-74-2	0.50	µg/kg		<0.50	----	----	----	----
^ **Total Chlordane (sum)**	----	0.50	µg/kg		<0.50	----	----	----	----
Oxychlordane	27304-13-8	0.50	µg/kg		<0.50	----	----	----	----
^ **Sum of Aldrin + Dieldrin**	309-00-2/60-57-1	0.50	µg/kg		<0.50	----	----	----	----
EP132B: Polynuclear Aromatic Hydrocarbons									
Naphthalene	91-20-3	5	µg/kg		<5	----	----	----	----
2-Methylnaphthalene	91-57-6	5	µg/kg		<5	----	----	----	----
Acenaphthylene	208-96-8	4	µg/kg		<4	----	----	----	----
Acenaphthene	83-32-9	4	µg/kg		<4	----	----	----	----
Fluorene	86-73-7	4	µg/kg		<4	----	----	----	----
Phenanthrene	85-01-8	4	µg/kg		<4	----	----	----	----
Anthracene	120-12-7	4	µg/kg		<4	----	----	----	----
Fluoranthene	206-44-0	4	µg/kg		<4	----	----	----	----
Pyrene	129-00-0	4	µg/kg		<4	----	----	----	----
Benz(a)anthracene	56-55-3	4	µg/kg		<4	----	----	----	----
Chrysene	218-01-9	4	µg/kg		<4	----	----	----	----
Benzo(b+j)fluoranthene	205-99-2 205-82-3	4	µg/kg		<4	----	----	----	----
Benzo(k)fluoranthene	207-08-9	4	µg/kg		<4	----	----	----	----
Benzo(e)pyrene	192-97-2	4	µg/kg		<4	----	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Sample ID	SH12 0-0.5	SH12 0.5-1	SH12 1-1.5	SH12 1.5-2	SH12 2-2.5
				Sampling date / time	11-Feb-2026 00:00	11-Feb-2026 00:00	11-Feb-2026 00:00	11-Feb-2026 00:00	11-Feb-2026 00:00
Compound	CAS Number	LOR	Unit		EB2605255-076	EB2605255-077	EB2605255-078	EB2605255-079	EB2605255-080
					Result	Result	Result	Result	Result
EP132B: Polynuclear Aromatic Hydrocarbons - Continued									
Benzo(a)pyrene	50-32-8	4	µg/kg		<4	----	----	----	----
Perylene	198-55-0	4	µg/kg		<4	----	----	----	----
Benzo(g.h.i)perylene	191-24-2	4	µg/kg		<4	----	----	----	----
Dibenz(a.h)anthracene	53-70-3	4	µg/kg		<4	----	----	----	----
Indeno(1.2.3.cd)pyrene	193-39-5	4	µg/kg		<4	----	----	----	----
Coronene	191-07-1	5	µg/kg		<5	----	----	----	----
^ Sum of PAHs	----	4	µg/kg		<4	----	----	----	----
^ Benzo(a)pyrene TEQ (zero)	----	4	µg/kg		<4	----	----	----	----
^ Benzo(a)pyrene TEQ (half LOR)	----	4	µg/kg		**5**	----	----	----	----
^ Benzo(a)pyrene TEQ (LOR)	----	4	µg/kg		**10**	----	----	----	----
EP080-SD: TPH(V)/BTEX Surrogates									
1.2-Dichloroethane-D4	17060-07-0	0.2	%		**65.3**	----	----	----	----
Toluene-D8	2037-26-5	0.2	%		**58.1**	----	----	----	----
4-Bromofluorobenzene	460-00-4	0.2	%		**71.9**	----	----	----	----
EP090S: Organotin Surrogate									
Tripropyltin	----	0.5	%		**97.0**	----	----	----	----
EP131S: OC Pesticide Surrogate									
Dibromo-DDE	21655-73-2	0.50	%		**67.7**	----	----	----	----
EP132T: Base/Neutral Extractable Surrogates - SD									
2-Fluorobiphenyl	321-60-8	10	%		**73.7**	----	----	----	----
Anthracene-d10	1719-06-8	10	%		**104**	----	----	----	----
4-Terphenyl-d14	1718-51-0	10	%		**76.5**	----	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Sample ID	SH12 0-1	SH12 1-2	SH12 2-3	SH15 0-0.5	SH15 0.5-1
			Sampling date / time	11-Feb-2026 00:00	11-Feb-2026 00:00	11-Feb-2026 00:00	11-Feb-2026 00:00	11-Feb-2026 00:00
Compound	CAS Number	LOR	Unit	EB2605255-081	EB2605255-082	EB2605255-083	EB2605255-084	EB2605255-085
				Result	Result	Result	Result	Result
EA033-A: Actual Acidity								
pH KCl (23A)	----	0.1	pH Unit	----	----	----	**9.0**	**8.7**
Titratable Actual Acidity (23F)	----	2	mole H+ / t	----	----	----	<2	<2
sulfidic - Titratable Actual Acidity (s-23F)	----	0.02	% pyrite S	----	----	----	<0.02	<0.02
EA033-B: Potential Acidity								
Chromium Reducible Sulfur (22B)	----	0.005	% S	----	----	----	**0.612**	**1.17**
acidity - Chromium Reducible Sulfur (a-22B)	----	10	mole H+ / t	----	----	----	**382**	**730**
EA033-C: Acid Neutralising Capacity								
Acid Neutralising Capacity (19A2)	----	0.01	% CaCO3	----	----	----	**41.6**	**13.6**
acidity - Acid Neutralising Capacity (a-19A2)	----	10	mole H+ / t	----	----	----	**8310**	**2720**
sulfidic - Acid Neutralising Capacity (s-19A2)	----	0.01	% pyrite S	----	----	----	**13.3**	**4.36**
EA033-E: Acid Base Accounting								
ANC Fineness Factor	----	0.5	-	----	----	----	**1.5**	**1.5**
Net Acidity (sulfur units)	----	0.02	% S	----	----	----	<0.02	<0.02
Net Acidity (acidity units)	----	10	mole H+ / t	----	----	----	<10	<10
Liming Rate	----	1	kg CaCO3/t	----	----	----	<1	<1
Net Acidity excluding ANC (sulfur units)	----	0.02	% S	----	----	----	**0.61**	**1.17**
Net Acidity excluding ANC (acidity units)	----	10	mole H+ / t	----	----	----	**382**	**730**
Liming Rate excluding ANC	----	1	kg CaCO3/t	----	----	----	**29**	**55**
EA055: Moisture Content (Dried @ 105-110°C)								
Moisture Content	----	1.0	%	----	----	----	**37.8**	**46.3**
EA150: Particle Sizing								
+75µm	----	1	%	----	----	----	**28**	**7**
+150µm	----	1	%	----	----	----	**25**	**5**
+300µm	----	1	%	----	----	----	**19**	**4**
+425µm	----	1	%	----	----	----	**16**	**3**
+600µm	----	1	%	----	----	----	**13**	**3**

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Sample ID	SH12 0-1	SH12 1-2	SH12 2-3	SH15 0-0.5	SH15 0.5-1
			Sampling date / time	11-Feb-2026 00:00	11-Feb-2026 00:00	11-Feb-2026 00:00	11-Feb-2026 00:00	11-Feb-2026 00:00
Compound	CAS Number	LOR	Unit	EB2605255-081	EB2605255-082	EB2605255-083	EB2605255-084	EB2605255-085
				Result	Result	Result	Result	Result
EA150: Particle Sizing - Continued								
+1180µm	----	1	%	----	----	----	6	1
+2.36mm	----	1	%	----	----	----	1	<1
+4.75mm	----	1	%	----	----	----	<1	<1
+9.5mm	----	1	%	----	----	----	<1	<1
+19.0mm	----	1	%	----	----	----	<1	<1
+37.5mm	----	1	%	----	----	----	<1	<1
+75.0mm	----	1	%	----	----	----	<1	<1
EA150: Soil Classification based on Particle Size								
Clay (<2 µm)	----	1	%	----	----	----	38	56
Silt (2-60 µm)	----	1	%	----	----	----	33	36
Sand (0.06-2.00 mm)	----	1	%	----	----	----	27	7
Gravel (>2mm)	----	1	%	----	----	----	2	1
Cobbles (>6cm)	----	1	%	----	----	----	<1	<1
EA151: Settleability 10%								
ø Underflow Density	----	0.01	g/cm3	1.23	1.19	1.19	----	----
ø Underflow Solids	----	0.1	%	27.6	24.0	29.9	----	----
ø Settling Rate @ 50% of Settlement	----	0.001	mm/min	3.60	1.90	2.80	----	----
ø Settling Rate @ 90% of Settlement	----	0.001	mm/min	0.100	0.100	0.100	----	----
ø Clarity	----	-	-	Transparent	Transparent	Transparent	----	----
EA152: Soil Particle Density								
Soil Particle Density (Clay/Silt/Sand)	----	0.01	g/cm3	----	----	----	2.39	2.58
EG005(ED093)-SD: Total Metals in Sediments by ICP-AES								
Aluminium	7429-90-5	50	mg/kg	----	----	----	6440	11200
Iron	7439-89-6	50	mg/kg	----	----	----	10800	24800
EG020-SD: Total Metals in Sediments by ICPMS								
Antimony	7440-36-0	0.50	mg/kg	----	----	----	<0.50	<0.50
Arsenic	7440-38-2	1.00	mg/kg	----	----	----	7.78	10.8

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Sample ID	SH12 0-1	SH12 1-2	SH12 2-3	SH15 0-0.5	SH15 0.5-1
				Sampling date / time	11-Feb-2026 00:00	11-Feb-2026 00:00	11-Feb-2026 00:00	11-Feb-2026 00:00	11-Feb-2026 00:00
Compound	CAS Number	LOR	Unit		EB2605255-081	EB2605255-082	EB2605255-083	EB2605255-084	EB2605255-085
					Result	Result	Result	Result	Result
EG020-SD: Total Metals in Sediments by ICPMS - Continued									
Cadmium	7440-43-9	0.1	mg/kg		----	----	----	<0.1	<0.1
Chromium	7440-47-3	1.0	mg/kg		----	----	----	**13.6**	**18.8**
Copper	7440-50-8	1.0	mg/kg		----	----	----	**4.5**	**7.4**
Cobalt	7440-48-4	0.5	mg/kg		----	----	----	**4.0**	**7.1**
Lead	7439-92-1	1.0	mg/kg		----	----	----	**6.3**	**10.6**
Manganese	7439-96-5	10	mg/kg		----	----	----	**190**	**270**
Nickel	7440-02-0	1.0	mg/kg		----	----	----	**6.8**	**10.5**
Selenium	7782-49-2	0.1	mg/kg		----	----	----	**0.6**	**0.8**
Silver	7440-22-4	0.1	mg/kg		----	----	----	<0.1	<0.1
Vanadium	7440-62-2	2.0	mg/kg		----	----	----	**19.2**	**28.7**
Zinc	7440-66-6	1.0	mg/kg		----	----	----	**19.2**	**23.0**
EG035T: Total Recoverable Mercury by FIMS									
Mercury	7439-97-6	0.01	mg/kg		----	----	----	<0.01	<0.01
EP003: Total Organic Carbon (TOC) in Soil									
Total Organic Carbon	----	0.02	%		----	----	----	**0.57**	**0.74**
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions									
>C10 - C16 Fraction	----	3	mg/kg		----	----	----	<3	<3
>C16 - C34 Fraction	----	3	mg/kg		----	----	----	<3	<3
>C34 - C40 Fraction	----	5	mg/kg		----	----	----	<5	<5
>C10 - C40 Fraction (sum)	----	3	mg/kg		----	----	----	<3	<3
>C10 - C16 Fraction minus Naphthalene (F2)	----	3	mg/kg		----	----	----	<3	<3
EP080-SD / EP071-SD: Total Petroleum Hydrocarbons									
C6 - C9 Fraction	----	3	mg/kg		----	----	----	<3	<3
C10 - C14 Fraction	----	3	mg/kg		----	----	----	<3	<3
C15 - C28 Fraction	----	3	mg/kg		----	----	----	<3	<3
C29 - C36 Fraction	----	5	mg/kg		----	----	----	<5	<5
^ C10 - C36 Fraction (sum)	----	3	mg/kg		----	----	----	<3	<3

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Sample ID	SH12 0-1	SH12 1-2	SH12 2-3	SH15 0-0.5	SH15 0.5-1
				Sampling date / time	11-Feb-2026 00:00	11-Feb-2026 00:00	11-Feb-2026 00:00	11-Feb-2026 00:00	11-Feb-2026 00:00
Compound	CAS Number	LOR	Unit		EB2605255-081	EB2605255-082	EB2605255-083	EB2605255-084	EB2605255-085
					Result	Result	Result	Result	Result
EP080-SD / EP071-SD: Total Petroleum Hydrocarbons - Continued									
EP080-SD / EP071-SD: Total Recoverable Hydrocarbons									
C6 - C10 Fraction	C6_C10	3	mg/kg		----	----	----	<3	<3
C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	3.0	mg/kg		----	----	----	<3.0	<3.0
EP080-SD: BTEXN									
Benzene	71-43-2	0.2	mg/kg		----	----	----	<0.2	<0.2
Toluene	108-88-3	0.2	mg/kg		----	----	----	<0.2	<0.2
Ethylbenzene	100-41-4	0.2	mg/kg		----	----	----	<0.2	<0.2
meta- & para-Xylene	108-38-3 106-42-3	0.2	mg/kg		----	----	----	<0.2	<0.2
ortho-Xylene	95-47-6	0.2	mg/kg		----	----	----	<0.2	<0.2
^ **Total Xylenes**	----	0.5	mg/kg		----	----	----	<0.5	<0.5
^ **Sum of BTEX**	----	0.2	mg/kg		----	----	----	<0.2	<0.2
Naphthalene	91-20-3	0.2	mg/kg		----	----	----	<0.2	<0.2
EP090: Organotin Compounds									
Monobutyltin	78763-54-9	1	µgSn/kg		----	----	----	<1	<1
Dibutyltin	1002-53-5	1	µgSn/kg		----	----	----	<1	<1
Tributyltin	56573-85-4	0.5	µgSn/kg		----	----	----	<0.5	<0.5
EP131A: Organochlorine Pesticides									
Aldrin	309-00-2	0.50	µg/kg		----	----	----	<0.50	<0.50
alpha-BHC	319-84-6	0.50	µg/kg		----	----	----	<0.50	<0.50
beta-BHC	319-85-7	0.50	µg/kg		----	----	----	<0.50	<0.50
delta-BHC	319-86-8	0.50	µg/kg		----	----	----	<0.50	<0.50
4.4`-DDD	72-54-8	0.50	µg/kg		----	----	----	<0.50	<0.50
4.4`-DDE	72-55-9	0.50	µg/kg		----	----	----	<0.50	<0.50
4.4`-DDT	50-29-3	0.50	µg/kg		----	----	----	<0.50	<0.50
^ **Sum of DDD + DDE + DDT**	72-54-8/72-55-9/50-2	0.50	µg/kg		----	----	----	<0.50	<0.50
Dieldrin	60-57-1	0.50	µg/kg		----	----	----	<0.50	<0.50

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Sample ID	SH12 0-1	SH12 1-2	SH12 2-3	SH15 0-0.5	SH15 0.5-1
				Sampling date / time	11-Feb-2026 00:00	11-Feb-2026 00:00	11-Feb-2026 00:00	11-Feb-2026 00:00	11-Feb-2026 00:00
Compound	CAS Number	LOR	Unit		EB2605255-081	EB2605255-082	EB2605255-083	EB2605255-084	EB2605255-085
					Result	Result	Result	Result	Result
EP131A: Organochlorine Pesticides - Continued									
alpha-Endosulfan	959-98-8	0.50	µg/kg		----	----	----	<0.50	<0.50
beta-Endosulfan	33213-65-9	0.50	µg/kg		----	----	----	<0.50	<0.50
Endosulfan sulfate	1031-07-8	0.50	µg/kg		----	----	----	<0.50	<0.50
^ **Endosulfan (sum)**	115-29-7	0.50	µg/kg		----	----	----	<0.50	<0.50
Endrin	72-20-8	0.50	µg/kg		----	----	----	<0.50	<0.50
Endrin aldehyde	7421-93-4	0.50	µg/kg		----	----	----	<0.50	<0.50
Endrin ketone	53494-70-5	0.50	µg/kg		----	----	----	<0.50	<0.50
Heptachlor	76-44-8	0.50	µg/kg		----	----	----	<0.50	<0.50
Heptachlor epoxide	1024-57-3	0.50	µg/kg		----	----	----	<0.50	<0.50
Hexachlorobenzene (HCB)	118-74-1	0.50	µg/kg		----	----	----	<0.50	<0.50
gamma-BHC - (Lindane)	58-89-9	0.25	µg/kg		----	----	----	<0.25	<0.25
Methoxychlor	72-43-5	0.50	µg/kg		----	----	----	<0.50	<0.50
cis-Chlordane	5103-71-9	0.50	µg/kg		----	----	----	<0.50	<0.50
trans-Chlordane	5103-74-2	0.50	µg/kg		----	----	----	<0.50	<0.50
^ **Total Chlordane (sum)**	----	0.50	µg/kg		----	----	----	<0.50	<0.50
Oxychlordane	27304-13-8	0.50	µg/kg		----	----	----	<0.50	<0.50
^ **Sum of Aldrin + Dieldrin**	309-00-2/60-57-1	0.50	µg/kg		----	----	----	<0.50	<0.50
EP132B: Polynuclear Aromatic Hydrocarbons									
Naphthalene	91-20-3	5	µg/kg		----	----	----	<5	<5
2-Methylnaphthalene	91-57-6	5	µg/kg		----	----	----	<5	<5
Acenaphthylene	208-96-8	4	µg/kg		----	----	----	<4	<4
Acenaphthene	83-32-9	4	µg/kg		----	----	----	<4	<4
Fluorene	86-73-7	4	µg/kg		----	----	----	<4	<4
Phenanthrene	85-01-8	4	µg/kg		----	----	----	<4	<4
Anthracene	120-12-7	4	µg/kg		----	----	----	<4	<4
Fluoranthene	206-44-0	4	µg/kg		----	----	----	<4	<4
Pyrene	129-00-0	4	µg/kg		----	----	----	<4	<4

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Sample ID	SH12 0-1	SH12 1-2	SH12 2-3	SH15 0-0.5	SH15 0.5-1
				Sampling date / time	11-Feb-2026 00:00	11-Feb-2026 00:00	11-Feb-2026 00:00	11-Feb-2026 00:00	11-Feb-2026 00:00
Compound	CAS Number	LOR	Unit		EB2605255-081	EB2605255-082	EB2605255-083	EB2605255-084	EB2605255-085
					Result	Result	Result	Result	Result
EP132B: Polynuclear Aromatic Hydrocarbons - Continued									
Benz(a)anthracene	56-55-3	4	µg/kg		----	----	----	<4	<4
Chrysene	218-01-9	4	µg/kg		----	----	----	<4	<4
Benzo(b+j)fluoranthene	205-99-2 205-82-3	4	µg/kg		----	----	----	<4	<4
Benzo(k)fluoranthene	207-08-9	4	µg/kg		----	----	----	<4	<4
Benzo(e)pyrene	192-97-2	4	µg/kg		----	----	----	<4	<4
Benzo(a)pyrene	50-32-8	4	µg/kg		----	----	----	<4	<4
Perylene	198-55-0	4	µg/kg		----	----	----	<4	<4
Benzo(g.h.i)perylene	191-24-2	4	µg/kg		----	----	----	<4	<4
Dibenz(a.h)anthracene	53-70-3	4	µg/kg		----	----	----	<4	<4
Indeno(1.2.3.cd)pyrene	193-39-5	4	µg/kg		----	----	----	<4	<4
Coronene	191-07-1	5	µg/kg		----	----	----	<5	<5
^ Sum of PAHs	----	4	µg/kg		----	----	----	<4	<4
^ Benzo(a)pyrene TEQ (zero)	----	4	µg/kg		----	----	----	<4	<4
^ Benzo(a)pyrene TEQ (half LOR)	----	4	µg/kg		----	----	----	5	5
^ Benzo(a)pyrene TEQ (LOR)	----	4	µg/kg		----	----	----	10	10
EP080-SD: TPH(V)/BTEX Surrogates									
1.2-Dichloroethane-D4	17060-07-0	0.2	%		----	----	----	51.5	54.2
Toluene-D8	2037-26-5	0.2	%		----	----	----	60.2	61.9
4-Bromofluorobenzene	460-00-4	0.2	%		----	----	----	68.8	67.5
EP090S: Organotin Surrogate									
Tripropyltin	----	0.5	%		----	----	----	103	109
EP131S: OC Pesticide Surrogate									
Dibromo-DDE	21655-73-2	0.50	%		----	----	----	108	57.4
EP132T: Base/Neutral Extractable Surrogates - SD									
2-Fluorobiphenyl	321-60-8	10	%		----	----	----	84.8	81.3
Anthracene-d10	1719-06-8	10	%		----	----	----	111	104
4-Terphenyl-d14	1718-51-0	10	%		----	----	----	84.1	77.3

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Sample ID	SH15 1-1.5	SH15 1.5-2	SH2 0-0.5	SH2 0.5-1	SH2 1-1.5
			Sampling date / time	11-Feb-2026 00:00	11-Feb-2026 00:00	11-Feb-2026 00:00	11-Feb-2026 00:00	11-Feb-2026 00:00
Compound	CAS Number	LOR	Unit	EB2605255-086	EB2605255-087	EB2605255-088	EB2605255-089	EB2605255-090
				Result	Result	Result	Result	Result
EA033-A: Actual Acidity								
pH KCl (23A)	----	0.1	pH Unit	**8.6**	**8.6**	**8.6**	**8.6**	**8.6**
Titratable Actual Acidity (23F)	----	2	mole H+ / t	<2	<2	<2	<2	<2
sulfidic - Titratable Actual Acidity (s-23F)	----	0.02	% pyrite S	<0.02	<0.02	<0.02	<0.02	<0.02
EA033-B: Potential Acidity								
Chromium Reducible Sulfur (22B)	----	0.005	% S	**1.21**	**1.19**	**1.01**	**1.13**	**1.04**
acidity - Chromium Reducible Sulfur (a-22B)	----	10	mole H+ / t	**756**	**745**	**627**	**702**	**649**
EA033-C: Acid Neutralising Capacity								
Acid Neutralising Capacity (19A2)	----	0.01	% CaCO3	**11.2**	**10.6**	**14.6**	**12.1**	**10.5**
acidity - Acid Neutralising Capacity (a-19A2)	----	10	mole H+ / t	**2240**	**2120**	**2920**	**2430**	**2100**
sulfidic - Acid Neutralising Capacity (s-19A2)	----	0.01	% pyrite S	**3.59**	**3.41**	**4.68**	**3.89**	**3.37**
EA033-E: Acid Base Accounting								
ANC Fineness Factor	----	0.5	-	**1.5**	**1.5**	**1.5**	**1.5**	**1.5**
Net Acidity (sulfur units)	----	0.02	% S	<0.02	<0.02	<0.02	<0.02	<0.02
Net Acidity (acidity units)	----	10	mole H+ / t	<10	<10	<10	<10	<10
Liming Rate	----	1	kg CaCO3/t	<1	<1	<1	<1	<1
Net Acidity excluding ANC (sulfur units)	----	0.02	% S	**1.21**	**1.19**	**1.01**	**1.13**	**1.04**
Net Acidity excluding ANC (acidity units)	----	10	mole H+ / t	**756**	**745**	**627**	**702**	**649**
Liming Rate excluding ANC	----	1	kg CaCO3/t	**57**	**56**	**47**	**53**	**49**
EA055: Moisture Content (Dried @ 105-110°C)								
Moisture Content	----	1.0	%	**----**	**----**	**46.6**	**46.8**	**----**
EA150: Particle Sizing								
+75µm	----	1	%	**6**	**12**	**8**	**5**	**5**
+150µm	----	1	%	**5**	**10**	**7**	**4**	**4**
+300µm	----	1	%	**4**	**8**	**6**	**3**	**4**
+425µm	----	1	%	**3**	**7**	**5**	**3**	**3**
+600µm	----	1	%	**3**	**6**	**5**	**2**	**3**

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Sample ID	SH15 1-1.5	SH15 1.5-2	SH2 0-0.5	SH2 0.5-1	SH2 1-1.5
				Sampling date / time	11-Feb-2026 00:00	11-Feb-2026 00:00	11-Feb-2026 00:00	11-Feb-2026 00:00	11-Feb-2026 00:00
Compound	CAS Number	LOR	Unit		EB2605255-086	EB2605255-087	EB2605255-088	EB2605255-089	EB2605255-090
					Result	Result	Result	Result	Result
EA150: Particle Sizing - Continued									
+1180µm	----	1	%		1	4	2	<1	1
+2.36mm	----	1	%		<1	2	<1	<1	<1
+4.75mm	----	1	%		<1	<1	<1	<1	<1
+9.5mm	----	1	%		<1	<1	<1	<1	<1
+19.0mm	----	1	%		<1	<1	<1	<1	<1
+37.5mm	----	1	%		<1	<1	<1	<1	<1
+75.0mm	----	1	%		<1	<1	<1	<1	<1
EA150: Soil Classification based on Particle Size									
Clay (<2 µm)	----	1	%		58	52	52	62	60
Silt (2-60 µm)	----	1	%		36	35	38	32	34
Sand (0.06-2.00 mm)	----	1	%		5	10	9	6	6
Gravel (>2mm)	----	1	%		1	3	1	<1	<1
Cobbles (>6cm)	----	1	%		<1	<1	<1	<1	<1
EA152: Soil Particle Density									
Soil Particle Density (Clay/Silt/Sand)	----	0.01	g/cm3		2.45	2.48	2.43	2.60	2.53
EG005(ED093)-SD: Total Metals in Sediments by ICP-AES									
Aluminium	7429-90-5	50	mg/kg		----	----	10800	10900	----
Iron	7439-89-6	50	mg/kg		----	----	22800	23900	----
EG020-SD: Total Metals in Sediments by ICPMS									
Antimony	7440-36-0	0.50	mg/kg		----	----	<0.50	<0.50	----
Arsenic	7440-38-2	1.00	mg/kg		----	----	9.97	10.5	----
Cadmium	7440-43-9	0.1	mg/kg		----	----	<0.1	<0.1	----
Chromium	7440-47-3	1.0	mg/kg		----	----	18.6	19.3	----
Copper	7440-50-8	1.0	mg/kg		----	----	7.7	8.3	----
Cobalt	7440-48-4	0.5	mg/kg		----	----	7.2	7.7	----
Lead	7439-92-1	1.0	mg/kg		----	----	10.2	10.2	----
Manganese	7439-96-5	10	mg/kg		----	----	242	256	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Sample ID	SH15 1-1.5	SH15 1.5-2	SH2 0-0.5	SH2 0.5-1	SH2 1-1.5
				Sampling date / time	11-Feb-2026 00:00	11-Feb-2026 00:00	11-Feb-2026 00:00	11-Feb-2026 00:00	11-Feb-2026 00:00
Compound	CAS Number	LOR	Unit		EB2605255-086	EB2605255-087	EB2605255-088	EB2605255-089	EB2605255-090
					Result	Result	Result	Result	Result
EG020-SD: Total Metals in Sediments by ICPMS - Continued									
Nickel	7440-02-0	1.0	mg/kg		----	----	**10.3**	**11.0**	----
Selenium	7782-49-2	0.1	mg/kg		----	----	**0.7**	**0.7**	----
Silver	7440-22-4	0.1	mg/kg		----	----	<0.1	<0.1	----
Vanadium	7440-62-2	2.0	mg/kg		----	----	**29.0**	**30.9**	----
Zinc	7440-66-6	1.0	mg/kg		----	----	**22.9**	**24.4**	----
EG035T: Total Recoverable Mercury by FIMS									
Mercury	7439-97-6	0.01	mg/kg		----	----	<0.01	<0.01	----
EP003: Total Organic Carbon (TOC) in Soil									
Total Organic Carbon	----	0.02	%		----	----	**0.81**	**0.79**	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions									
>C10 - C16 Fraction	----	3	mg/kg		----	----	<3	<3	----
>C16 - C34 Fraction	----	3	mg/kg		----	----	<3	<3	----
>C34 - C40 Fraction	----	5	mg/kg		----	----	<5	<5	----
>C10 - C40 Fraction (sum)	----	3	mg/kg		----	----	<3	<3	----
>C10 - C16 Fraction minus Naphthalene (F2)	----	3	mg/kg		----	----	<3	<3	----
EP080-SD / EP071-SD: Total Petroleum Hydrocarbons									
C6 - C9 Fraction	----	3	mg/kg		----	----	<3	<3	----
C10 - C14 Fraction	----	3	mg/kg		----	----	<3	<3	----
C15 - C28 Fraction	----	3	mg/kg		----	----	<3	<3	----
C29 - C36 Fraction	----	5	mg/kg		----	----	<5	<5	----
^ **C10 - C36 Fraction (sum)**	----	3	mg/kg		----	----	<3	<3	----
EP080-SD / EP071-SD: Total Recoverable Hydrocarbons									
C6 - C10 Fraction	C6_C10	3	mg/kg		----	----	<3	<3	----
C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	3.0	mg/kg		----	----	<3.0	<3.0	----
EP080-SD: BTEXN									
Benzene	71-43-2	0.2	mg/kg		----	----	<0.2	<0.2	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Sample ID	SH15 1-1.5	SH15 1.5-2	SH2 0-0.5	SH2 0.5-1	SH2 1-1.5
			Sampling date / time	11-Feb-2026 00:00	11-Feb-2026 00:00	11-Feb-2026 00:00	11-Feb-2026 00:00	11-Feb-2026 00:00
Compound	CAS Number	LOR	Unit	EB2605255-086	EB2605255-087	EB2605255-088	EB2605255-089	EB2605255-090
				Result	Result	Result	Result	Result
EP080-SD: BTEXN - Continued								
Toluene	108-88-3	0.2	mg/kg	----	----	<0.2	<0.2	----
Ethylbenzene	100-41-4	0.2	mg/kg	----	----	<0.2	<0.2	----
meta- & para-Xylene	108-38-3 106-42-3	0.2	mg/kg	----	----	<0.2	<0.2	----
ortho-Xylene	95-47-6	0.2	mg/kg	----	----	<0.2	<0.2	----
^ **Total Xylenes**	----	0.5	mg/kg	----	----	<0.5	<0.5	----
^ **Sum of BTEX**	----	0.2	mg/kg	----	----	<0.2	<0.2	----
Naphthalene	91-20-3	0.2	mg/kg	----	----	<0.2	<0.2	----
EP090: Organotin Compounds								
Monobutyltin	78763-54-9	1	µgSn/kg	----	----	<1	<1	----
Dibutyltin	1002-53-5	1	µgSn/kg	----	----	<1	<1	----
Tributyltin	56573-85-4	0.5	µgSn/kg	----	----	<0.5	<0.5	----
EP131A: Organochlorine Pesticides								
Aldrin	309-00-2	0.50	µg/kg	----	----	<0.50	<0.50	----
alpha-BHC	319-84-6	0.50	µg/kg	----	----	<0.50	<0.50	----
beta-BHC	319-85-7	0.50	µg/kg	----	----	<0.50	<0.50	----
delta-BHC	319-86-8	0.50	µg/kg	----	----	<0.50	<0.50	----
4.4`-DDD	72-54-8	0.50	µg/kg	----	----	<0.50	<0.50	----
4.4`-DDE	72-55-9	0.50	µg/kg	----	----	<0.50	<0.50	----
4.4`-DDT	50-29-3	0.50	µg/kg	----	----	<0.50	<0.50	----
^ **Sum of DDD + DDE + DDT**	72-54-8/72-55-9/50-2	0.50	µg/kg	----	----	<0.50	<0.50	----
Dieldrin	60-57-1	0.50	µg/kg	----	----	<0.50	<0.50	----
alpha-Endosulfan	959-98-8	0.50	µg/kg	----	----	<0.50	<0.50	----
beta-Endosulfan	33213-65-9	0.50	µg/kg	----	----	<0.50	<0.50	----
Endosulfan sulfate	1031-07-8	0.50	µg/kg	----	----	<0.50	<0.50	----
^ **Endosulfan (sum)**	115-29-7	0.50	µg/kg	----	----	<0.50	<0.50	----
Endrin	72-20-8	0.50	µg/kg	----	----	<0.50	<0.50	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Sample ID	SH15 1-1.5	SH15 1.5-2	SH2 0-0.5	SH2 0.5-1	SH2 1-1.5
				Sampling date / time	11-Feb-2026 00:00	11-Feb-2026 00:00	11-Feb-2026 00:00	11-Feb-2026 00:00	11-Feb-2026 00:00
Compound	CAS Number	LOR	Unit		EB2605255-086	EB2605255-087	EB2605255-088	EB2605255-089	EB2605255-090
					Result	Result	Result	Result	Result
EP131A: Organochlorine Pesticides - Continued									
Endrin aldehyde	7421-93-4	0.50	µg/kg		----	----	<0.50	<0.50	----
Endrin ketone	53494-70-5	0.50	µg/kg		----	----	<0.50	<0.50	----
Heptachlor	76-44-8	0.50	µg/kg		----	----	<0.50	<0.50	----
Heptachlor epoxide	1024-57-3	0.50	µg/kg		----	----	<0.50	<0.50	----
Hexachlorobenzene (HCB)	118-74-1	0.50	µg/kg		----	----	<0.50	<0.50	----
gamma-BHC - (Lindane)	58-89-9	0.25	µg/kg		----	----	<0.25	<0.25	----
Methoxychlor	72-43-5	0.50	µg/kg		----	----	<0.50	<0.50	----
cis-Chlordane	5103-71-9	0.50	µg/kg		----	----	<0.50	<0.50	----
trans-Chlordane	5103-74-2	0.50	µg/kg		----	----	<0.50	<0.50	----
^ **Total Chlordane (sum)**	----	0.50	µg/kg		----	----	<0.50	<0.50	----
Oxychlordane	27304-13-8	0.50	µg/kg		----	----	<0.50	<0.50	----
^ **Sum of Aldrin + Dieldrin**	309-00-2/60-57-1	0.50	µg/kg		----	----	<0.50	<0.50	----
EP131B: Polychlorinated Biphenyls (as Aroclors)									
^ **Total Polychlorinated biphenyls**	----	5.0	µg/kg		----	----	<5.0	<5.0	----
Aroclor 1016	12674-11-2	5.0	µg/kg		----	----	<5.0	<5.0	----
Aroclor 1221	11104-28-2	5.0	µg/kg		----	----	<5.0	<5.0	----
Aroclor 1232	11141-16-5	5.0	µg/kg		----	----	<5.0	<5.0	----
Aroclor 1242	53469-21-9	5.0	µg/kg		----	----	<5.0	<5.0	----
Aroclor 1248	12672-29-6	5.0	µg/kg		----	----	<5.0	<5.0	----
Aroclor 1254	11097-69-1	5.0	µg/kg		----	----	<5.0	<5.0	----
Aroclor 1260	11096-82-5	5.0	µg/kg		----	----	<5.0	<5.0	----
EP132B: Polynuclear Aromatic Hydrocarbons									
Naphthalene	91-20-3	5	µg/kg		----	----	<5	<5	----
2-Methylnaphthalene	91-57-6	5	µg/kg		----	----	<5	<5	----
Acenaphthylene	208-96-8	4	µg/kg		----	----	<4	<4	----
Acenaphthene	83-32-9	4	µg/kg		----	----	<4	<4	----
Fluorene	86-73-7	4	µg/kg		----	----	<4	<4	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Sample ID	SH15 1-1.5	SH15 1.5-2	SH2 0-0.5	SH2 0.5-1	SH2 1-1.5
				Sampling date / time	11-Feb-2026 00:00	11-Feb-2026 00:00	11-Feb-2026 00:00	11-Feb-2026 00:00	11-Feb-2026 00:00
Compound	CAS Number	LOR	Unit		EB2605255-086	EB2605255-087	EB2605255-088	EB2605255-089	EB2605255-090
					Result	Result	Result	Result	Result
EP132B: Polynuclear Aromatic Hydrocarbons - Continued									
Phenanthrene	85-01-8	4	µg/kg		----	----	<4	<4	----
Anthracene	120-12-7	4	µg/kg		----	----	<4	<4	----
Fluoranthene	206-44-0	4	µg/kg		----	----	<4	<4	----
Pyrene	129-00-0	4	µg/kg		----	----	<4	<4	----
Benz(a)anthracene	56-55-3	4	µg/kg		----	----	<4	<4	----
Chrysene	218-01-9	4	µg/kg		----	----	<4	<4	----
Benzo(b+j)fluoranthene	205-99-2 205-82-3	4	µg/kg		----	----	<4	<4	----
Benzo(k)fluoranthene	207-08-9	4	µg/kg		----	----	<4	<4	----
Benzo(e)pyrene	192-97-2	4	µg/kg		----	----	<4	<4	----
Benzo(a)pyrene	50-32-8	4	µg/kg		----	----	<4	<4	----
Perylene	198-55-0	4	µg/kg		----	----	<4	<4	----
Benzo(g.h.i)perylene	191-24-2	4	µg/kg		----	----	<4	<4	----
Dibenz(a.h)anthracene	53-70-3	4	µg/kg		----	----	<4	<4	----
Indeno(1.2.3.cd)pyrene	193-39-5	4	µg/kg		----	----	<4	<4	----
Coronene	191-07-1	5	µg/kg		----	----	<5	<5	----
^ Sum of PAHs	----	4	µg/kg		----	----	<4	<4	----
^ Benzo(a)pyrene TEQ (zero)	----	4	µg/kg		----	----	<4	<4	----
^ Benzo(a)pyrene TEQ (half LOR)	----	4	µg/kg		----	----	5	5	----
^ Benzo(a)pyrene TEQ (LOR)	----	4	µg/kg		----	----	10	10	----
EP080-SD: TPH(V)/BTEX Surrogates									
1.2-Dichloroethane-D4	17060-07-0	0.2	%		----	----	39.4	44.4	----
Toluene-D8	2037-26-5	0.2	%		----	----	46.6	53.0	----
4-Bromofluorobenzene	460-00-4	0.2	%		----	----	50.6	59.0	----
EP090S: Organotin Surrogate									
Tripropyltin	----	0.5	%		----	----	86.7	91.4	----
EP131S: OC Pesticide Surrogate									
Dibromo-DDE	21655-73-2	0.50	%		----	----	78.3	71.7	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Sample ID	SH15 1-1.5	SH15 1.5-2	SH2 0-0.5	SH2 0.5-1	SH2 1-1.5
				Sampling date / time	11-Feb-2026 00:00	11-Feb-2026 00:00	11-Feb-2026 00:00	11-Feb-2026 00:00	11-Feb-2026 00:00
Compound	CAS Number	LOR	Unit		EB2605255-086	EB2605255-087	EB2605255-088	EB2605255-089	EB2605255-090
					Result	Result	Result	Result	Result
EP131T: PCB Surrogate									
Decachlorobiphenyl	2051-24-3	0.5	%		----	----	**57.8**	**53.9**	----
EP132T: Base/Neutral Extractable Surrogates - SD									
2-Fluorobiphenyl	321-60-8	10	%		----	----	**71.6**	**79.9**	----
Anthracene-d10	1719-06-8	10	%		----	----	**123**	**121**	----
4-Terphenyl-d14	1718-51-0	10	%		----	----	**103**	**91.0**	----

Surrogate Control Limits

Sub-Matrix: SOIL		Recovery Limits (%)	
Compound	CAS Number	Low	High
EP080-SD: TPH(V)/BTEX Surrogates			
1.2-Dichloroethane-D4	17060-07-0	51	145
Toluene-D8	2037-26-5	42	144
4-Bromofluorobenzene	460-00-4	58	142
EP090S: Organotin Surrogate			
Tripropyltin	----	35	130
EP131S: OC Pesticide Surrogate			
Dibromo-DDE	21655-73-2	10	119
EP131T: PCB Surrogate			
Decachlorobiphenyl	2051-24-3	10	106
EP132T: Base/Neutral Extractable Surrogates - SD			
2-Fluorobiphenyl	321-60-8	55	135
Anthracene-d10	1719-06-8	70	136
4-Terphenyl-d14	1718-51-0	57	127

Inter-Laboratory Testing

Analysis conducted by ALS Newcastle, NATA accreditation no. 825, site no. 1656 (Chemistry / Biology).

(SOIL) EA151: Settleability 10%

Analysis conducted by ALS Sydney, NATA accreditation no. 825, site no. 10911 (Chemistry / Biology).

(SOIL) EP132B: Polynuclear Aromatic Hydrocarbons

(SOIL) EP132T: Base/Neutral Extractable Surrogates - SD

(SOIL) EP131A: Organochlorine Pesticides

(SOIL) EP131S: OC Pesticide Surrogate

(SOIL) EP131B: Polychlorinated Biphenyls (as Aroclors)

(SOIL) EP131T: PCB Surrogate

CERTIFICATE OF ANALYSIS

Work Order	: **EB2608381**	Page	: 1 of 16
Client	: **BMT COMMERCIAL AUSTRALIA PTY LTD**	Laboratory	: Environmental Division Brisbane
Contact	: ANGUS WILLIAMS	Contact	: Nathan King
Address	:	Address	: 2 Byth Street Stafford QLD Australia 4053
Telephone	: 07 3831 6744	Telephone	: +61-7-3552-8685
Project	: 004043 Shute Harbour SAP	Date Samples Received	: 05-Mar-2026 12:24
Order number	: 1111	Date Analysis Commenced	: 09-Mar-2026
C-O-C number	: ----	Issue Date	: 01-Jun-2026 12:28
Sampler	: CRAIG HEATHERINGTON, ELYSSA MCLEOD		
Site	: ----		
Quote number	: EB26BMTWBM0001_V6		
No. of samples received	: 66		
No. of samples analysed	: 66		

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted, unless the sampling was conducted by ALS. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QA/QC Compliance Assessment to assist with Quality Review and Sample Receipt Notification.

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories	*Position*	*Accreditation Category*
Layla Hafner	Acid Sulphate Soils - Chemist	Brisbane Acid Sulphate Soils, Stafford, QLD

General Comments

The analytical procedures used by ALS have been developed from established internationally recognised procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are fully validated and are often at the client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

When sampling time information is not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes.

Where a result is required to meet compliance limits the associated uncertainty must be considered. Refer to the ALS Contract for details.

Key : CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
LOR = Limit of reporting
^ = This result is computed from individual analyte detections at or above the level of reporting
~ = Indicates an estimated value.

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Sample ID	SH14A 0-0.5 EB2605255-001	SH14A 0.5-1 EB2605255-002	SH14A 1-1.5 EB2605255-003	SH14A 1.5-2 EB2605255-004	SH14A 2-2.5 EB2605255-005
			Sampling date / time	08-Feb-2026 00:00	08-Feb-2026 00:00	08-Feb-2026 00:00	08-Feb-2026 00:00	08-Feb-2026 00:00
Compound	CAS Number	LOR	Unit	EB2608381-001	EB2608381-002	EB2608381-003	EB2608381-004	EB2608381-005
				Result	Result	Result	Result	Result
EA027: ANC Corroboration by Chip Tray Incubation								
pH (INC)	----	0.1	pH Unit	**7.3**	**7.4**	**7.3**	**7.3**	**7.3**
ANC Corroborated	----	-	-	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Sample ID	SH13 0-0.5 EB2605255-016	SH13 0.5-1 EB2605255-017	SH13 1-1.5 EB2605255-018	SH13 1.5-2 EB2605255-019	SH13 2-2.5 EB2605255-020
			Sampling date / time	08-Feb-2026 00:00	08-Feb-2026 00:00	08-Feb-2026 00:00	08-Feb-2026 00:00	08-Feb-2026 00:00
Compound	CAS Number	LOR	Unit	EB2608381-006	EB2608381-007	EB2608381-008	EB2608381-009	EB2608381-010
				Result	Result	Result	Result	Result
EA027: ANC Corroboration by Chip Tray Incubation								
pH (INC)	----	0.1	pH Unit	**7.4**	**7.3**	**7.3**	**7.2**	**7.3**
ANC Corroborated	----	-	-	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Sample ID	SH8 0-0.5 EB2605255-021	SH8 0.5-1 EB2605255-022	SH8 1-1.5 EB2605255-023	SH8 1.5-2 EB2605255-024	SH8 2-2.5 EB2605255-025
			Sampling date / time	08-Feb-2026 00:00	08-Feb-2026 00:00	08-Feb-2026 00:00	08-Feb-2026 00:00	08-Feb-2026 00:00
Compound	CAS Number	LOR	Unit	EB2608381-011	EB2608381-012	EB2608381-013	EB2608381-014	EB2608381-015
				Result	Result	Result	Result	Result
EA027: ANC Corroboration by Chip Tray Incubation								
pH (INC)	----	0.1	pH Unit	**7.1**	**7.3**	**7.3**	**7.3**	**7.3**
ANC Corroborated	----	-	-	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Sample ID	SH8 2.5-3 EB2605255-026	SH8 3-3.5 EB2605255-027	SH5 0-0.5 EB2605255-028	SH5 0.5-1 EB2605255-029	SH5 1-1.5 EB2605255-030
			Sampling date / time	08-Feb-2026 00:00	08-Feb-2026 00:00	08-Feb-2026 00:00	08-Feb-2026 00:00	08-Feb-2026 00:00
Compound	CAS Number	LOR	Unit	EB2608381-016	EB2608381-017	EB2608381-018	EB2608381-019	EB2608381-020
				Result	Result	Result	Result	Result
EA027: ANC Corroboration by Chip Tray Incubation								
pH (INC)	----	0.1	pH Unit	**7.2**	**7.2**	**7.7**	**7.2**	**7.3**
ANC Corroborated	----	-	-	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Sample ID	SH5 1.5-2 EB2605255-031	SH5 2-2.5 EB2605255-032	SH4 0-0.5 EB2605255-033	SH4 0.5-1 EB2605255-034	SH4 1-1.5 EB2605255-035
			Sampling date / time	08-Feb-2026 00:00	08-Feb-2026 00:00	09-Feb-2026 00:00	09-Feb-2026 00:00	09-Feb-2026 00:00
Compound	CAS Number	LOR	Unit	EB2608381-021	EB2608381-022	EB2608381-023	EB2608381-024	EB2608381-025
				Result	Result	Result	Result	Result
EA027: ANC Corroboration by Chip Tray Incubation								
pH (INC)	----	0.1	pH Unit	**7.3**	**7.4**	**7.7**	**7.6**	**7.6**
ANC Corroborated	----	-	-	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Sample ID	SH1 0-0.5 EB2605255-036	SH1 0.5-1 EB2605255-037	SH1 1-1.5 EB2605255-038	SH1 1.5-2 EB2605255-039	SH11A 0-0.5 EB2605255-040
			Sampling date / time	09-Feb-2026 00:00	09-Feb-2026 00:00	09-Feb-2026 00:00	09-Feb-2026 00:00	09-Feb-2026 00:00
Compound	CAS Number	LOR	Unit	EB2608381-026	EB2608381-027	EB2608381-028	EB2608381-029	EB2608381-030
				Result	Result	Result	Result	Result
EA027: ANC Corroboration by Chip Tray Incubation								
pH (INC)	----	0.1	pH Unit	**7.5**	**7.5**	**7.2**	**7.3**	**7.5**
ANC Corroborated	----	-	-	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Sample ID	SH11 0.5-1 EB2605255-041	SH11 1-1.5 EB2605255-042	SH11 1.5-2 EB2605255-043	SH3 0-0.5 EB2605255-047	SH3 0.5-1 EB2605255-048
			Sampling date / time	09-Feb-2026 00:00	09-Feb-2026 00:00	09-Feb-2026 00:00	09-Feb-2026 00:00	09-Feb-2026 00:00
Compound	CAS Number	LOR	Unit	EB2608381-031	EB2608381-032	EB2608381-033	EB2608381-034	EB2608381-035
				Result	Result	Result	Result	Result
EA027: ANC Corroboration by Chip Tray Incubation								
pH (INC)	----	0.1	pH Unit	**7.5**	**7.4**	**7.4**	**7.5**	**7.4**
ANC Corroborated	----	-	-	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Sample ID	SH3 1-1.5 EB2605255-049	SH3 1.5-2 EB2605255-050	SH16 0-0.5 EB2605255-053	SH16 0.5-1 EB2605255-054	SH16 1-1.5 EB2605255-055
			Sampling date / time	09-Feb-2026 00:00	09-Feb-2026 00:00	09-Feb-2026 00:00	09-Feb-2026 00:00	09-Feb-2026 00:00
Compound	CAS Number	LOR	Unit	EB2608381-036	EB2608381-037	EB2608381-038	EB2608381-039	EB2608381-040
				Result	Result	Result	Result	Result
EA027: ANC Corroboration by Chip Tray Incubation								
pH (INC)	----	0.1	pH Unit	**7.4**	**7.3**	**7.2**	**7.3**	**7.2**
ANC Corroborated	----	-	-	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Sample ID	SH16 1.5-2 EB2605255-056	SH9 0-0.5 EB2605255-057	SH9 0.5-1 EB2605255-058	SH9 1-1.5 EB2605255-059	SH9 1.5-2 EB2605255-060
			Sampling date / time	09-Feb-2026 00:00	09-Feb-2026 00:00	09-Feb-2026 00:00	09-Feb-2026 00:00	09-Feb-2026 00:00
Compound	CAS Number	LOR	Unit	EB2608381-041	EB2608381-042	EB2608381-043	EB2608381-044	EB2608381-045
				Result	Result	Result	Result	Result
EA027: ANC Corroboration by Chip Tray Incubation								
pH (INC)	----	0.1	pH Unit	**7.2**	**7.5**	**7.3**	**7.4**	**7.3**
ANC Corroborated	----	-	-	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Sample ID	SH6 0-0.5 EB2605255-061	SH6 0.5-1 EB2605255-062	SH6 1-1.5 EB2605255-063	SH6 1.5-2 EB2605255-064	SH7 0-0.5 EB2605255-071
			Sampling date / time	10-Feb-2026 00:00	10-Feb-2026 00:00	10-Feb-2026 00:00	10-Feb-2026 00:00	11-Feb-2026 00:00
Compound	CAS Number	LOR	Unit	EB2608381-046	EB2608381-047	EB2608381-048	EB2608381-049	EB2608381-050
				Result	Result	Result	Result	Result
EA027: ANC Corroboration by Chip Tray Incubation								
pH (INC)	----	0.1	pH Unit	**7.1**	**7.1**	**7.2**	**7.2**	**7.3**
ANC Corroborated	----	-	-	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Sample ID	SH7 0.5-1 EB2605255-072	SH7 1-1.5 EB2605255-073	SH7 1.5-2 EB2605255-074	SH7 2-2.5 EB2605255-075	SH12 0-0.5 EB2605255-076
			Sampling date / time	11-Feb-2026 00:00	11-Feb-2026 00:00	11-Feb-2026 00:00	11-Feb-2026 00:00	11-Feb-2026 00:00
Compound	CAS Number	LOR	Unit	EB2608381-051	EB2608381-052	EB2608381-053	EB2608381-054	EB2608381-055
				Result	Result	Result	Result	Result
EA027: ANC Corroboration by Chip Tray Incubation								
pH (INC)	----	0.1	pH Unit	**7.3**	**7.3**	**7.4**	**7.6**	**7.1**
ANC Corroborated	----	-	-	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Sample ID	SH12 0.5-1 EB2605255-077	SH12 1-1.5 EB2605255-078	SH12 1.5-2 EB2605255-079	SH12 2-2.5 EB2605255-080	SH15 0-0.5 EB2605255-084
			Sampling date / time	11-Feb-2026 00:00	11-Feb-2026 00:00	11-Feb-2026 00:00	11-Feb-2026 00:00	11-Feb-2026 00:00
Compound	CAS Number	LOR	Unit	EB2608381-056	EB2608381-057	EB2608381-058	EB2608381-059	EB2608381-060
				Result	Result	Result	Result	Result
EA027: ANC Corroboration by Chip Tray Incubation								
pH (INC)	----	0.1	pH Unit	**7.1**	**7.2**	**7.1**	**7.2**	**7.2**
ANC Corroborated	----	-	-	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Sample ID	SH15 0.5-1 EB2605255-085	SH15 1-1.5 EB2605255-086	SH15 1.5-2 EB2605255-087	SH2 0-0.5 EB2605255-088	SH2 0.5-1 EB2605255-089
			Sampling date / time	11-Feb-2026 00:00	11-Feb-2026 00:00	11-Feb-2026 00:00	11-Feb-2026 00:00	11-Feb-2026 00:00
Compound	CAS Number	LOR	Unit	EB2608381-061	EB2608381-062	EB2608381-063	EB2608381-064	EB2608381-065
				Result	Result	Result	Result	Result
EA027: ANC Corroboration by Chip Tray Incubation								
pH (INC)	----	0.1	pH Unit	**7.2**	**7.2**	**7.2**	**7.4**	**7.4**
ANC Corroborated	----	-	-	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Sample ID	SH2 1-1.5 EB2605255-090	----	----	----	----
			Sampling date / time	11-Feb-2026 00:00	----	----	----	----
Compound	CAS Number	LOR	Unit	EB2608381-066	--------	--------	--------	--------
				Result	----	----	----	----
EA027: ANC Corroboration by Chip Tray Incubation								
pH (INC)	----	0.1	pH Unit	**7.4**	**----**	**----**	**----**	**----**
ANC Corroborated	----	-	-	**Yes**	**----**	**----**	**----**	**----**

Certificate of Analysis

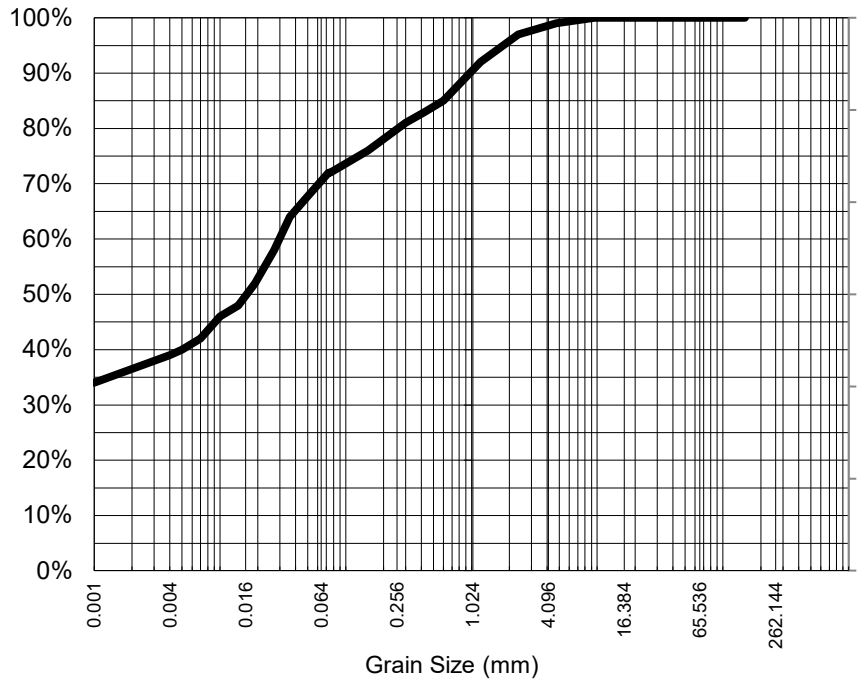
ALS Laboratory Group Pty Ltd
2 Byth Street
Stafford, QLD 4053
pH 07 3243 7222
samples.brisbane@alsenviro.com

ALS Environmental

Brisbane QLD

CLIENT:	MACKENZIE STACEY	**DATE REPORTED:**	25-Feb-2026
COMPANY:	BMT COMMERCIAL AUSTRALIA PTY LTD	**DATE RECEIVED:**	13-Feb-2026
ADDRESS:		**REPORT NO:**	EB2605255-001 / PSD
PROJECT:	004043 Shute Harbour SAP	**SAMPLE ID:**	SH14A 0-0.5

Particle Size Distribution



Particle Size (mm)	% Passing
9.50	100%
4.75	99%
2.36	97%
1.18	92%
0.600	85%
0.425	83%
0.300	81%
0.150	76%
0.075	72%
Particle Size (microns)	
51	68%
36	64%
27	58%
19	52%
14	48%
10	46%
7	42%
5	40%
1	34%

Median Particle Size (mm)*	0.017

Analysis Notes

Samples analysed as received.

Median Particle Size is not covered under the current scope of ALS's NATA accreditation.

Sample Comments:

Analysed: 18-Feb-26

Loss on Pretreatment NA

Limit of Reporting: 1%

Sample Description:

Dispersion Method Shaker

Test Method: AS1289.3.6.2/AS1289.3.6.3

Soil Particle Density (<2.36mm) 2.53

NATA Accreditation: 825 Site: Brisbane
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Satish Trivedi
Soil Senior Chemist
Authorised Signatory

Certificate of Analysis

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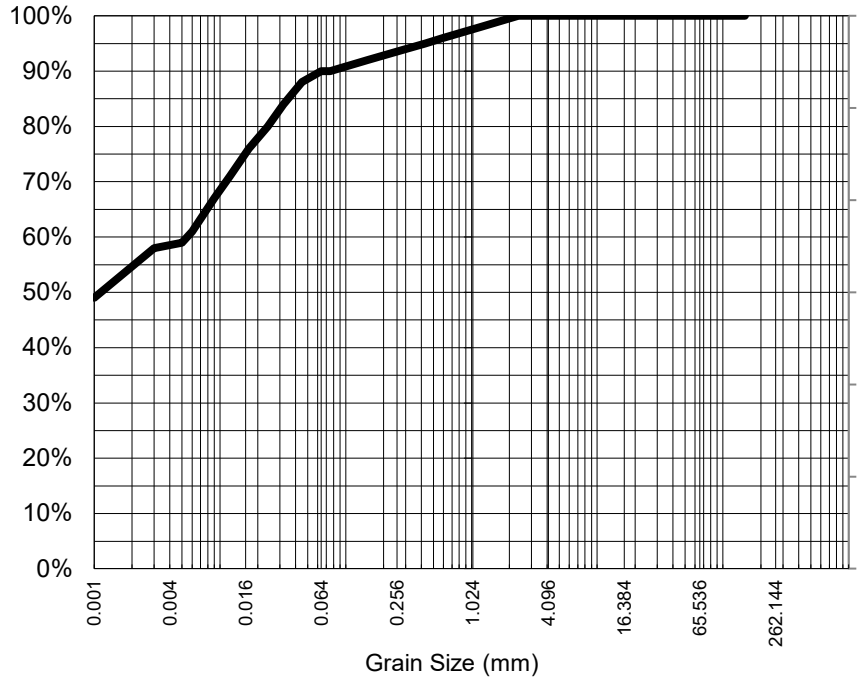
Brisbane QLD

CLIENT:	MACKENZIE STACEY	**DATE REPORTED:**	25-Feb-2026
COMPANY:	BMT COMMERCIAL AUSTRALIA PTY LTD	**DATE RECEIVED:**	13-Feb-2026
ADDRESS:		**REPORT NO:**	EB2605255-002 / PSD
PROJECT:	004043 Shute Harbour SAP	**SAMPLE ID:**	SH14A 0.5-1

Particle Size Distribution



Particle Size (mm)	% Passing
2.36	100%
1.18	98%
0.600	96%
0.425	95%
0.300	94%
0.150	92%
0.075	90%
Particle Size (microns)	
45	88%
32	84%
24	80%
17	76%
12	71%
9	67%
6	61%
5	59%
1	49%

Median Particle Size (mm)*	<0.006

Analysis Notes

Samples analysed as received.

Median Particle Size is not covered under the current scope of ALS's NATA accreditation.

Sample Comments:

Analysed: 18-Feb-26

Loss on Pretreatment NA

Limit of Reporting: 1%

Sample Description:

Dispersion Method Shaker

Test Method: AS1289.3.6.2/AS1289.3.6.3

Soil Particle Density (<2.36mm) 2.77

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Certificate of Analysis

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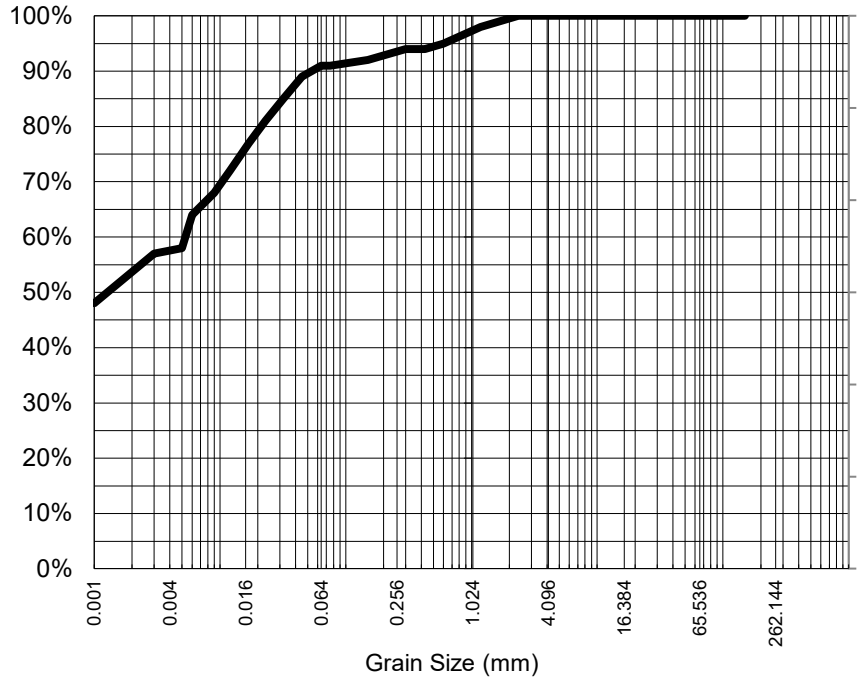
ALS Environmental

Brisbane QLD

CLIENT:	MACKENZIE STACEY	**DATE REPORTED:**	25-Feb-2026
COMPANY:	BMT COMMERCIAL AUSTRALIA PTY LTD	**DATE RECEIVED:**	13-Feb-2026
ADDRESS:		**REPORT NO:**	EB2605255-003 / PSD
PROJECT:	004043 Shute Harbour SAP	**SAMPLE ID:**	SH14A 1-1.5

Particle Size Distribution



Particle Size (mm)	% Passing
2.36	100%
1.18	98%
0.600	95%
0.425	94%
0.300	94%
0.150	92%
0.075	91%
Particle Size (microns)	
45	89%
32	85%
23	81%
17	77%
12	72%
9	68%
6	64%
5	58%
1	48%

Median Particle Size (mm)*	<0.006

Median Particle Size is not covered under the current scope of ALS's NATA accreditation.

Analysis Notes

Samples analysed as received.

Sample Comments:

Analysed: 18-Feb-26

Loss on Pretreatment NA

Limit of Reporting: 1%

Sample Description:

Dispersion Method Shaker

Test Method: AS1289.3.6.2/AS1289.3.6.3

Soil Particle Density (<2.36mm) 2.78

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Certificate of Analysis

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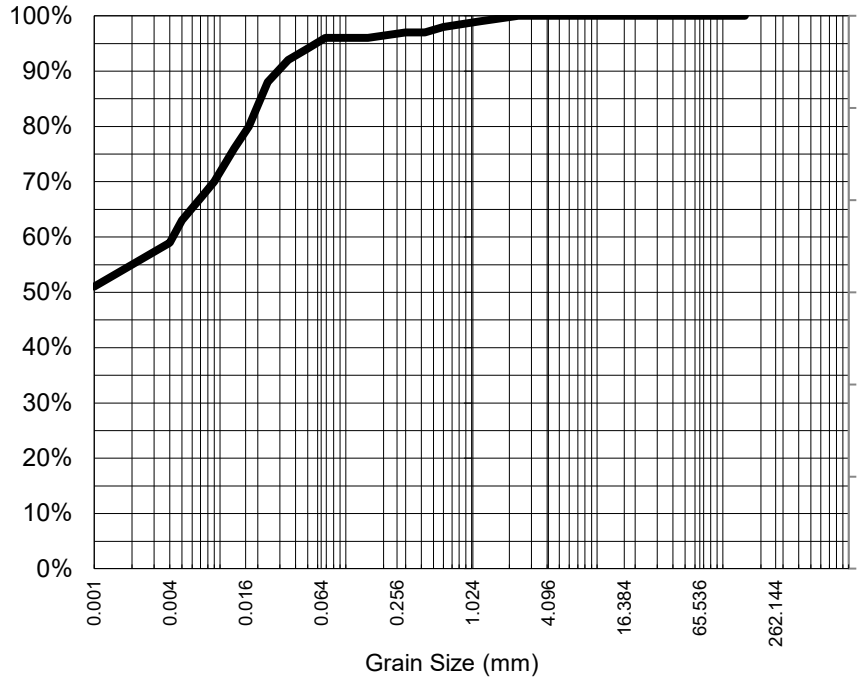
ALS Environmental

Brisbane QLD

CLIENT:	MACKENZIE STACEY	**DATE REPORTED:**	25-Feb-2026
COMPANY:	BMT COMMERCIAL AUSTRALIA PTY LTD	**DATE RECEIVED:**	13-Feb-2026
ADDRESS:		**REPORT NO:**	EB2605255-004 / PSD
PROJECT:	004043 Shute Harbour SAP	**SAMPLE ID:**	SH14A 1.5-2

Particle Size Distribution



Particle Size (mm)	% Passing
2.36	100%
1.18	99%
0.600	98%
0.425	97%
0.300	97%
0.150	96%
0.075	96%
Particle Size (microns)	
49	94%
35	92%
24	88%
17	80%
13	76%
9	70%
7	67%
5	63%
1	51%

Median Particle Size (mm)*	<0.007

Analysis Notes

Samples analysed as received.

Median Particle Size is not covered under the current scope of ALS's NATA accreditation.

Sample Comments:

Analysed: 18-Feb-26

Loss on Pretreatment NA

Limit of Reporting: 1%

Sample Description:

Dispersion Method Shaker

Test Method: AS1289.3.6.2/AS1289.3.6.3

Soil Particle Density (<2.36mm) 2.5

NATA Accreditation: 825 Site: Brisbane
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Satish Trivedi
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Authorised Signatory

Certificate of Analysis

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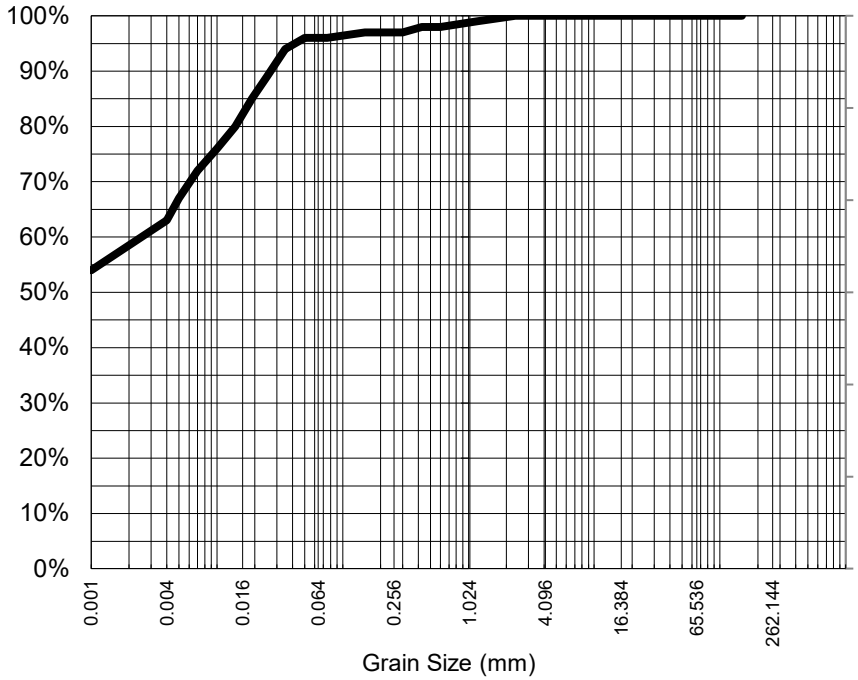
ALS Environmental

Brisbane QLD

CLIENT:	MACKENZIE STACEY	**DATE REPORTED:**	25-Feb-2026
COMPANY:	BMT COMMERCIAL AUSTRALIA PTY LTD	**DATE RECEIVED:**	13-Feb-2026
ADDRESS:		**REPORT NO:**	EB2605255-005 / PSD
PROJECT:	004043 Shute Harbour SAP	**SAMPLE ID:**	SH14A 2-2.5

Particle Size Distribution



Particle Size (mm)	% Passing
2.36	100%
1.18	99%
0.600	98%
0.425	98%
0.300	97%
0.150	97%
0.075	96%
Particle Size (microns)	
50	96%
35	94%
25	89%
19	85%
14	80%
10	76%
7	72%
5	67%
1	54%

Median Particle Size (mm)*	<0.007

Analysis Notes

Samples analysed as received.

** Soil Particle Density results fell outside the scope of AS 1289.3.6.3. Typical sediment SPD values used for calculations and consequently, NATA endorsement does not apply to hydrometer results*

Median Particle Size is not covered under the current scope of ALS's NATA accreditation.

Sample Comments:

Analysed: 18-Feb-26

Loss on Pretreatment NA

Limit of Reporting: 1%

Sample Description:

Dispersion Method Shaker

Test Method: AS1289.3.6.2/AS1289.3.6.3

Soil Particle Density (<2.36mm) 2.35 (2.45)*

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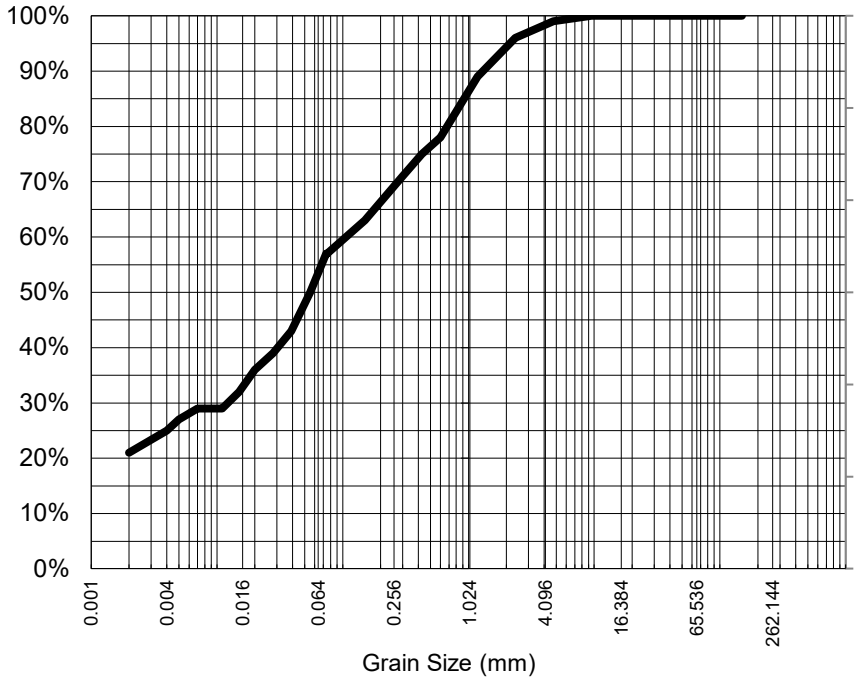
ALS Environmental

Brisbane QLD

CLIENT:	MACKENZIE STACEY	**DATE REPORTED:**	25-Feb-2026
COMPANY:	BMT COMMERCIAL AUSTRALIA PTY LTD	**DATE RECEIVED:**	13-Feb-2026
ADDRESS:		**REPORT NO:**	EB2605255-006 / PSD
PROJECT:	004043 Shute Harbour SAP	**SAMPLE ID:**	SH14B 0-0.5

Particle Size Distribution



Particle Size (mm)	% Passing
9.50	100%
4.75	99%
2.36	96%
1.18	89%
0.600	78%
0.425	75%
0.300	71%
0.150	63%
0.075	57%
Particle Size (microns)	
55	50%
39	43%
28	39%
20	36%
15	32%
11	29%
7	29%
5	27%
2	21%

Median Particle Size (mm)*	0.055

Analysis Notes

Samples analysed as received.

Median Particle Size is not covered under the current scope of ALS's NATA accreditation.

Sample Comments:

Analysed: 18-Feb-26

Loss on Pretreatment NA

Limit of Reporting: 1%

Sample Description:

Dispersion Method Shaker

Test Method: AS1289.3.6.2/AS1289.3.6.3

Soil Particle Density (<2.36mm) 2.48

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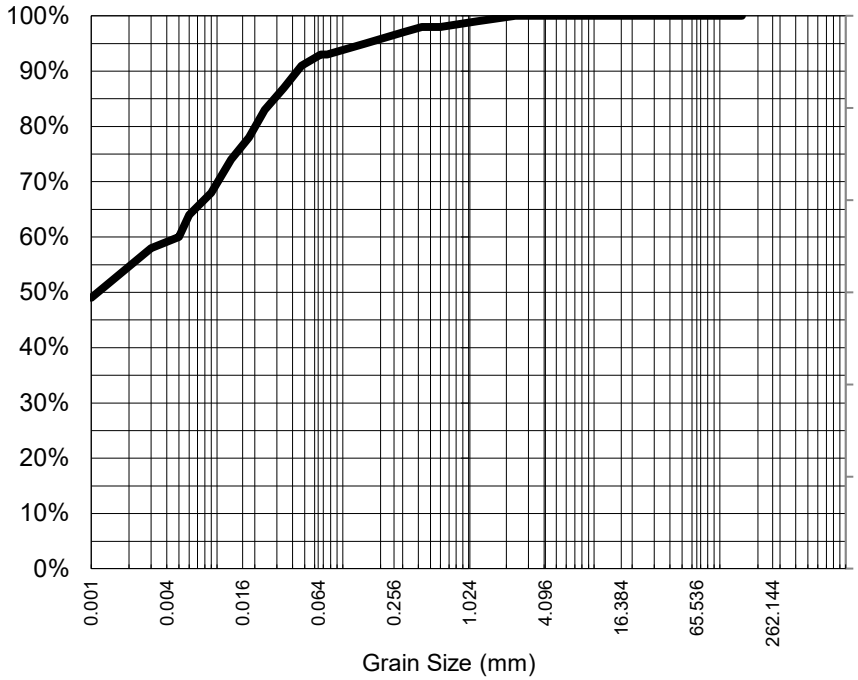
COMPANY:	BMT COMMERCIAL AUSTRALIA PTY LTD	**DATE RECEIVED:**	13-Feb-2026
ADDRESS:		**REPORT NO:**	EB2605255-007 / PSD
PROJECT:	004043 Shute Harbour SAP	**SAMPLE ID:**	SH14B 0.5-1

Particle Size Distribution



Particle Size (mm)	% Passing
2.36	100%
1.18	99%
0.600	98%
0.425	98%
0.300	97%
0.150	95%
0.075	93%
Particle Size (microns)	
47	91%
34	87%
24	83%
18	78%
13	74%
9	68%
6	64%
5	60%
1	49%

Median Particle Size (mm)*	<0.006

Median Particle Size is not covered under the current scope of ALS's NATA accreditation.

Analysis Notes

Samples analysed as received.

Sample Comments:

Loss on Pretreatment NA

Sample Description:

Test Method: AS1289.3.6.2/AS1289.3.6.3

Soil Particle Density (<2.36mm) 2.64

Analysed: 18-Feb-26

Limit of Reporting: 1%

Dispersion Method Shaker

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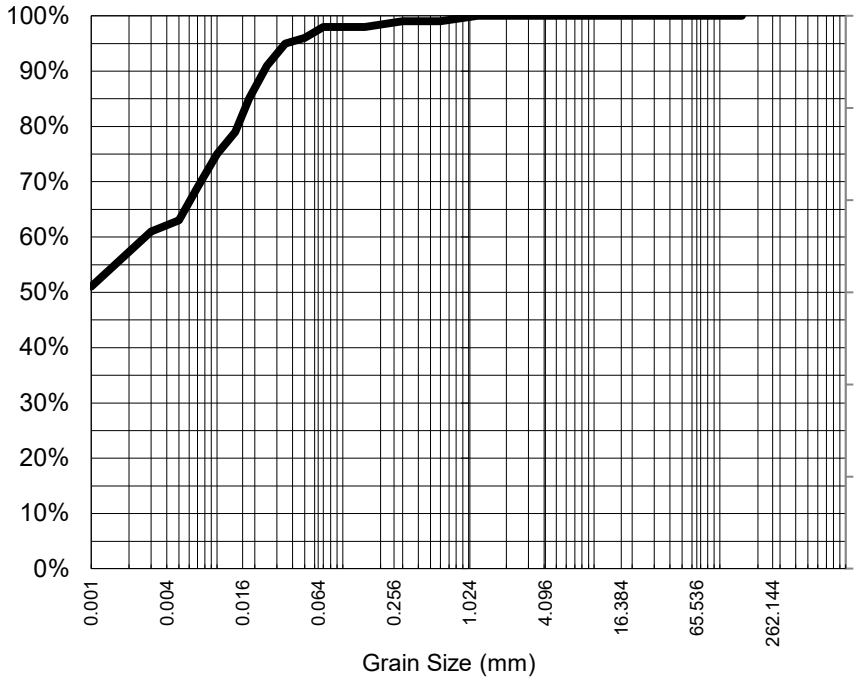
COMPANY:	BMT COMMERCIAL AUSTRALIA PTY LTD	**DATE RECEIVED:**	13-Feb-2026
ADDRESS:		**REPORT NO:**	EB2605255-008 / PSD
PROJECT:	004043 Shute Harbour SAP	**SAMPLE ID:**	SH14B 1-1.5

Particle Size Distribution



Particle Size (mm)	% Passing
1.18	100%
0.600	99%
0.425	99%
0.300	99%
0.150	98%
0.075	98%
Particle Size (microns)	
50	96%
35	95%
25	91%
18	85%
14	79%
10	75%
7	69%
5	63%
1	51%

Median Particle Size (mm)*	<0.007

Analysis Notes

Samples analysed as received.

** Soil Particle Density results fell outside the scope of AS 1289.3.6.3. Typical sediment SPD values used for calculations and consequently, NATA endorsement does not apply to hydrometer results*

Median Particle Size is not covered under the current scope of ALS's NATA accreditation.

Sample Comments:

Analysed: 18-Feb-26

Loss on Pretreatment NA

Limit of Reporting: 1%

Sample Description:

Dispersion Method Shaker

Test Method: AS1289.3.6.2/AS1289.3.6.3

Soil Particle Density (<2.36mm) 2.15 (2.45)*

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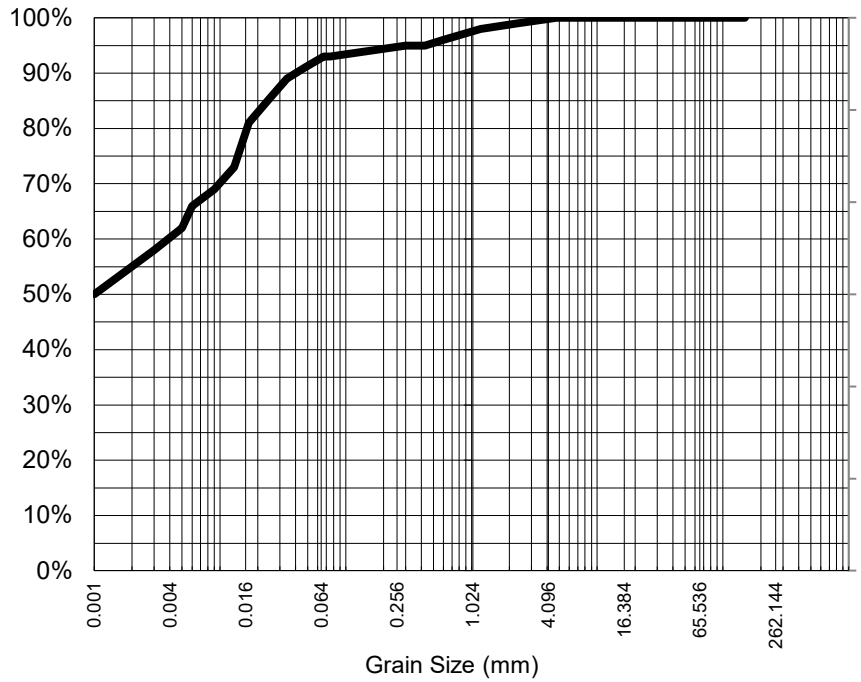
COMPANY:	BMT COMMERCIAL AUSTRALIA PTY LTD	**DATE RECEIVED:**	13-Feb-2026
ADDRESS:		**REPORT NO:**	EB2605255-009 / PSD
PROJECT:	004043 Shute Harbour SAP	**SAMPLE ID:**	SH14B 1.5-2

Particle Size Distribution



Particle Size (mm)	% Passing
4.75	100%
2.36	99%
1.18	98%
0.600	96%
0.425	95%
0.300	95%
0.150	94%
0.075	93%
Particle Size (microns)	
47	91%
34	89%
24	85%
17	81%
13	73%
9	69%
6	66%
5	62%
1	50%

Median Particle Size (mm)*	<0.006

Analysis Notes

Samples analysed as received.

Median Particle Size is not covered under the current scope of ALS's NATA accreditation.

Sample Comments:

Analysed: 18-Feb-26

Loss on Pretreatment NA

Limit of Reporting: 1%

Sample Description:

Dispersion Method Shaker

Test Method: AS1289.3.6.2/AS1289.3.6.3

Soil Particle Density (<2.36mm) 2.62

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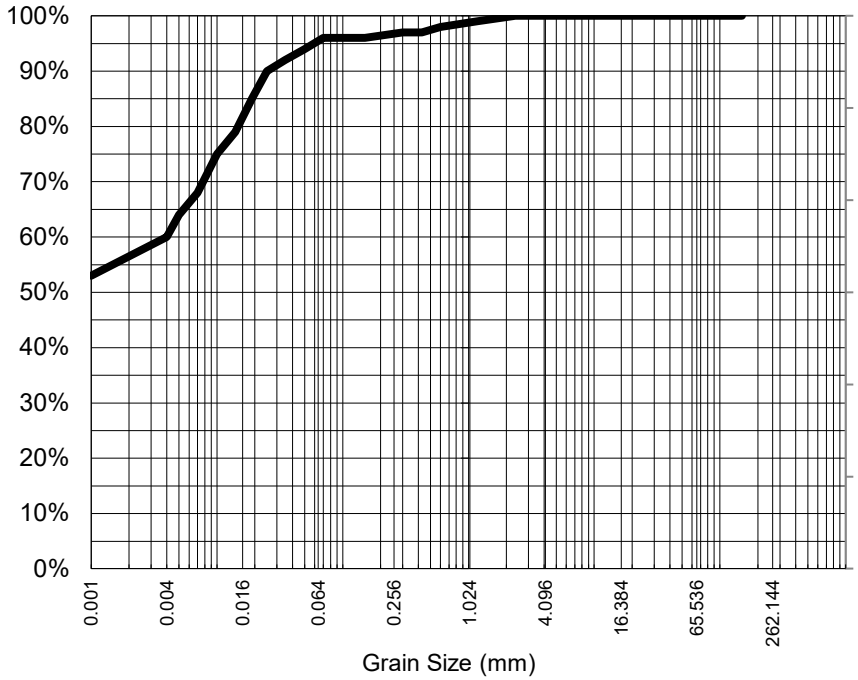
COMPANY:	BMT COMMERCIAL AUSTRALIA PTY LTD	**DATE RECEIVED:**	13-Feb-2026
ADDRESS:		**REPORT NO:**	EB2605255-010 / PSD
PROJECT:	004043 Shute Harbour SAP	**SAMPLE ID:**	SH14B 2-2.5

Particle Size Distribution



Particle Size (mm)	% Passing
2.36	100%
1.18	99%
0.600	98%
0.425	97%
0.300	97%
0.150	96%
0.075	96%
Particle Size (microns)	
50	94%
35	92%
25	90%
19	85%
14	79%
10	75%
7	68%
5	64%
1	53%

Median Particle Size (mm)*	<0.007

Analysis Notes

Samples analysed as received.

Median Particle Size is not covered under the current scope of ALS's NATA accreditation.

Sample Comments:

Analysed: 18-Feb-26

Loss on Pretreatment NA

Limit of Reporting: 1%

Sample Description:

Dispersion Method Shaker

Test Method: AS1289.3.6.2/AS1289.3.6.3

Soil Particle Density (<2.36mm) 2.47

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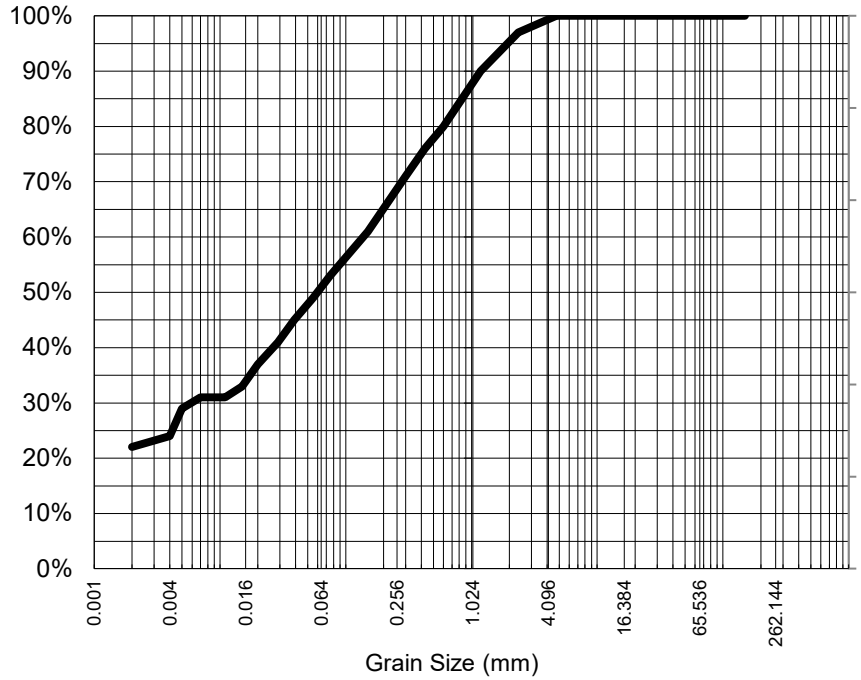
COMPANY:	BMT COMMERCIAL AUSTRALIA PTY LTD	**DATE RECEIVED:**	13-Feb-2026
ADDRESS:		**REPORT NO:**	EB2605255-011 / PSD
PROJECT:	004043 Shute Harbour SAP	**SAMPLE ID:**	SH14C 0-0.5

Particle Size Distribution



Particle Size (mm)	% Passing
4.75	100%
2.36	97%
1.18	90%
0.600	80%
0.425	76%
0.300	71%
0.150	61%
0.075	53%
Particle Size (microns)	
55	49%
39	45%
29	41%
20	37%
15	33%
11	31%
7	31%
5	29%
2	22%

Median Particle Size (mm)*	0.060

Analysis Notes

Samples analysed as received.

** Soil Particle Density results fell outside the scope of AS 1289.3.6.3. Typical sediment SPD values used for calculations and consequently, NATA endorsement does not apply to hydrometer results*

Median Particle Size is not covered under the current scope of ALS's NATA accreditation.

Sample Comments:

Analysed: 18-Feb-26

Loss on Pretreatment NA

Limit of Reporting: 1%

Sample Description:

Dispersion Method Shaker

Test Method: AS1289.3.6.2/AS1289.3.6.3

Soil Particle Density (<2.36mm) 2.43 (2.45)*

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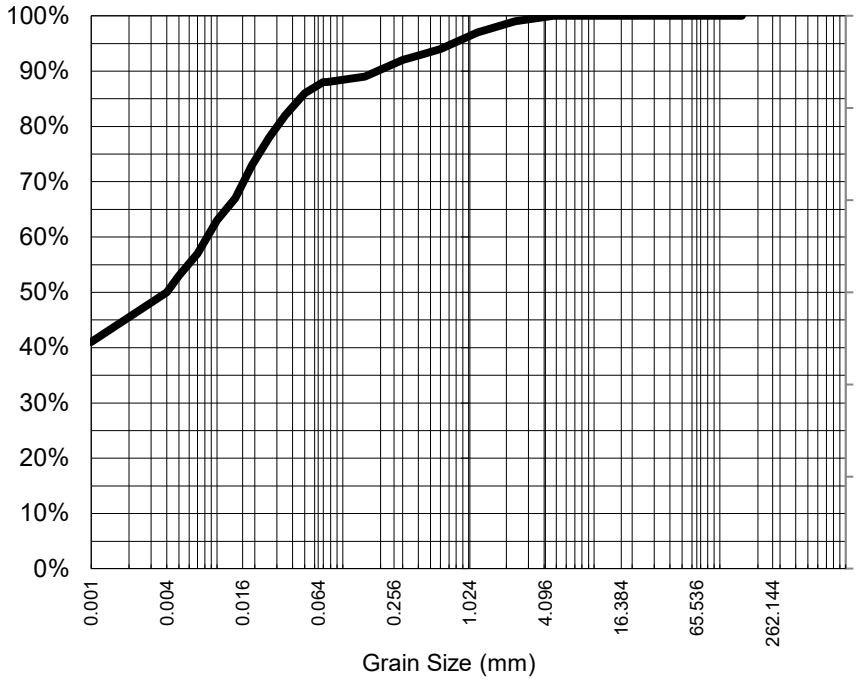
COMPANY:	BMT COMMERCIAL AUSTRALIA PTY LTD	**DATE RECEIVED:**	13-Feb-2026
ADDRESS:		**REPORT NO:**	EB2605255-012 / PSD
PROJECT:	004043 Shute Harbour SAP	**SAMPLE ID:**	SH14C 0.5-1

Particle Size Distribution



Particle Size (mm)	% Passing
4.75	100%
2.36	99%
1.18	97%
0.600	94%
0.425	93%
0.300	92%
0.150	89%
0.075	88%
Particle Size (microns)	
50	86%
35	82%
26	78%
19	73%
14	67%
10	63%
7	57%
5	53%
1	41%

Median Particle Size (mm)*	<0.007

Analysis Notes

Samples analysed as received.

** Soil Particle Density results fell outside the scope of AS 1289.3.6.3. Typical sediment SPD values used for calculations and consequently, NATA endorsement does not apply to hydrometer results*

Median Particle Size is not covered under the current scope of ALS's NATA accreditation.

Sample Comments:		**Analysed:**	18-Feb-26
Loss on Pretreatment	NA	**Limit of Reporting:**	1%
Sample Description:		**Dispersion Method**	Shaker
Test Method:	AS1289.3.6.2/AS1289.3.6.3		
Soil Particle Density (<2.36mm)	2.44 (2.45)*		

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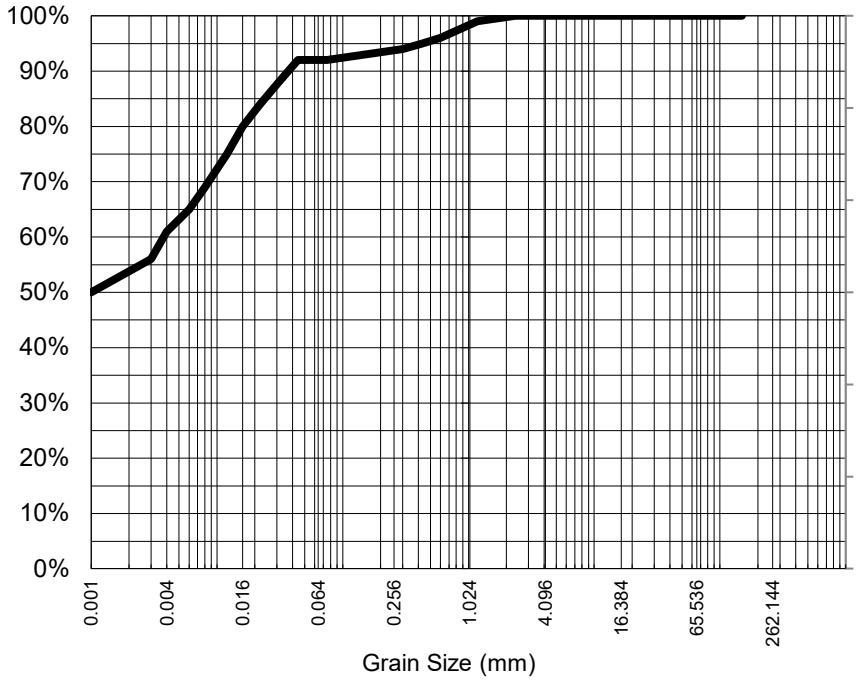
COMPANY:	BMT COMMERCIAL AUSTRALIA PTY LTD	**DATE RECEIVED:**	13-Feb-2026
ADDRESS:		**REPORT NO:**	EB2605255-013 / PSD
PROJECT:	004043 Shute Harbour SAP	**SAMPLE ID:**	SH14C 1-1.5

Particle Size Distribution



Particle Size (mm)	% Passing
2.36	100%
1.18	99%
0.600	96%
0.425	95%
0.300	94%
0.150	93%
0.075	92%
Particle Size (microns)	
44	92%
31	88%
22	84%
16	80%
12	75%
8	69%
6	65%
4	61%
1	50%

Median Particle Size (mm)*	<0.006

Analysis Notes

Samples analysed as received.

** Soil Particle Density results fell outside the scope of AS 1289.3.6.3. Typical sediment SPD values used for calculations and consequently, NATA endorsement does not apply to hydrometer results*

Median Particle Size is not covered under the current scope of ALS's NATA accreditation.

Sample Comments:

Analysed: 18-Feb-26

Loss on Pretreatment NA

Limit of Reporting: 1%

Sample Description:

Dispersion Method Shaker

Test Method: AS1289.3.6.2/AS1289.3.6.3

Soil Particle Density (<2.36mm) 2.89 (2.85)*

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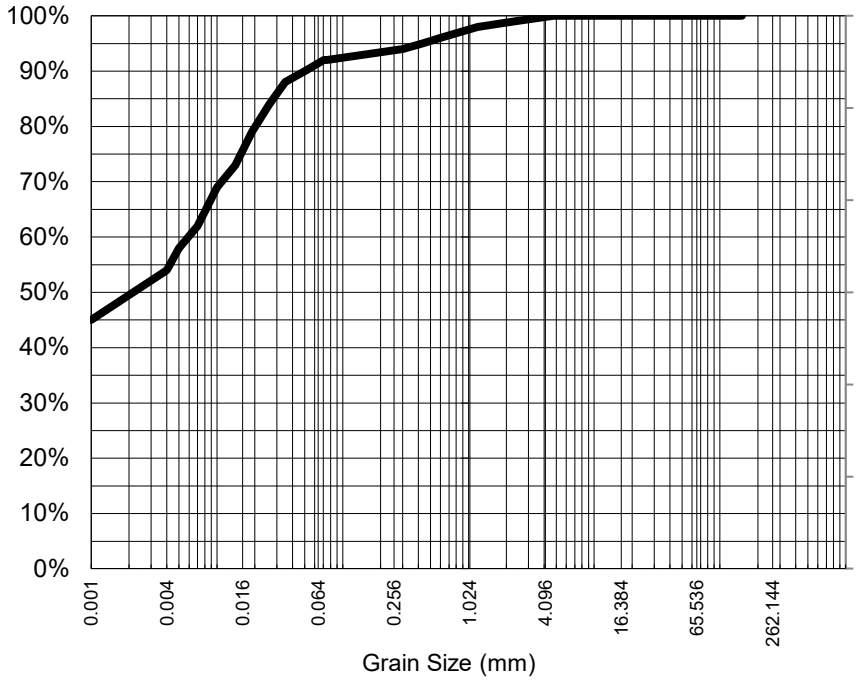
COMPANY:	BMT COMMERCIAL AUSTRALIA PTY LTD	**DATE RECEIVED:**	13-Feb-2026
ADDRESS:		**REPORT NO:**	EB2605255-014 / PSD
PROJECT:	004043 Shute Harbour SAP	**SAMPLE ID:**	SH14C 1.5-2

Particle Size Distribution



Particle Size (mm)	% Passing
4.75	100%
2.36	99%
1.18	98%
0.600	96%
0.425	95%
0.300	94%
0.150	93%
0.075	92%
Particle Size (microns)	
50	90%
35	88%
26	84%
19	79%
14	73%
10	69%
7	62%
5	58%
1	45%

Median Particle Size (mm)*	<0.007

Analysis Notes

Samples analysed as received.

** Soil Particle Density results fell outside the scope of AS 1289.3.6.3. Typical sediment SPD values used for calculations and consequently, NATA endorsement does not apply to hydrometer results*

Median Particle Size is not covered under the current scope of ALS's NATA accreditation.

Sample Comments:

Analysed: 18-Feb-26

Loss on Pretreatment NA

Limit of Reporting: 1%

Sample Description:

Dispersion Method Shaker

Test Method: AS1289.3.6.2/AS1289.3.6.3

Soil Particle Density (<2.36mm) 2.14 (2.45)*

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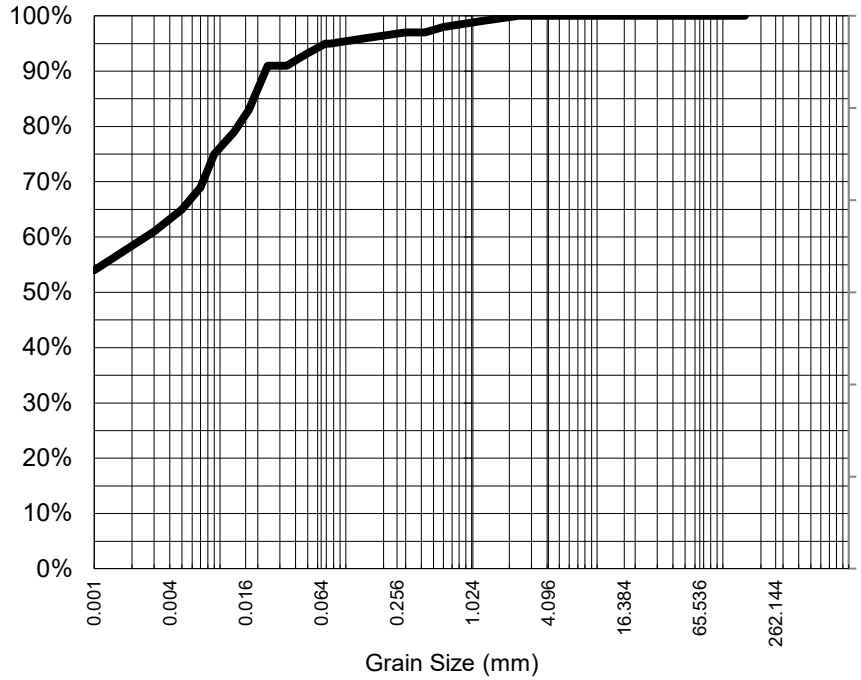
COMPANY:	BMT COMMERCIAL AUSTRALIA PTY LTD	**DATE RECEIVED:**	13-Feb-2026
ADDRESS:		**REPORT NO:**	EB2605255-015 / PSD
PROJECT:	004043 Shute Harbour SAP	**SAMPLE ID:**	SH14C 2-2.5

Particle Size Distribution



Particle Size (mm)	% Passing
2.36	100%
1.18	99%
0.600	98%
0.425	97%
0.300	97%
0.150	96%
0.075	95%
Particle Size (microns)	
48	93%
34	91%
24	91%
17	83%
13	79%
9	75%
7	69%
5	65%
1	54%

Median Particle Size (mm)*	<0.007

Analysis Notes

Samples analysed as received.

Median Particle Size is not covered under the current scope of ALS's NATA accreditation.

Sample Comments:

Analysed: 18-Feb-26

Loss on Pretreatment NA

Limit of Reporting: 1%

Sample Description:

Dispersion Method Shaker

Test Method: AS1289.3.6.2/AS1289.3.6.3

Soil Particle Density (<2.36mm) 2.55

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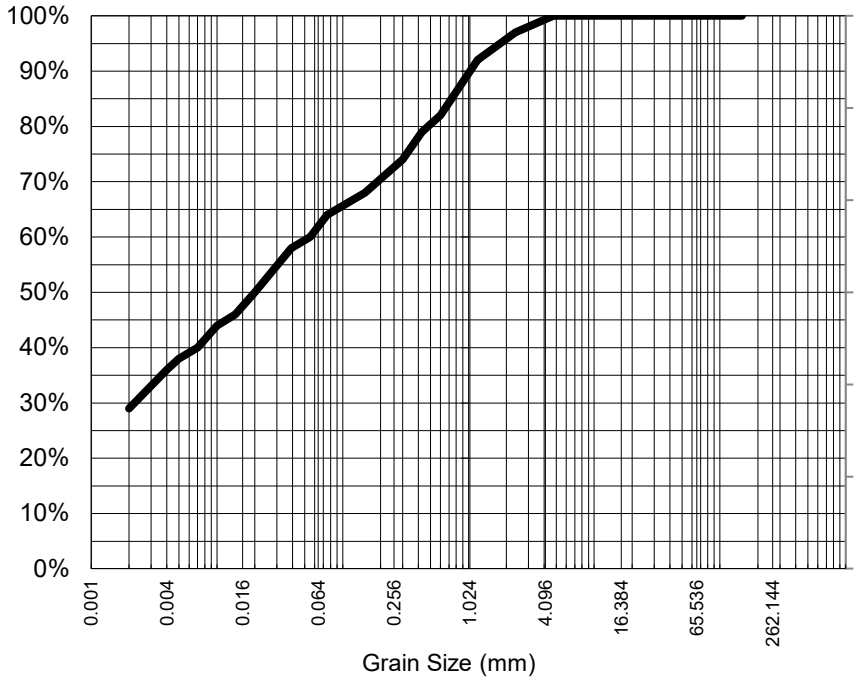
COMPANY:	BMT COMMERCIAL AUSTRALIA PTY LTD	**DATE RECEIVED:**	13-Feb-2026
ADDRESS:		**REPORT NO:**	EB2605255-016 / PSD
PROJECT:	004043 Shute Harbour SAP	**SAMPLE ID:**	SH13 0-0.5

Particle Size Distribution



Particle Size (mm)	% Passing
4.75	100%
2.36	97%
1.18	92%
0.600	82%
0.425	79%
0.300	74%
0.150	68%
0.075	64%
Particle Size (microns)	
55	60%
39	58%
28	54%
20	50%
14	46%
10	44%
7	40%
5	38%
2	29%

Median Particle Size (mm)*	0.020

Analysis Notes

Samples analysed as received.

** Soil Particle Density results fell outside the scope of AS 1289.3.6.3. Typical sediment SPD values used for calculations and consequently, NATA endorsement does not apply to hydrometer results*

Median Particle Size is not covered under the current scope of ALS's NATA accreditation.

Sample Comments:		**Analysed:**	18-Feb-26
Loss on Pretreatment	NA	**Limit of Reporting:**	1%
Sample Description:		**Dispersion Method**	Shaker
Test Method:	AS1289.3.6.2/AS1289.3.6.3		
Soil Particle Density (<2.36mm)	2.37 (2.45)*		

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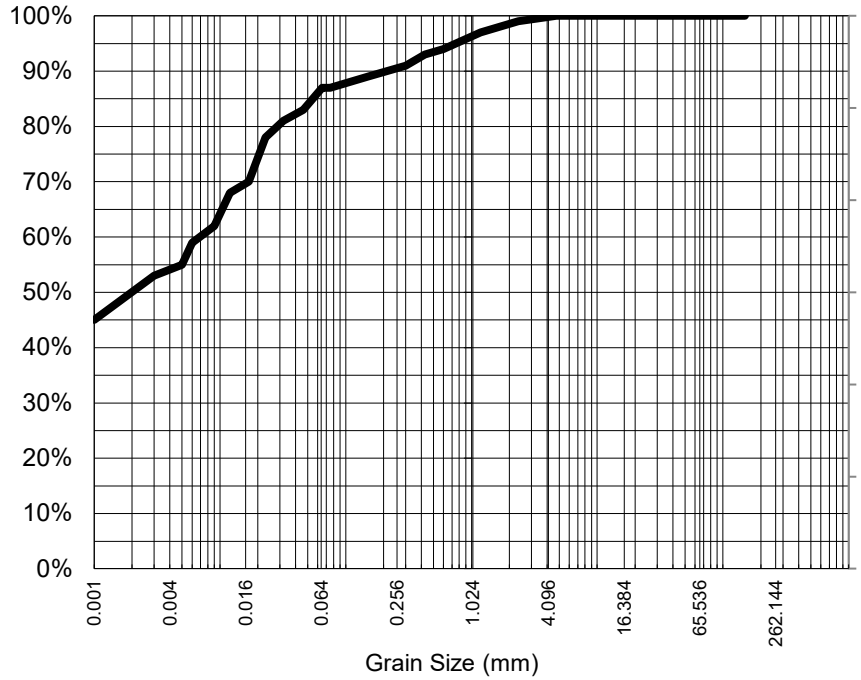
CLIENT:	MACKENZIE STACEY	**DATE REPORTED:**	25-Feb-2026
COMPANY:	BMT COMMERCIAL AUSTRALIA PTY LTD	**DATE RECEIVED:**	13-Feb-2026
ADDRESS:		**REPORT NO:**	EB2605255-017 / PSD
PROJECT:	004043 Shute Harbour SAP	**SAMPLE ID:**	SH13 0.5-1

Particle Size Distribution



Particle Size (mm)	% Passing
4.75	100%
2.36	99%
1.18	97%
0.600	94%
0.425	93%
0.300	91%
0.150	89%
0.075	87%
Particle Size (microns)	
46	83%
32	81%
23	78%
17	70%
12	68%
9	62%
6	59%
5	55%
1	45%

Median Particle Size (mm)*	<0.006

Median Particle Size is not covered under the current scope of ALS's NATA accreditation.

Analysis Notes

Samples analysed as received.

Sample Comments:

Analysed: 18-Feb-26

Loss on Pretreatment NA

Limit of Reporting: 1%

Sample Description:

Dispersion Method Shaker

Test Method: AS1289.3.6.2/AS1289.3.6.3

Soil Particle Density (<2.36mm) 2.76

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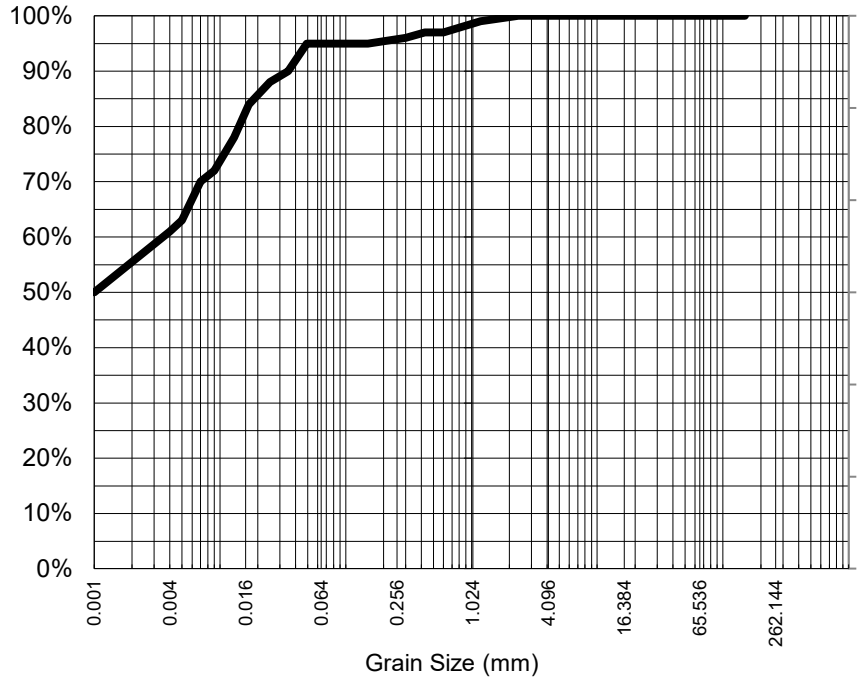
Brisbane QLD

CLIENT:	MACKENZIE STACEY	**DATE REPORTED:**	25-Feb-2026
COMPANY:	BMT COMMERCIAL AUSTRALIA PTY LTD	**DATE RECEIVED:**	13-Feb-2026
ADDRESS:		**REPORT NO:**	EB2605255-018 / PSD
PROJECT:	004043 Shute Harbour SAP	**SAMPLE ID:**	SH13 1-1.5

Particle Size Distribution



Particle Size (mm)	% Passing
2.36	100%
1.18	99%
0.600	97%
0.425	97%
0.300	96%
0.150	95%
0.075	95%
Particle Size (microns)	
49	95%
35	90%
25	88%
17	84%
13	78%
9	72%
7	70%
5	63%
1	50%

Median Particle Size (mm)*	<0.007

Median Particle Size is not covered under the current scope of ALS's NATA accreditation.

Analysis Notes

Samples analysed as received.

Sample Comments:

Analysed: 18-Feb-26

Loss on Pretreatment NA

Limit of Reporting: 1%

Sample Description:

Dispersion Method Shaker

Test Method: AS1289.3.6.2/AS1289.3.6.3

Soil Particle Density (<2.36mm) 2.5

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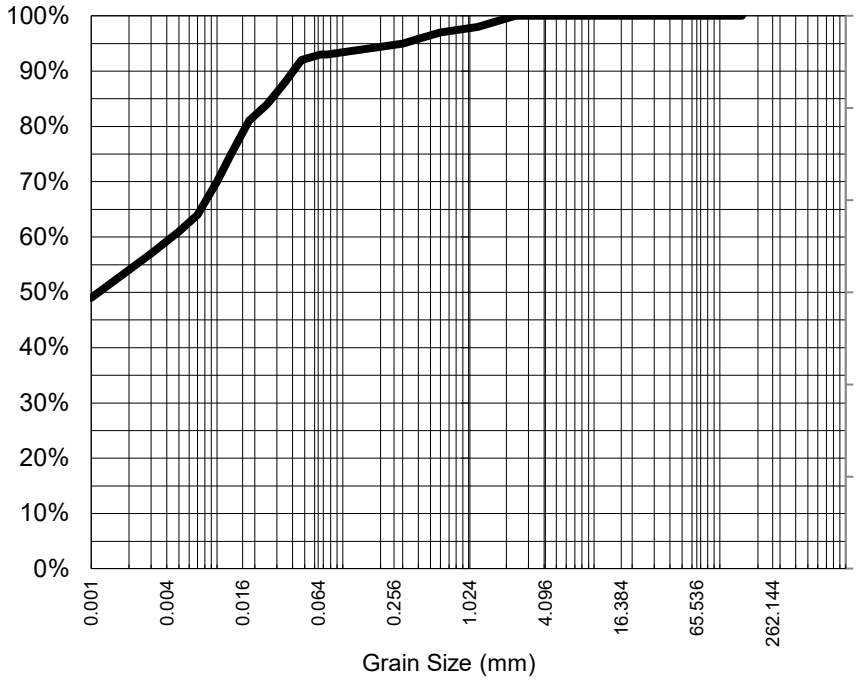
COMPANY:	BMT COMMERCIAL AUSTRALIA PTY LTD	**DATE RECEIVED:**	13-Feb-2026
ADDRESS:		**REPORT NO:**	EB2605255-019 / PSD
PROJECT:	004043 Shute Harbour SAP	**SAMPLE ID:**	SH13 1.5-2

Particle Size Distribution



Particle Size (mm)	% Passing
2.36	100%
1.18	98%
0.600	97%
0.425	96%
0.300	95%
0.150	94%
0.075	93%
Particle Size (microns)	
47	92%
35	88%
25	84%
18	81%
13	75%
10	70%
7	64%
5	61%
1	49%

Median Particle Size (mm)*	<0.007

Analysis Notes

Samples analysed as received.

** Soil Particle Density results fell outside the scope of AS 1289.3.6.3. Typical sediment SPD values used for calculations and consequently, NATA endorsement does not apply to hydrometer results*

Median Particle Size is not covered under the current scope of ALS's NATA accreditation.

Sample Comments:

Analysed: 18-Feb-26

Loss on Pretreatment NA

Limit of Reporting: 1%

Sample Description:

Dispersion Method Shaker

Test Method: AS1289.3.6.2/AS1289.3.6.3

Soil Particle Density (<2.36mm) 2.18 (2.45)*

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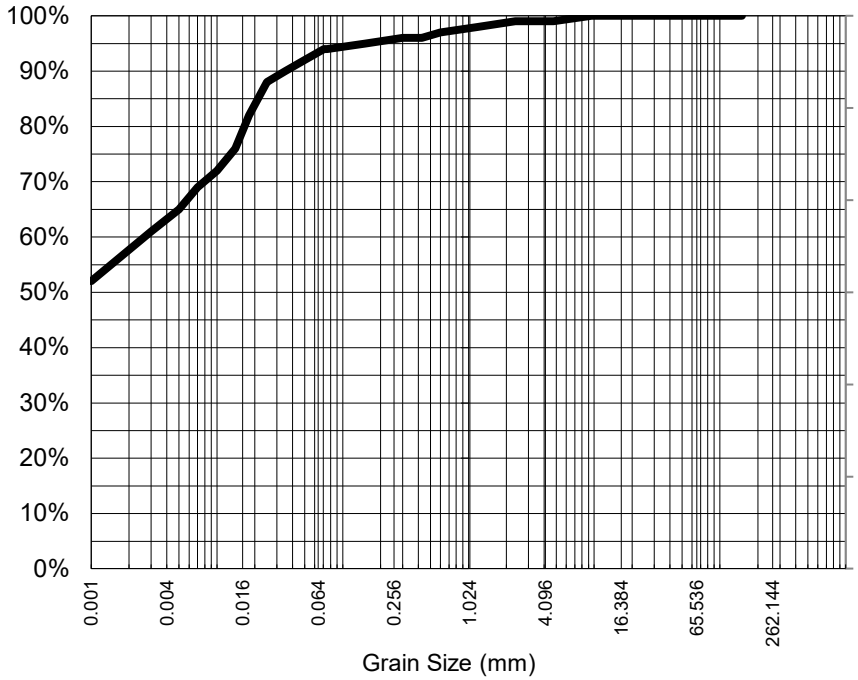
COMPANY:	BMT COMMERCIAL AUSTRALIA PTY LTD	**DATE RECEIVED:**	13-Feb-2026
ADDRESS:		**REPORT NO:**	EB2605255-020 / PSD
PROJECT:	004043 Shute Harbour SAP	**SAMPLE ID:**	SH13 2-2.5

Particle Size Distribution



Particle Size (mm)	% Passing
9.50	100%
4.75	99%
2.36	99%
1.18	98%
0.600	97%
0.425	96%
0.300	96%
0.150	95%
0.075	94%
Particle Size (microns)	
50	92%
35	90%
25	88%
18	82%
14	76%
10	72%
7	69%
5	65%
1	52%

Median Particle Size (mm)*	<0.007

Analysis Notes

Samples analysed as received.

** Soil Particle Density results fell outside the scope of AS 1289.3.6.3. Typical sediment SPD values used for calculations and consequently, NATA endorsement does not apply to hydrometer results*

Median Particle Size is not covered under the current scope of ALS's NATA accreditation.

Sample Comments:

Analysed: 18-Feb-26

Loss on Pretreatment NA

Limit of Reporting: 1%

Sample Description:

Dispersion Method Shaker

Test Method: AS1289.3.6.2/AS1289.3.6.3

Soil Particle Density (<2.36mm) 2.16 (2.45)*

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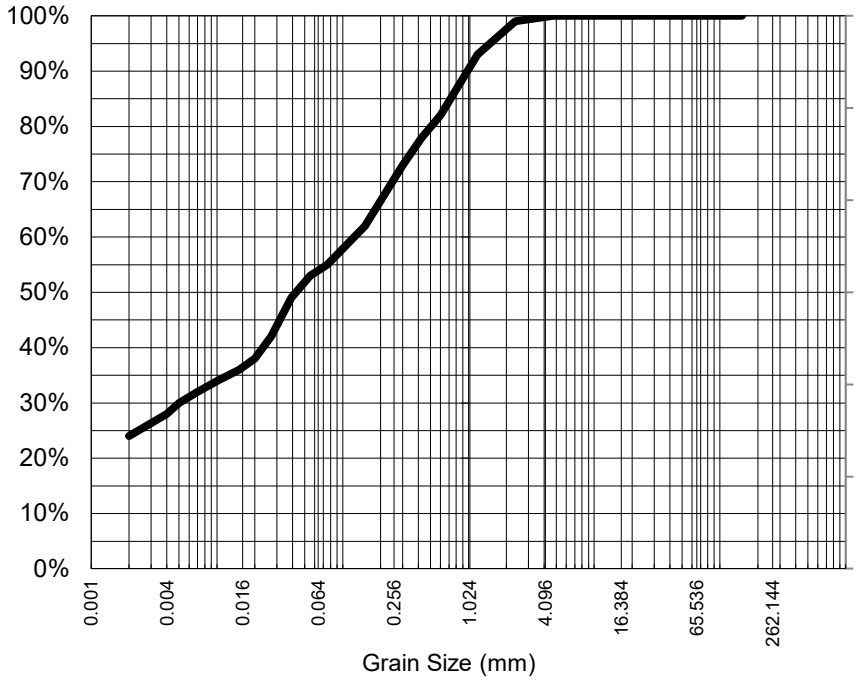
COMPANY:	BMT COMMERCIAL AUSTRALIA PTY LTD	**DATE RECEIVED:**	13-Feb-2026
ADDRESS:		**REPORT NO:**	EB2605255-021 / PSD
PROJECT:	004043 Shute Harbour SAP	**SAMPLE ID:**	SH8 0-0.5

Particle Size Distribution



Particle Size (mm)	% Passing
4.75	100%
2.36	99%
1.18	93%
0.600	82%
0.425	78%
0.300	73%
0.150	62%
0.075	55%
Particle Size (microns)	
55	53%
39	49%
27	42%
20	38%
15	36%
10	34%
7	32%
5	30%
2	24%

Median Particle Size (mm)*	0.043

Analysis Notes

Samples analysed as received.

** Soil Particle Density results fell outside the scope of AS 1289.3.6.3. Typical sediment SPD values used for calculations and consequently, NATA endorsement does not apply to hydrometer results*

Median Particle Size is not covered under the current scope of ALS's NATA accreditation.

Sample Comments:		**Analysed:**	18-Feb-26
Loss on Pretreatment	NA	**Limit of Reporting:**	1%
Sample Description:		**Dispersion Method**	Shaker
Test Method:	AS1289.3.6.2/AS1289.3.6.3		
Soil Particle Density (<2.36mm)	2.32 (2.45)*		

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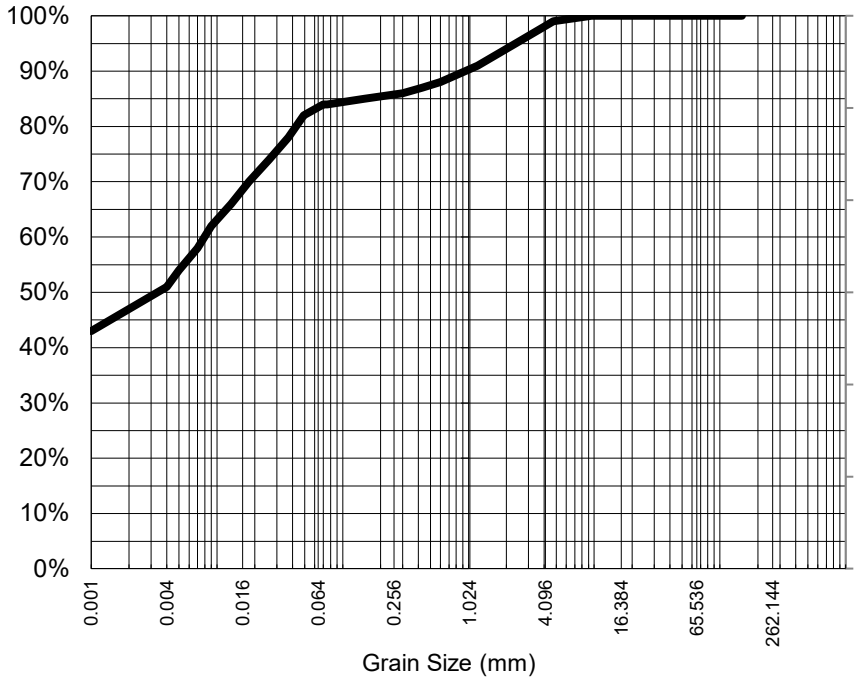
COMPANY:	BMT COMMERCIAL AUSTRALIA PTY LTD	**DATE RECEIVED:**	13-Feb-2026
ADDRESS:		**REPORT NO:**	EB2605255-022 / PSD
PROJECT:	004043 Shute Harbour SAP	**SAMPLE ID:**	SH8 0.5-1

Particle Size Distribution



Particle Size (mm)	% Passing
9.50	100%
4.75	99%
2.36	95%
1.18	91%
0.600	88%
0.425	87%
0.300	86%
0.150	85%
0.075	84%
Particle Size (microns)	
49	82%
37	78%
26	74%
18	70%
13	66%
9	62%
7	58%
5	54%
1	43%

Median Particle Size (mm)*	<0.007

Analysis Notes

Samples analysed as received.

** Soil Particle Density results fell outside the scope of AS 1289.3.6.3. Typical sediment SPD values used for calculations and consequently, NATA endorsement does not apply to hydrometer results*

Median Particle Size is not covered under the current scope of ALS's NATA accreditation.

Sample Comments:

Analysed: 18-Feb-26

Loss on Pretreatment NA

Limit of Reporting: 1%

Sample Description:

Dispersion Method Shaker

Test Method: AS1289.3.6.2/AS1289.3.6.3

Soil Particle Density (<2.36mm) 1.92 (2.45)*

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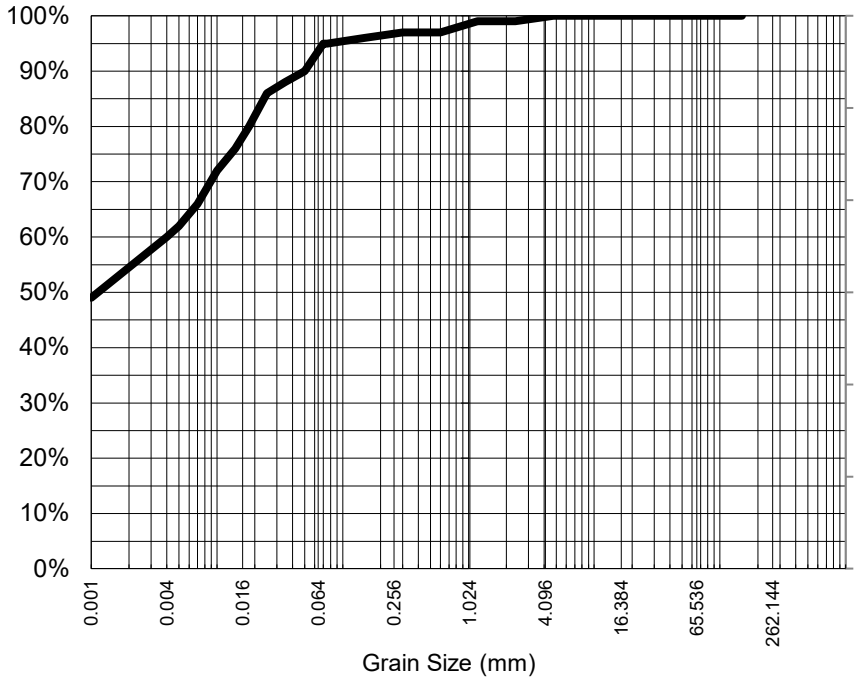
COMPANY:	BMT COMMERCIAL AUSTRALIA PTY LTD	**DATE RECEIVED:**	13-Feb-2026
ADDRESS:		**REPORT NO:**	EB2605255-023 / PSD
PROJECT:	004043 Shute Harbour SAP	**SAMPLE ID:**	SH8 1-1.5

Particle Size Distribution



Particle Size (mm)	% Passing
4.75	100%
2.36	99%
1.18	99%
0.600	97%
0.425	97%
0.300	97%
0.150	96%
0.075	95%
Particle Size (microns)	
50	90%
35	88%
25	86%
18	80%
14	76%
10	72%
7	66%
5	62%
1	49%

Median Particle Size (mm)*	<0.007

Median Particle Size is not covered under the current scope of ALS's NATA accreditation.

Analysis Notes

Samples analysed as received.

Sample Comments:

Analysed: 18-Feb-26

Loss on Pretreatment NA

Limit of Reporting: 1%

Sample Description:

Dispersion Method Shaker

Test Method: AS1289.3.6.2/AS1289.3.6.3

Soil Particle Density (<2.36mm) 2.49

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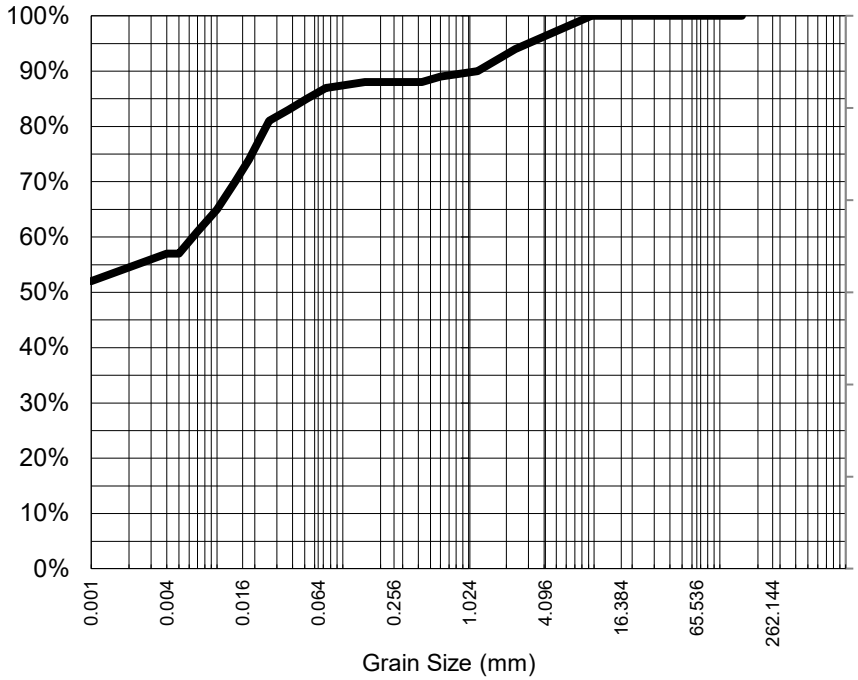
COMPANY:	BMT COMMERCIAL AUSTRALIA PTY LTD	**DATE RECEIVED:**	13-Feb-2026
ADDRESS:		**REPORT NO:**	EB2605255-024 / PSD
PROJECT:	004043 Shute Harbour SAP	**SAMPLE ID:**	SH8 1.5-2

Particle Size Distribution



Particle Size (mm)	% Passing
9.50	100%
4.75	97%
2.36	94%
1.18	90%
0.600	89%
0.425	88%
0.300	88%
0.150	88%
0.075	87%
Particle Size (microns)	
52	85%
37	83%
26	81%
18	74%
14	70%
10	65%
7	61%
5	57%
1	52%

Median Particle Size (mm)*	<0.007

Median Particle Size is not covered under the current scope of ALS's NATA accreditation.

Analysis Notes

Samples analysed as received.

Sample Comments:

Analysed: 18-Feb-26

Loss on Pretreatment NA

Limit of Reporting: 1%

Sample Description:

Dispersion Method Shaker

Test Method: AS1289.3.6.2/AS1289.3.6.3

Soil Particle Density (<2.36mm) 2.49

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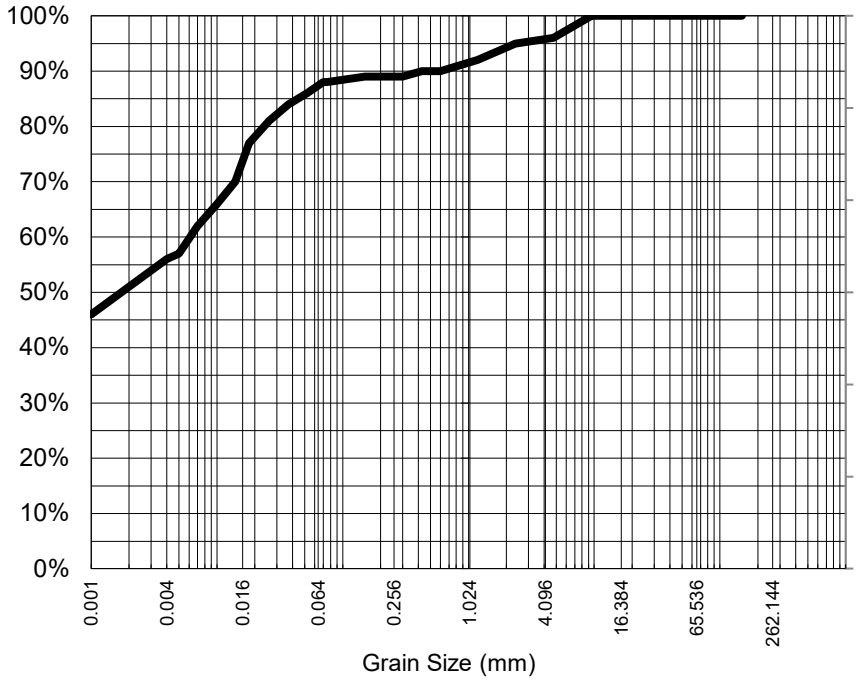
COMPANY:	BMT COMMERCIAL AUSTRALIA PTY LTD	**DATE RECEIVED:**	13-Feb-2026
ADDRESS:		**REPORT NO:**	EB2605255-025 / PSD
PROJECT:	004043 Shute Harbour SAP	**SAMPLE ID:**	SH8 2-2.5

Particle Size Distribution



Particle Size (mm)	% Passing
9.50	100%
4.75	96%
2.36	95%
1.18	92%
0.600	90%
0.425	90%
0.300	89%
0.150	89%
0.075	88%
Particle Size (microns)	
52	86%
37	84%
26	81%
18	77%
14	70%
10	66%
7	62%
5	57%
1	46%

Median Particle Size (mm)*	<0.007

Analysis Notes

Samples analysed as received.

** Soil Particle Density results fell outside the scope of AS 1289.3.6.3. Typical sediment SPD values used for calculations and consequently, NATA endorsement does not apply to hydrometer results*

Median Particle Size is not covered under the current scope of ALS's NATA accreditation.

Sample Comments:

Analysed: 18-Feb-26

Loss on Pretreatment NA

Limit of Reporting: 1%

Sample Description:

Dispersion Method Shaker

Test Method: AS1289.3.6.2/AS1289.3.6.3

Soil Particle Density (<2.36mm) 2.2 (2.45)*

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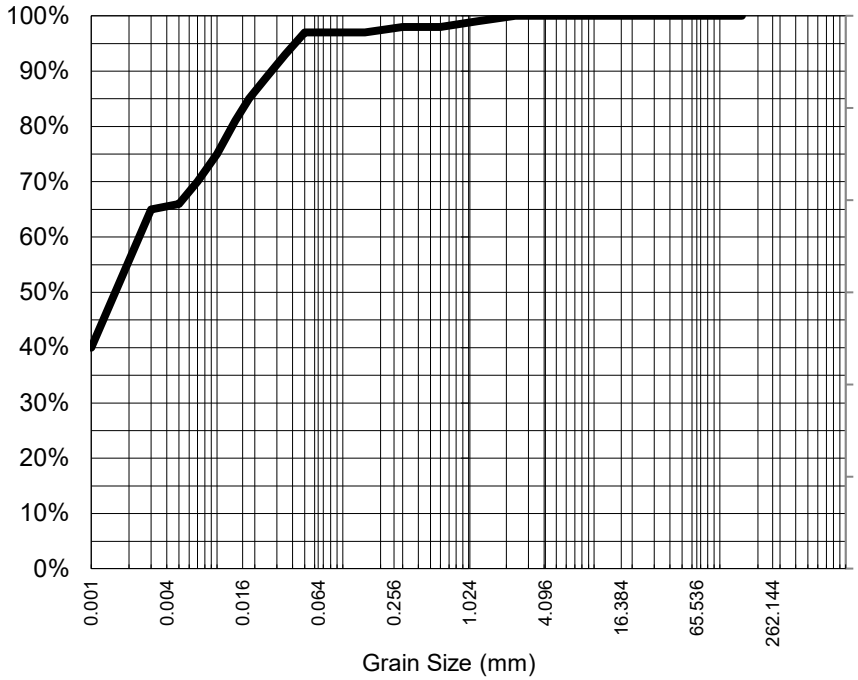
COMPANY:	BMT COMMERCIAL AUSTRALIA PTY LTD	**DATE RECEIVED:**	13-Feb-2026
ADDRESS:		**REPORT NO:**	EB2605255-026 / PSD
PROJECT:	004043 Shute Harbour SAP	**SAMPLE ID:**	SH8 2.5-3

Particle Size Distribution



Particle Size (mm)	% Passing
2.36	100%
1.18	99%
0.600	98%
0.425	98%
0.300	98%
0.150	97%
0.075	97%
Particle Size (microns)	
50	97%
35	93%
25	89%
18	85%
14	81%
10	75%
7	70%
5	66%
1	40%

Median Particle Size (mm)*	<0.007

Analysis Notes

Samples analysed as received.

** Soil Particle Density results fell outside the scope of AS 1289.3.6.3. Typical sediment SPD values used for calculations and consequently, NATA endorsement does not apply to hydrometer results*

Median Particle Size is not covered under the current scope of ALS's NATA accreditation.

Sample Comments:

Analysed: 18-Feb-26

Loss on Pretreatment NA

Limit of Reporting: 1%

Sample Description:

Dispersion Method Shaker

Test Method: AS1289.3.6.2/AS1289.3.6.3

Soil Particle Density (<2.36mm) 2.25 (2.45)*

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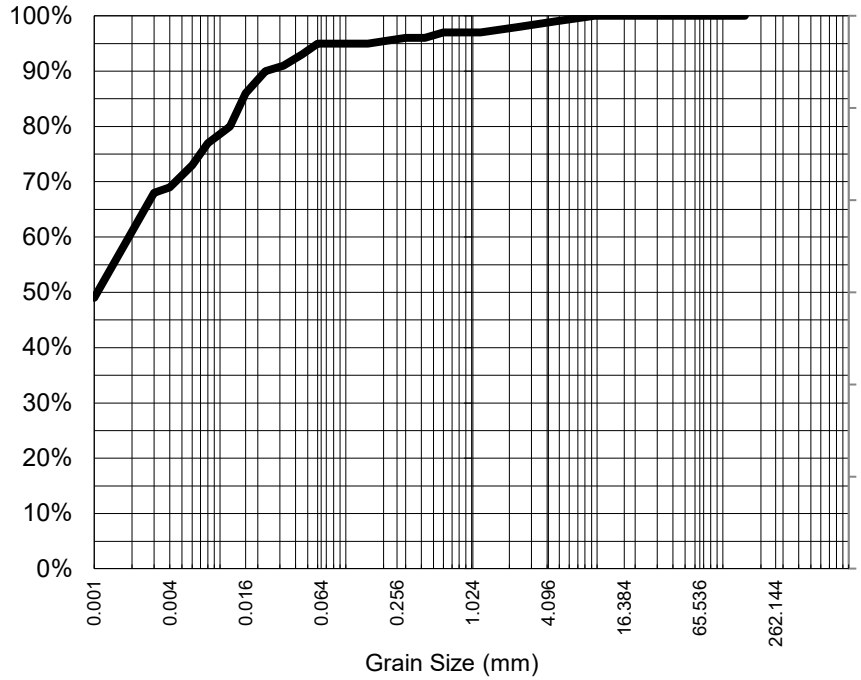
COMPANY:	BMT COMMERCIAL AUSTRALIA PTY LTD	**DATE RECEIVED:**	13-Feb-2026
ADDRESS:		**REPORT NO:**	EB2605255-027 / PSD
PROJECT:	004043 Shute Harbour SAP	**SAMPLE ID:**	SH8 3-3.5

Particle Size Distribution



Particle Size (mm)	% Passing
9.50	100%
4.75	99%
2.36	98%
1.18	97%
0.600	97%
0.425	96%
0.300	96%
0.150	95%
0.075	95%
Particle Size (microns)	
45	93%
32	91%
23	90%
16	86%
12	80%
8	77%
6	73%
4	69%
1	49%

Analysis Notes

Samples analysed as received.

Median Particle Size (mm)*	<0.006

Median Particle Size is not covered under the current scope of ALS's NATA accreditation.

Sample Comments:

Analysed: 18-Feb-26

Loss on Pretreatment NA

Limit of Reporting: 1%

Sample Description:

Dispersion Method Shaker

Test Method: AS1289.3.6.2/AS1289.3.6.3

Soil Particle Density (<2.36mm) 2.76

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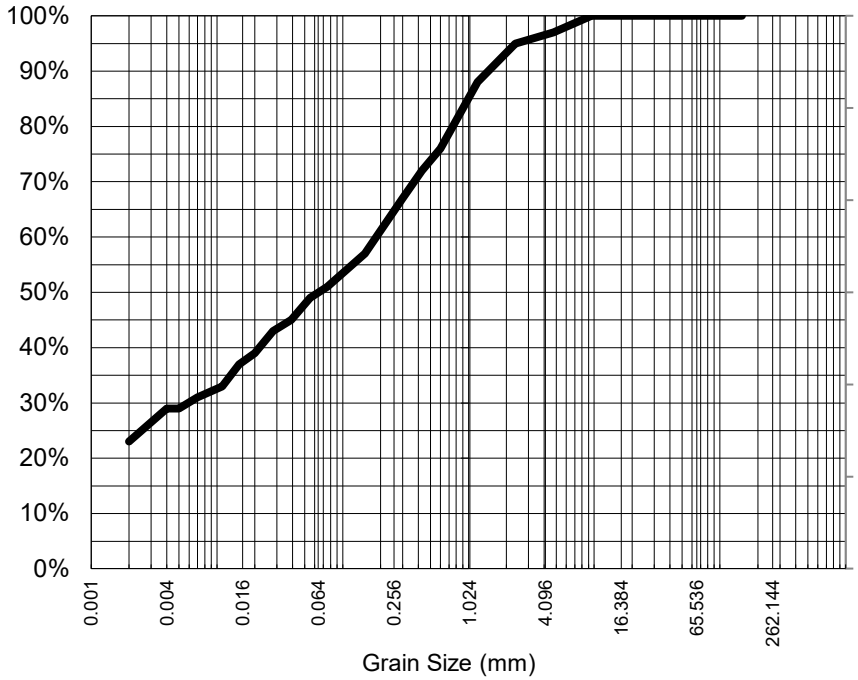
COMPANY:	BMT COMMERCIAL AUSTRALIA PTY LTD	**DATE RECEIVED:**	13-Feb-2026
ADDRESS:		**REPORT NO:**	EB2605255-028 / PSD
PROJECT:	004043 Shute Harbour SAP	**SAMPLE ID:**	SH5 0-0.5

Particle Size Distribution



Particle Size (mm)	% Passing
9.50	100%
4.75	97%
2.36	95%
1.18	88%
0.600	76%
0.425	72%
0.300	67%
0.150	57%
0.075	51%
Particle Size (microns)	
55	49%
39	45%
28	43%
20	39%
15	37%
11	33%
7	31%
5	29%
2	23%

Median Particle Size (mm)*	0.065

Analysis Notes

Samples analysed as received.

** Soil Particle Density results fell outside the scope of AS 1289.3.6.3. Typical sediment SPD values used for calculations and consequently, NATA endorsement does not apply to hydrometer results*

Median Particle Size is not covered under the current scope of ALS's NATA accreditation.

Sample Comments:

Analysed: 18-Feb-26

Loss on Pretreatment NA

Limit of Reporting: 1%

Sample Description:

Dispersion Method Shaker

Test Method: AS1289.3.6.2/AS1289.3.6.3

Soil Particle Density (<2.36mm) 2.38 (2.45)*

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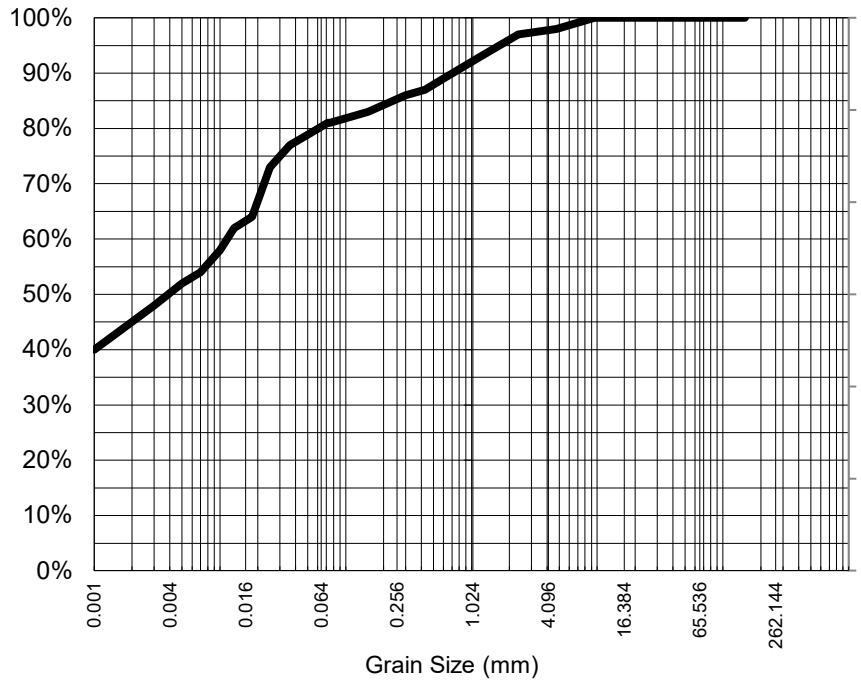
Brisbane QLD

CLIENT:	MACKENZIE STACEY	**DATE REPORTED:**	25-Feb-2026
COMPANY:	BMT COMMERCIAL AUSTRALIA PTY LTD	**DATE RECEIVED:**	13-Feb-2026
ADDRESS:		**REPORT NO:**	EB2605255-029 / PSD
PROJECT:	004043 Shute Harbour SAP	**SAMPLE ID:**	SH5 0.5-1

Particle Size Distribution



Particle Size (mm)	% Passing
9.50	100%
4.75	98%
2.36	97%
1.18	93%
0.600	89%
0.425	87%
0.300	86%
0.150	83%
0.075	81%
Particle Size (microns)	
51	79%
36	77%
25	73%
18	64%
13	62%
10	58%
7	54%
5	52%
1	40%

Median Particle Size (mm)*	<0.007

Analysis Notes

Samples analysed as received.

Median Particle Size is not covered under the current scope of ALS's NATA accreditation.

Sample Comments:

Analysed: 18-Feb-26

Loss on Pretreatment NA

Limit of Reporting: 1%

Sample Description:

Dispersion Method Shaker

Test Method: AS1289.3.6.2/AS1289.3.6.3

Soil Particle Density (<2.36mm) 2.57

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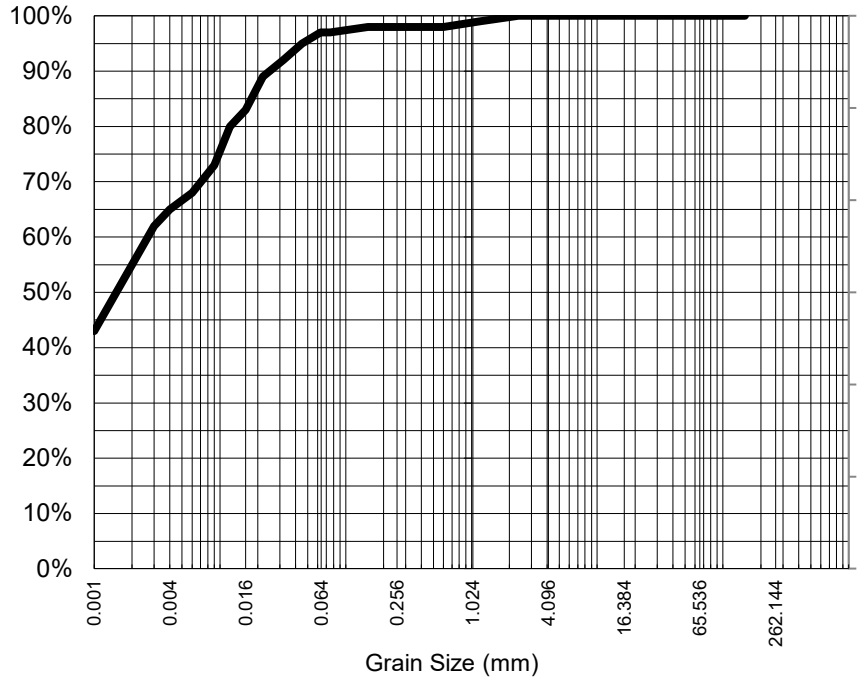
COMPANY:	BMT COMMERCIAL AUSTRALIA PTY LTD	**DATE RECEIVED:**	13-Feb-2026
ADDRESS:		**REPORT NO:**	EB2605255-030 / PSD
PROJECT:	004043 Shute Harbour SAP	**SAMPLE ID:**	SH5 1-1.5

Particle Size Distribution



Particle Size (mm)	% Passing
2.36	100%
1.18	99%
0.600	98%
0.425	98%
0.300	98%
0.150	98%
0.075	97%
Particle Size (microns)	
45	95%
32	92%
22	89%
16	83%
12	80%
9	73%
6	68%
4	65%
1	43%

Median Particle Size (mm)*	<0.006

Median Particle Size is not covered under the current scope of ALS's NATA accreditation.

Analysis Notes

Samples analysed as received.

Sample Comments:

Analysed: 18-Feb-26

Loss on Pretreatment NA

Limit of Reporting: 1%

Sample Description:

Dispersion Method Shaker

Test Method: AS1289.3.6.2/AS1289.3.6.3

Soil Particle Density (<2.36mm) 2.62

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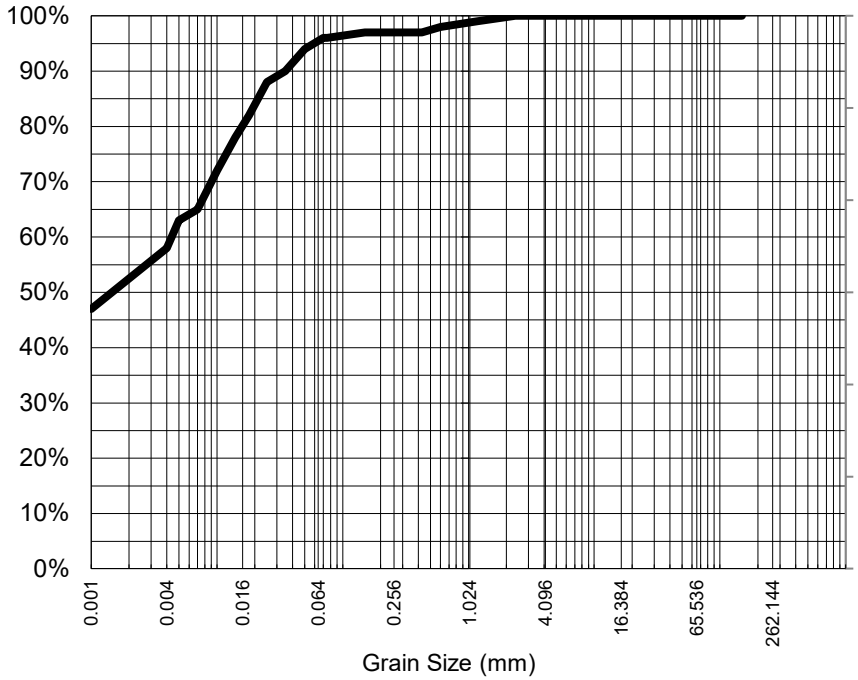
COMPANY:	BMT COMMERCIAL AUSTRALIA PTY LTD	**DATE RECEIVED:**	13-Feb-2026
ADDRESS:		**REPORT NO:**	EB2605255-031 / PSD
PROJECT:	004043 Shute Harbour SAP	**SAMPLE ID:**	SH5 1.5-2

Particle Size Distribution



Particle Size (mm)	% Passing
2.36	100%
1.18	99%
0.600	98%
0.425	97%
0.300	97%
0.150	97%
0.075	96%
Particle Size (microns)	
50	94%
35	90%
25	88%
18	82%
14	78%
10	72%
7	65%
5	63%
1	47%

Median Particle Size (mm)*	<0.007

Analysis Notes

Samples analysed as received.

** Soil Particle Density results fell outside the scope of AS 1289.3.6.3. Typical sediment SPD values used for calculations and consequently, NATA endorsement does not apply to hydrometer results*

Median Particle Size is not covered under the current scope of ALS's NATA accreditation.

Sample Comments:

Analysed: 18-Feb-26

Loss on Pretreatment NA

Limit of Reporting: 1%

Sample Description:

Dispersion Method Shaker

Test Method: AS1289.3.6.2/AS1289.3.6.3

Soil Particle Density (<2.36mm) 2.16 (2.45)*

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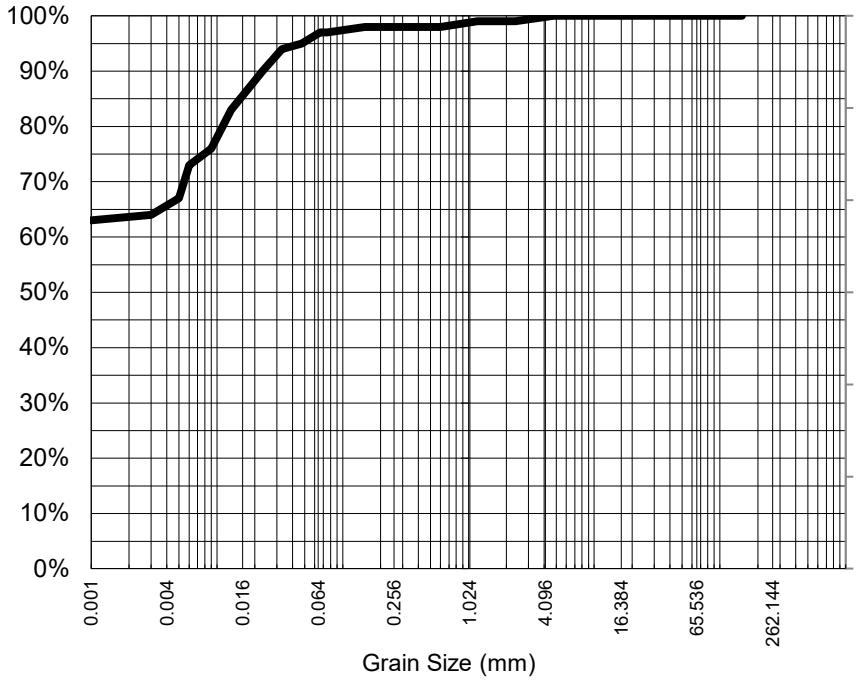
COMPANY:	BMT COMMERCIAL AUSTRALIA PTY LTD	**DATE RECEIVED:**	13-Feb-2026
ADDRESS:		**REPORT NO:**	EB2605255-032 / PSD
PROJECT:	004043 Shute Harbour SAP	**SAMPLE ID:**	SH5 2-2.5

Particle Size Distribution



Particle Size (mm)	% Passing
4.75	100%
2.36	99%
1.18	99%
0.600	98%
0.425	98%
0.300	98%
0.150	98%
0.075	97%
Particle Size (microns)	
47	95%
33	94%
23	90%
18	87%
13	83%
9	76%
6	73%
5	67%
1	63%

Median Particle Size (mm)*	<0.006

Analysis Notes

Samples analysed as received.

** Soil Particle Density results fell outside the scope of AS 1289.3.6.3. Typical sediment SPD values used for calculations and consequently, NATA endorsement does not apply to hydrometer results*

Median Particle Size is not covered under the current scope of ALS's NATA accreditation.

Sample Comments:		**Analysed:**	18-Feb-26
Loss on Pretreatment	NA	**Limit of Reporting:**	1%
Sample Description:		**Dispersion Method**	Shaker
Test Method:	AS1289.3.6.2/AS1289.3.6.3		
Soil Particle Density (<2.36mm)	2.37 (2.45)*		

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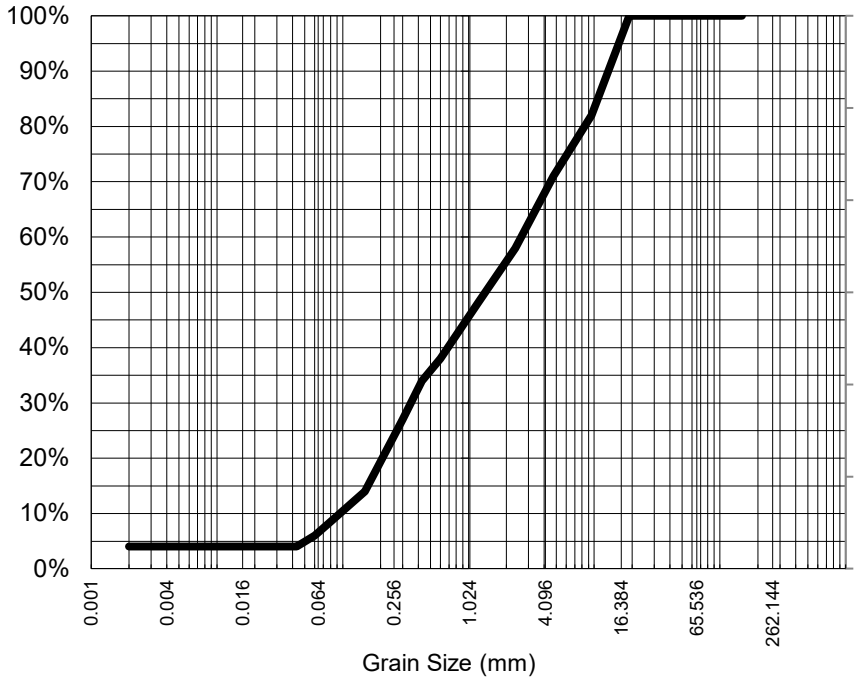
ADDRESS:		**REPORT NO:**	EB2605255-033 / PSD
PROJECT:	004043 Shute Harbour SAP	**SAMPLE ID:**	SH4 0-0.5

Particle Size Distribution



Particle Size (mm)	% Passing
19.0	100%
9.50	82%
4.75	71%
2.36	58%
1.18	48%
0.600	38%
0.425	34%
0.300	27%
0.150	14%
0.075	8%
Particle Size (microns)	
60	6%
43	4%
30	4%
21	4%
16	4%
11	4%
8	4%
5	4%
2	4%

Median Particle Size (mm)*	1.416

Analysis Notes

Samples analysed as received.

** Soil Particle Density results fell outside the scope of AS 1289.3.6.3. Typical sediment SPD values used for calculations and consequently, NATA endorsement does not apply to hydrometer results*

Median Particle Size is not covered under the current scope of ALS's NATA accreditation.

Sample Comments:	AS1289.3.6.3 states that hydrometer analysis is not applicable for samples containing <10% fines (<75um). Results should be assessed accordingly	**Analysed:**	18-Feb-26
Loss on Pretreatment	NA	**Limit of Reporting:**	1%
Sample Description:		**Dispersion Method**	Shaker
Test Method:	AS1289.3.6.2/AS1289.3.6.3		
Soil Particle Density (<2.36mm)	2.4 (2.45)*		

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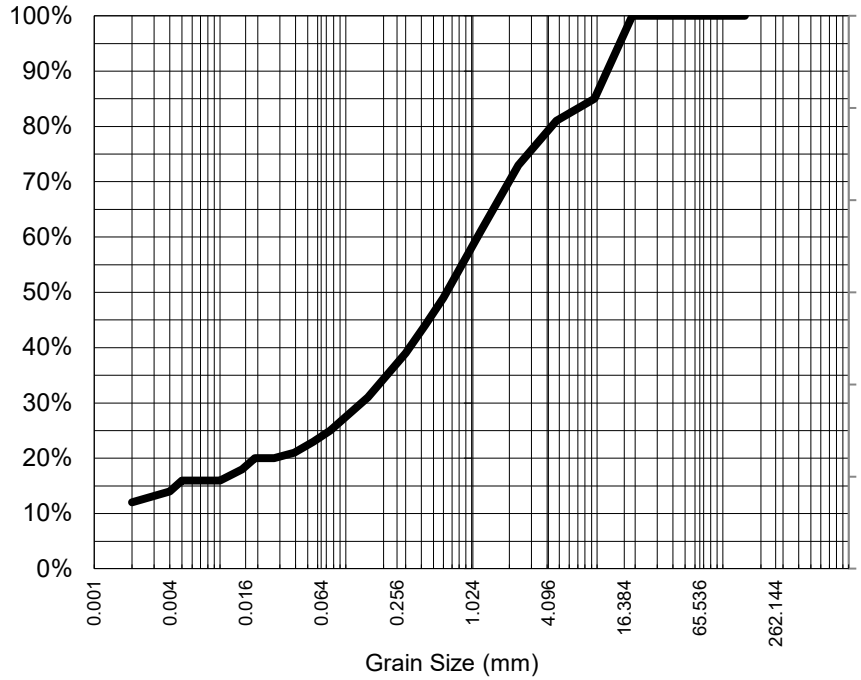
ADDRESS:		**REPORT NO:**	EB2605255-034 / PSD
PROJECT:	004043 Shute Harbour SAP	**SAMPLE ID:**	SH4 0.5-1

Particle Size Distribution



Particle Size (mm)	% Passing
19.0	100%
9.50	85%
4.75	81%
2.36	73%
1.18	61%
0.600	49%
0.425	44%
0.300	39%
0.150	31%
0.075	25%
Particle Size (microns)	
55	23%
39	21%
27	20%
19	20%
15	18%
10	16%
7	16%
5	16%
2	12%

Analysis Notes

Samples analysed as received.

Median Particle Size (mm)*	0.648

Median Particle Size is not covered under the current scope of ALS's NATA accreditation.

Sample Comments:

Analysed: 18-Feb-26

Loss on Pretreatment NA

Limit of Reporting: 1%

Sample Description:

Dispersion Method Shaker

Test Method: AS1289.3.6.2/AS1289.3.6.3

Soil Particle Density (<2.36mm) 2.64

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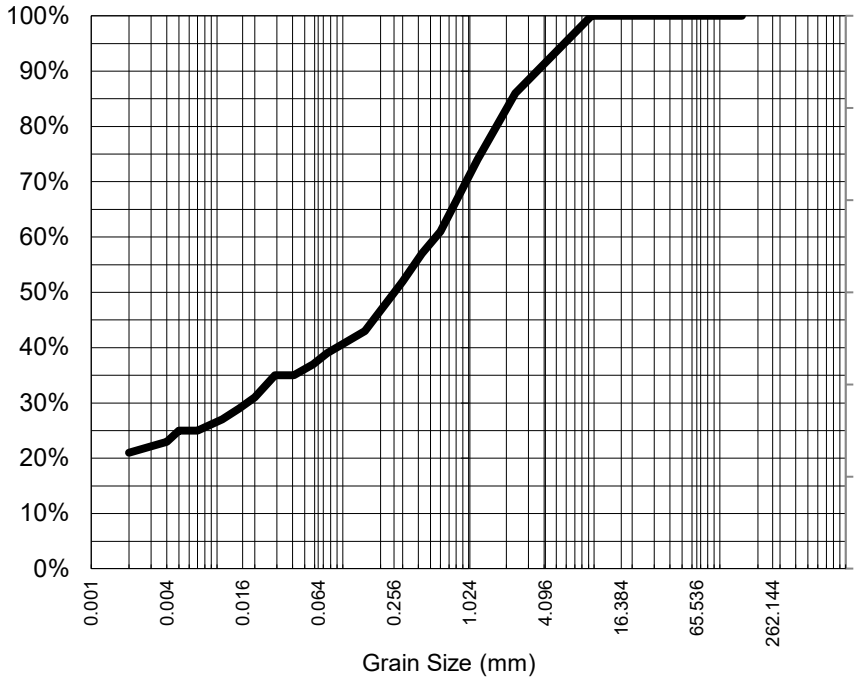
COMPANY:	BMT COMMERCIAL AUSTRALIA PTY LTD	**DATE RECEIVED:**	13-Feb-2026
ADDRESS:		**REPORT NO:**	EB2605255-035 / PSD
PROJECT:	004043 Shute Harbour SAP	**SAMPLE ID:**	SH4 1-1.5

Particle Size Distribution



Particle Size (mm)	% Passing
9.50	100%
4.75	93%
2.36	86%
1.18	74%
0.600	61%
0.425	57%
0.300	52%
0.150	43%
0.075	39%
Particle Size (microns)	
58	37%
41	35%
29	35%
20	31%
15	29%
11	27%
7	25%
5	25%
2	21%

Median Particle Size (mm)*	0.267

Analysis Notes

Samples analysed as received.

** Soil Particle Density results fell outside the scope of AS 1289.3.6.3. Typical sediment SPD values used for calculations and consequently, NATA endorsement does not apply to hydrometer results*

Median Particle Size is not covered under the current scope of ALS's NATA accreditation.

Sample Comments:

Analysed: 18-Feb-26

Loss on Pretreatment NA

Limit of Reporting: 1%

Sample Description:

Dispersion Method Shaker

Test Method: AS1289.3.6.2/AS1289.3.6.3

Soil Particle Density (<2.36mm) 2.45

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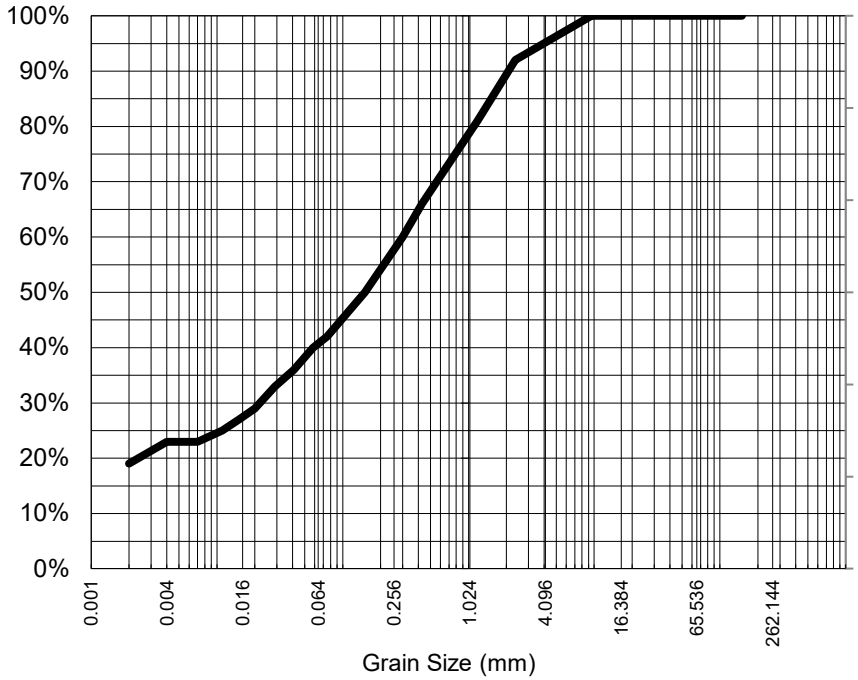
COMPANY:	BMT COMMERCIAL AUSTRALIA PTY LTD	**DATE RECEIVED:**	13-Feb-2026
ADDRESS:		**REPORT NO:**	EB2605255-036 / PSD
PROJECT:	004043 Shute Harbour SAP	**SAMPLE ID:**	SH1 0-0.5

Particle Size Distribution



Particle Size (mm)	% Passing
9.50	100%
4.75	96%
2.36	92%
1.18	81%
0.600	71%
0.425	66%
0.300	60%
0.150	50%
0.075	42%
Particle Size (microns)	
58	40%
41	36%
29	33%
20	29%
15	27%
11	25%
7	23%
5	23%
2	19%

Median Particle Size (mm)*	0.150

Analysis Notes

Samples analysed as received.

** Soil Particle Density results fell outside the scope of AS 1289.3.6.3. Typical sediment SPD values used for calculations and consequently, NATA endorsement does not apply to hydrometer results*

Median Particle Size is not covered under the current scope of ALS's NATA accreditation.

Sample Comments:

Analysed: 18-Feb-26

Loss on Pretreatment NA

Limit of Reporting: 1%

Sample Description:

Dispersion Method Shaker

Test Method: AS1289.3.6.2/AS1289.3.6.3

Soil Particle Density (<2.36mm) 2.4 (2.45)*

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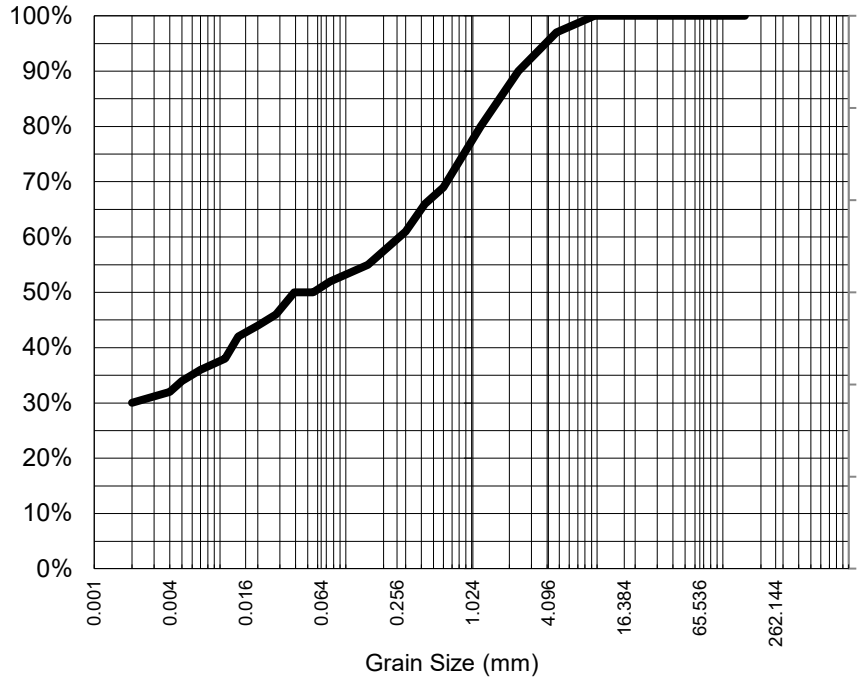
COMPANY:	BMT COMMERCIAL AUSTRALIA PTY LTD	**DATE RECEIVED:**	13-Feb-2026
ADDRESS:		**REPORT NO:**	EB2605255-037 / PSD
PROJECT:	004043 Shute Harbour SAP	**SAMPLE ID:**	SH1 0.5-1

Particle Size Distribution



Particle Size (mm)	% Passing
9.50	100%
4.75	97%
2.36	90%
1.18	80%
0.600	69%
0.425	66%
0.300	61%
0.150	55%
0.075	52%
Particle Size (microns)	
55	50%
39	50%
28	46%
20	44%
14	42%
11	38%
7	36%
5	34%
2	30%

Median Particle Size (mm)*	0.055

Analysis Notes

Samples analysed as received.

** Soil Particle Density results fell outside the scope of AS 1289.3.6.3. Typical sediment SPD values used for calculations and consequently, NATA endorsement does not apply to hydrometer results*

Median Particle Size is not covered under the current scope of ALS's NATA accreditation.

Sample Comments:

Analysed: 18-Feb-26

Loss on Pretreatment NA

Limit of Reporting: 1%

Sample Description:

Dispersion Method Shaker

Test Method: AS1289.3.6.2/AS1289.3.6.3

Soil Particle Density (<2.36mm) 2.38 (2.45)*

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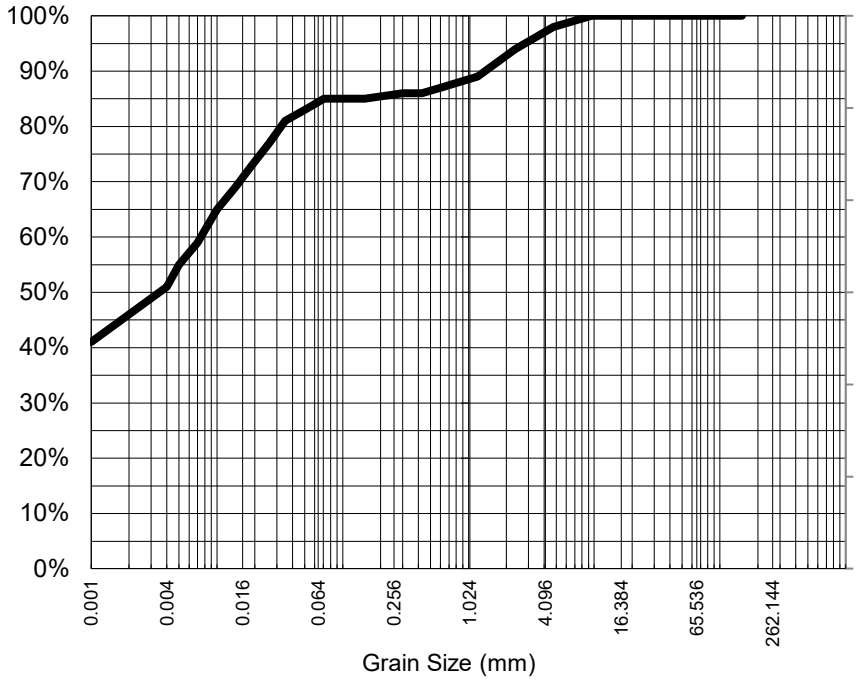
COMPANY:	BMT COMMERCIAL AUSTRALIA PTY LTD	**DATE RECEIVED:**	13-Feb-2026
ADDRESS:		**REPORT NO:**	EB2605255-038 / PSD
PROJECT:	004043 Shute Harbour SAP	**SAMPLE ID:**	SH1 1-1.5

Particle Size Distribution



Particle Size (mm)	% Passing
9.50	100%
4.75	98%
2.36	94%
1.18	89%
0.600	87%
0.425	86%
0.300	86%
0.150	85%
0.075	85%
Particle Size (microns)	
50	83%
35	81%
26	77%
19	73%
14	69%
10	65%
7	59%
5	55%
1	41%

Median Particle Size (mm)*	<0.007

Analysis Notes

Samples analysed as received.

** Soil Particle Density results fell outside the scope of AS 1289.3.6.3. Typical sediment SPD values used for calculations and consequently, NATA endorsement does not apply to hydrometer results*

Median Particle Size is not covered under the current scope of ALS's NATA accreditation.

Sample Comments:

Analysed: 18-Feb-26

Loss on Pretreatment NA

Limit of Reporting: 1%

Sample Description:

Dispersion Method Shaker

Test Method: AS1289.3.6.2/AS1289.3.6.3

Soil Particle Density (<2.36mm) 2.26 (2.45)*

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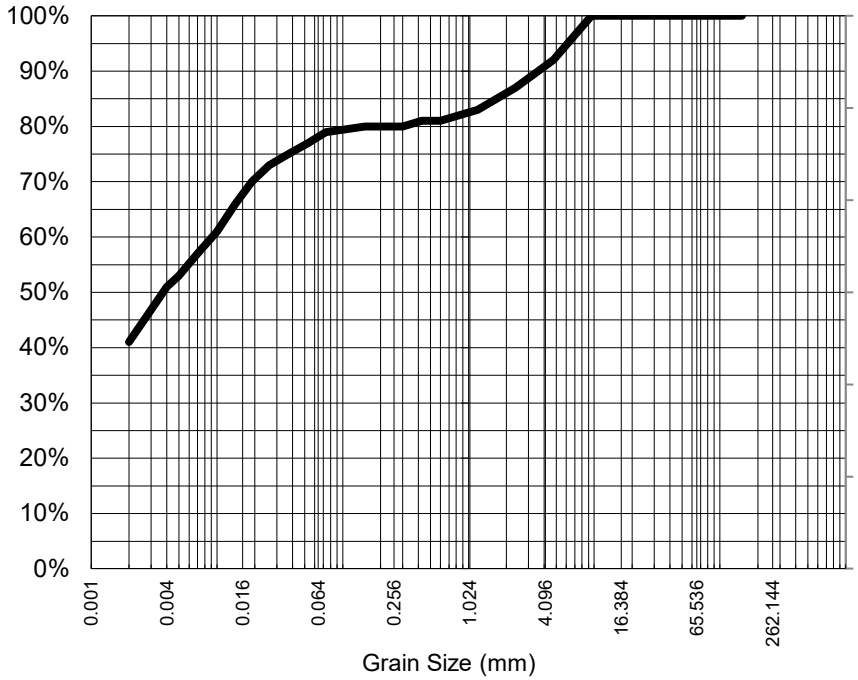
COMPANY:	BMT COMMERCIAL AUSTRALIA PTY LTD	**DATE RECEIVED:**	13-Feb-2026
ADDRESS:		**REPORT NO:**	EB2605255-039 / PSD
PROJECT:	004043 Shute Harbour SAP	**SAMPLE ID:**	SH1 1.5-2

Particle Size Distribution



Particle Size (mm)	% Passing
9.50	100%
4.75	92%
2.36	87%
1.18	83%
0.600	81%
0.425	81%
0.300	80%
0.150	80%
0.075	79%
Particle Size (microns)	
53	77%
37	75%
26	73%
19	70%
14	66%
10	61%
7	57%
5	53%
2	41%

Median Particle Size (mm)*	<0.007

Analysis Notes

Samples analysed as received.

** Soil Particle Density results fell outside the scope of AS 1289.3.6.3. Typical sediment SPD values used for calculations and consequently, NATA endorsement does not apply to hydrometer results*

Median Particle Size is not covered under the current scope of ALS's NATA accreditation.

Sample Comments:

Analysed: 18-Feb-26

Loss on Pretreatment NA

Limit of Reporting: 1%

Sample Description:

Dispersion Method Shaker

Test Method: AS1289.3.6.2/AS1289.3.6.3

Soil Particle Density (<2.36mm) 2.34 (2.45)*

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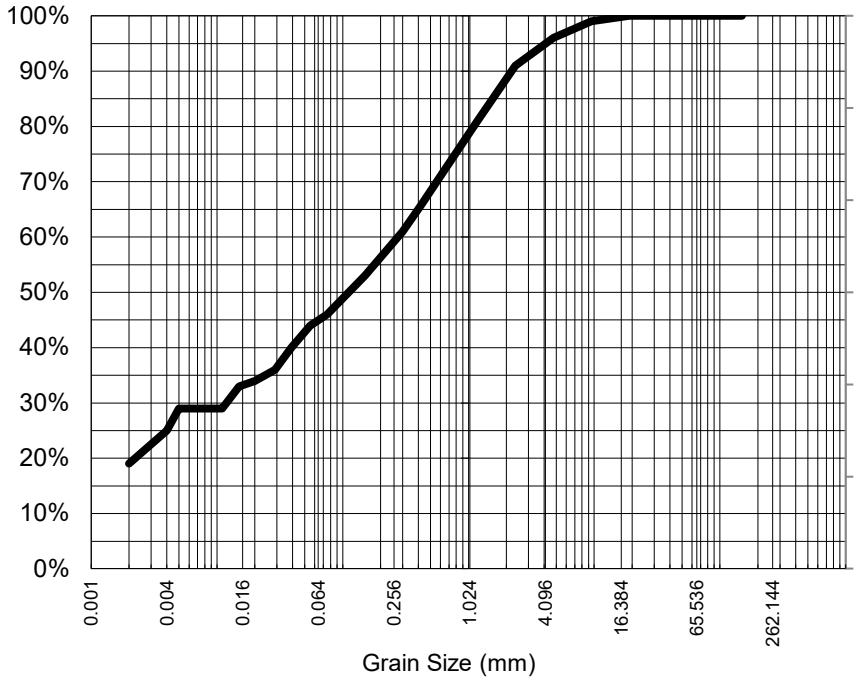
CLIENT:	MACKENZIE STACEY	**DATE REPORTED:**	25-Feb-2026
COMPANY:	BMT COMMERCIAL AUSTRALIA PTY LTD	**DATE RECEIVED:**	13-Feb-2026
ADDRESS:		**REPORT NO:**	EB2605255-040 / PSD
PROJECT:	004043 Shute Harbour SAP	**SAMPLE ID:**	SH11A 0-0.5

Particle Size Distribution



Particle Size (mm)	% Passing
19.0	100%
9.50	99%
4.75	96%
2.36	91%
1.18	81%
0.600	71%
0.425	66%
0.300	61%
0.150	53%
0.075	46%
Particle Size (microns)	
55	44%
39	40%
29	36%
20	34%
15	33%
11	29%
7	29%
5	29%
2	19%

Median Particle Size (mm)*	0.118

Analysis Notes

Samples analysed as received.

** Soil Particle Density results fell outside the scope of AS 1289.3.6.3. Typical sediment SPD values used for calculations and consequently, NATA endorsement does not apply to hydrometer results*

Median Particle Size is not covered under the current scope of ALS's NATA accreditation.

Sample Comments:

Analysed: 18-Feb-26

Loss on Pretreatment NA

Limit of Reporting: 1%

Sample Description:

Dispersion Method Shaker

Test Method: AS1289.3.6.2/AS1289.3.6.3

Soil Particle Density (<2.36mm) 2.39 (2.45)*

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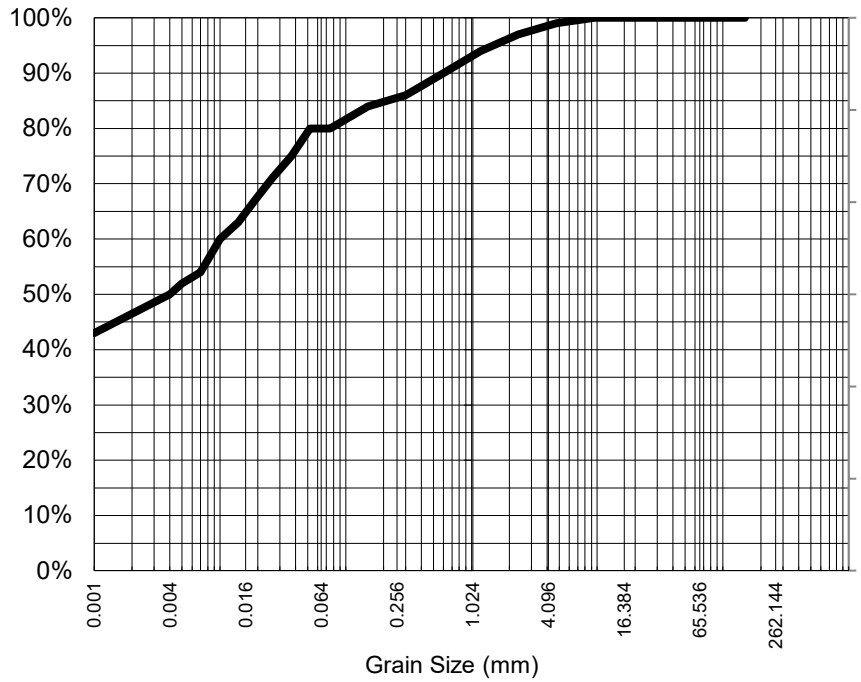
Brisbane QLD

CLIENT:	MACKENZIE STACEY	**DATE REPORTED:**	25-Feb-2026
COMPANY:	BMT COMMERCIAL AUSTRALIA PTY LTD	**DATE RECEIVED:**	13-Feb-2026
ADDRESS:		**REPORT NO:**	EB2605255-041 / PSD
PROJECT:	004043 Shute Harbour SAP	**SAMPLE ID:**	SH11 0.5-1

Particle Size Distribution



Particle Size (mm)	% Passing
9.50	100%
4.75	99%
2.36	97%
1.18	94%
0.600	90%
0.425	88%
0.300	86%
0.150	84%
0.075	80%
Particle Size (microns)	
52	80%
37	75%
26	71%
19	67%
14	63%
10	60%
7	54%
5	52%
1	43%

Median Particle Size (mm)*	<0.007

Analysis Notes

Samples analysed as received.

** Soil Particle Density results fell outside the scope of AS 1289.3.6.3. Typical sediment SPD values used for calculations and consequently, NATA endorsement does not apply to hydrometer results*

Median Particle Size is not covered under the current scope of ALS's NATA accreditation.

Sample Comments:

Analysed: 20-Feb-26

Loss on Pretreatment NA

Limit of Reporting: 1%

Sample Description:

Dispersion Method Shaker

Test Method: AS1289.3.6.2/AS1289.3.6.3

Soil Particle Density (<2.36mm) 2.28 (2.45)*

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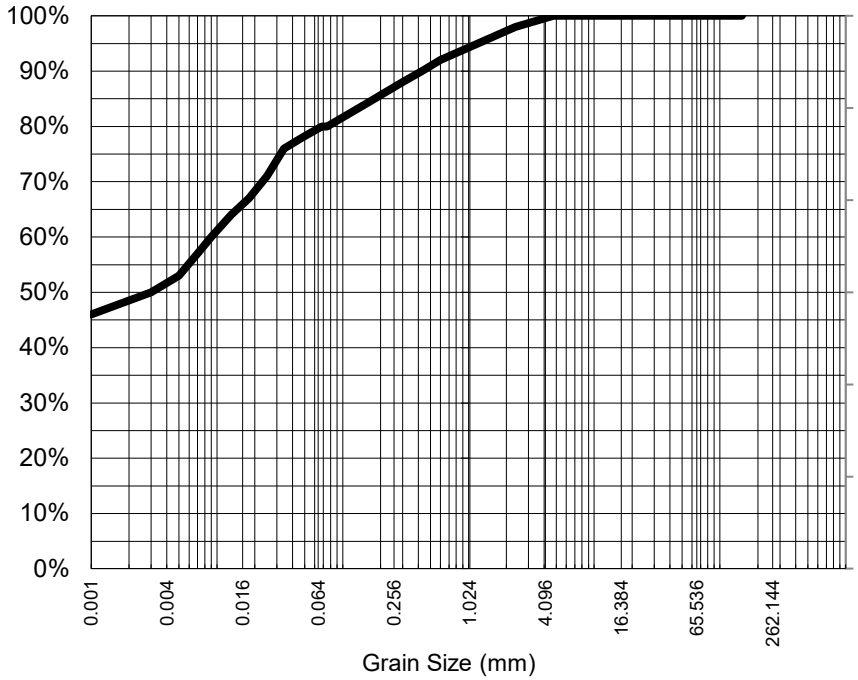
CLIENT:	MACKENZIE STACEY	**DATE REPORTED:**	25-Feb-2026
COMPANY:	BMT COMMERCIAL AUSTRALIA PTY LTD	**DATE RECEIVED:**	13-Feb-2026
ADDRESS:		**REPORT NO:**	EB2605255-042 / PSD
PROJECT:	004043 Shute Harbour SAP	**SAMPLE ID:**	SH11 1-1.5

Particle Size Distribution



Particle Size (mm)	% Passing
4.75	100%
2.36	98%
1.18	95%
0.600	92%
0.425	90%
0.300	88%
0.150	84%
0.075	80%
Particle Size (microns)	
48	78%
34	76%
25	71%
18	67%
13	64%
9	60%
7	57%
5	53%
1	46%

Median Particle Size (mm)*	<0.007

Analysis Notes

Samples analysed as received.

Median Particle Size is not covered under the current scope of ALS's NATA accreditation.

Sample Comments:

Analysed: 20-Feb-26

Loss on Pretreatment NA

Limit of Reporting: 1%

Sample Description:

Dispersion Method Shaker

Test Method: AS1289.3.6.2/AS1289.3.6.3

Soil Particle Density (<2.36mm) 2.56

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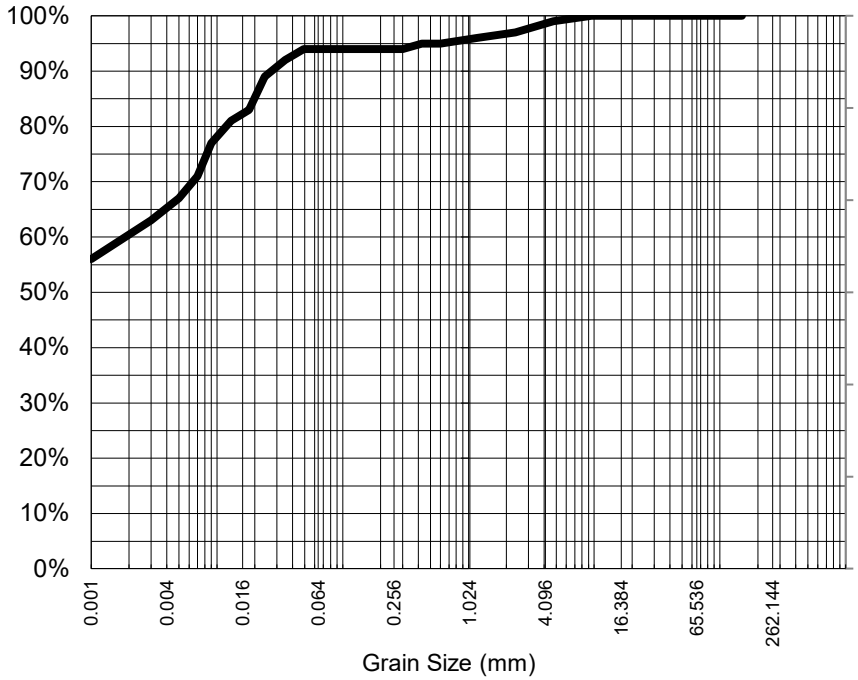
COMPANY:	BMT COMMERCIAL AUSTRALIA PTY LTD	**DATE RECEIVED:**	13-Feb-2026
ADDRESS:		**REPORT NO:**	EB2605255-043 / PSD
PROJECT:	004043 Shute Harbour SAP	**SAMPLE ID:**	SH11 1.5-2

Particle Size Distribution



Particle Size (mm)	% Passing
9.50	100%
4.75	99%
2.36	97%
1.18	96%
0.600	95%
0.425	95%
0.300	94%
0.150	94%
0.075	94%
Particle Size (microns)	
49	94%
35	92%
24	89%
18	83%
13	81%
9	77%
7	71%
5	67%
1	56%

Median Particle Size (mm)*	<0.007

Median Particle Size is not covered under the current scope of ALS's NATA accreditation.

Analysis Notes

Samples analysed as received.

Sample Comments:

Analysed: 20-Feb-26

Loss on Pretreatment NA

Limit of Reporting: 1%

Sample Description:

Dispersion Method Shaker

Test Method: AS1289.3.6.2/AS1289.3.6.3

Soil Particle Density (<2.36mm) 2.52

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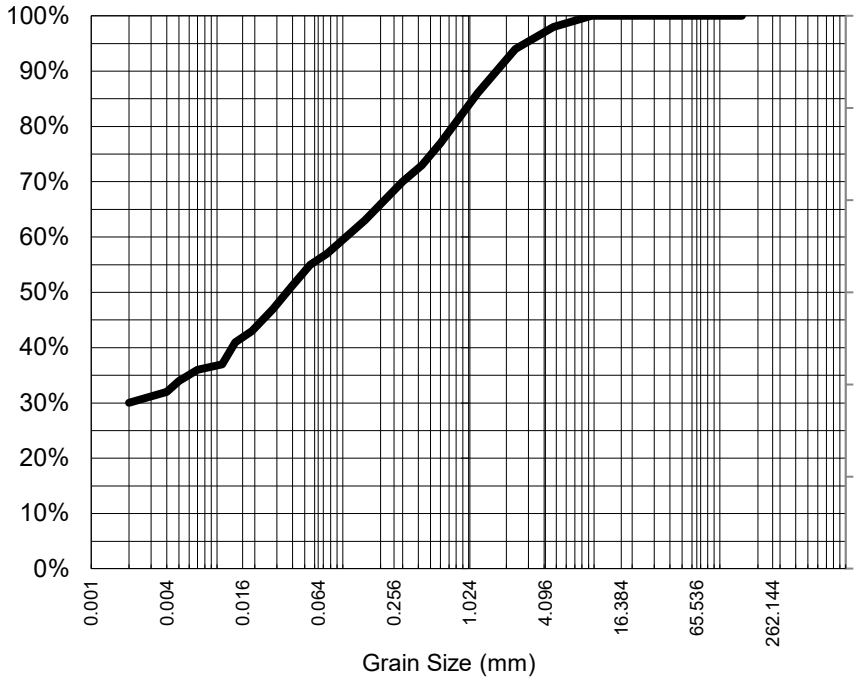
CLIENT:	MACKENZIE STACEY	**DATE REPORTED:**	25-Feb-2026
COMPANY:	BMT COMMERCIAL AUSTRALIA PTY LTD	**DATE RECEIVED:**	13-Feb-2026
ADDRESS:		**REPORT NO:**	EB2605255-044 / PSD
PROJECT:	004043 Shute Harbour SAP	**SAMPLE ID:**	SH11C 0-0.5

Particle Size Distribution



Particle Size (mm)	% Passing
9.50	100%
4.75	98%
2.36	94%
1.18	86%
0.600	77%
0.425	73%
0.300	70%
0.150	63%
0.075	57%
Particle Size (microns)	
55	55%
39	51%
28	47%
19	43%
14	41%
11	37%
7	36%
5	34%
2	30%

Median Particle Size (mm)*	0.036

Analysis Notes

Samples analysed as received.

** Soil Particle Density results fell outside the scope of AS 1289.3.6.3. Typical sediment SPD values used for calculations and consequently, NATA endorsement does not apply to hydrometer results*

Median Particle Size is not covered under the current scope of ALS's NATA accreditation.

Sample Comments:

Analysed: 20-Feb-26

Loss on Pretreatment NA

Limit of Reporting: 1%

Sample Description:

Dispersion Method Shaker

Test Method: AS1289.3.6.2/AS1289.3.6.3

Soil Particle Density (<2.36mm) 2.38 (2.45)*

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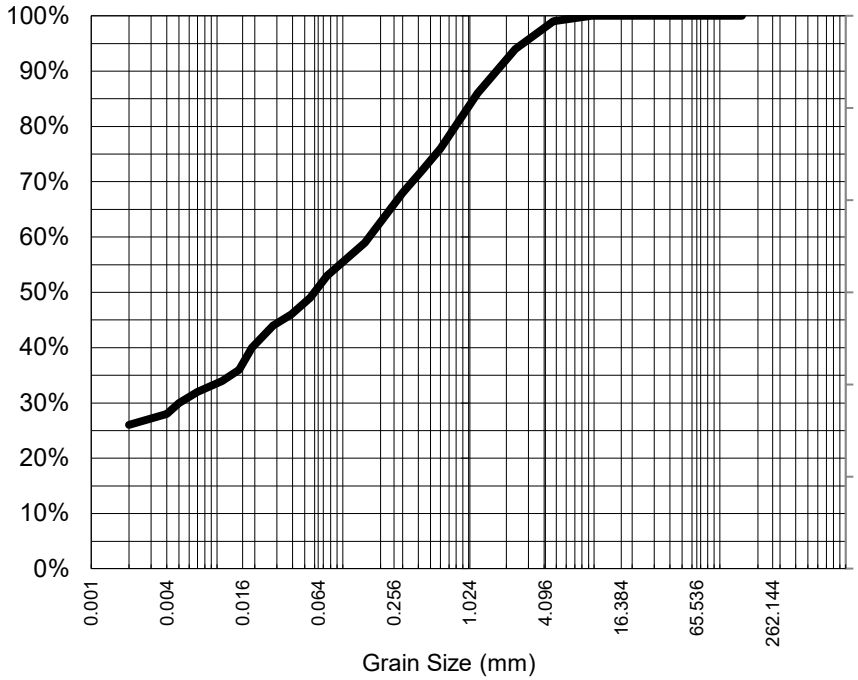
COMPANY:	BMT COMMERCIAL AUSTRALIA PTY LTD	**DATE RECEIVED:**	13-Feb-2026
ADDRESS:		**REPORT NO:**	EB2605255-047 / PSD
PROJECT:	004043 Shute Harbour SAP	**SAMPLE ID:**	SH3 0-0.5

Particle Size Distribution



Particle Size (mm)	% Passing
9.50	100%
4.75	99%
2.36	94%
1.18	86%
0.600	76%
0.425	72%
0.300	68%
0.150	59%
0.075	53%
Particle Size (microns)	
55	49%
39	46%
28	44%
19	40%
15	36%
11	34%
7	32%
5	30%
2	26%

Median Particle Size (mm)*	0.060

Analysis Notes

Samples analysed as received.

** Soil Particle Density results fell outside the scope of AS 1289.3.6.3. Typical sediment SPD values used for calculations and consequently, NATA endorsement does not apply to hydrometer results*

Median Particle Size is not covered under the current scope of ALS's NATA accreditation.

Sample Comments:

Analysed: 20-Feb-26

Loss on Pretreatment NA

Limit of Reporting: 1%

Sample Description:

Dispersion Method Shaker

Test Method: AS1289.3.6.2/AS1289.3.6.3

Soil Particle Density (<2.36mm) 2.35 (2.45)*

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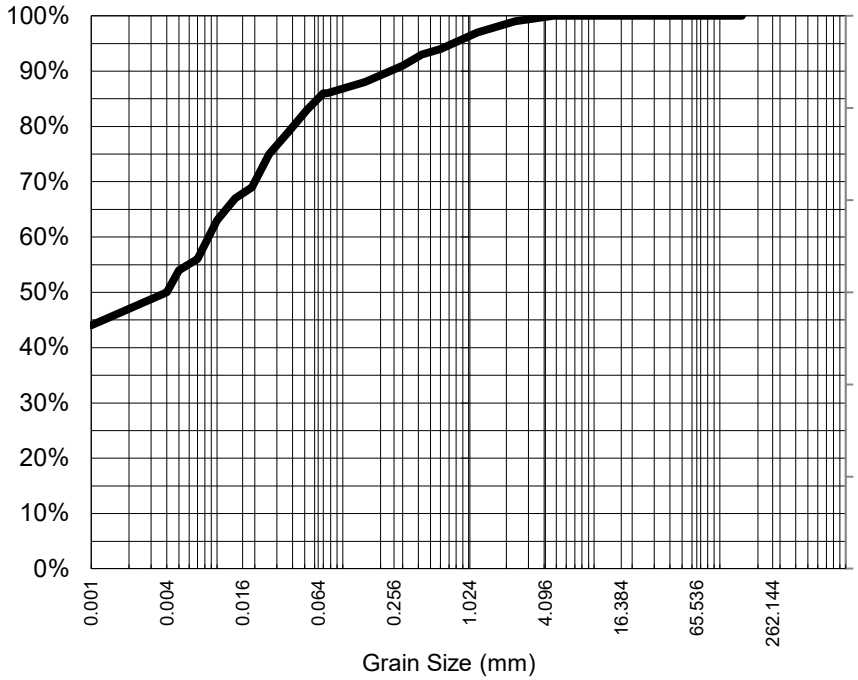
CLIENT:	MACKENZIE STACEY	**DATE REPORTED:**	25-Feb-2026
COMPANY:	BMT COMMERCIAL AUSTRALIA PTY LTD	**DATE RECEIVED:**	13-Feb-2026
ADDRESS:		**REPORT NO:**	EB2605255-048 / PSD
PROJECT:	004043 Shute Harbour SAP	**SAMPLE ID:**	SH3 0.5-1

Particle Size Distribution



Particle Size (mm)	% Passing
4.75	100%
2.36	99%
1.18	97%
0.600	94%
0.425	93%
0.300	91%
0.150	88%
0.075	86%
Particle Size (microns)	
52	83%
37	79%
26	75%
19	69%
14	67%
10	63%
7	56%
5	54%
1	44%

Median Particle Size (mm)*	<0.007

Analysis Notes

Samples analysed as received.

** Soil Particle Density results fell outside the scope of AS 1289.3.6.3. Typical sediment SPD values used for calculations and consequently, NATA endorsement does not apply to hydrometer results*

Median Particle Size is not covered under the current scope of ALS's NATA accreditation.

Sample Comments:

Analysed: 20-Feb-26

Loss on Pretreatment NA

Limit of Reporting: 1%

Sample Description:

Dispersion Method Shaker

Test Method: AS1289.3.6.2/AS1289.3.6.3

Soil Particle Density (<2.36mm) 2.2 (2.45)*

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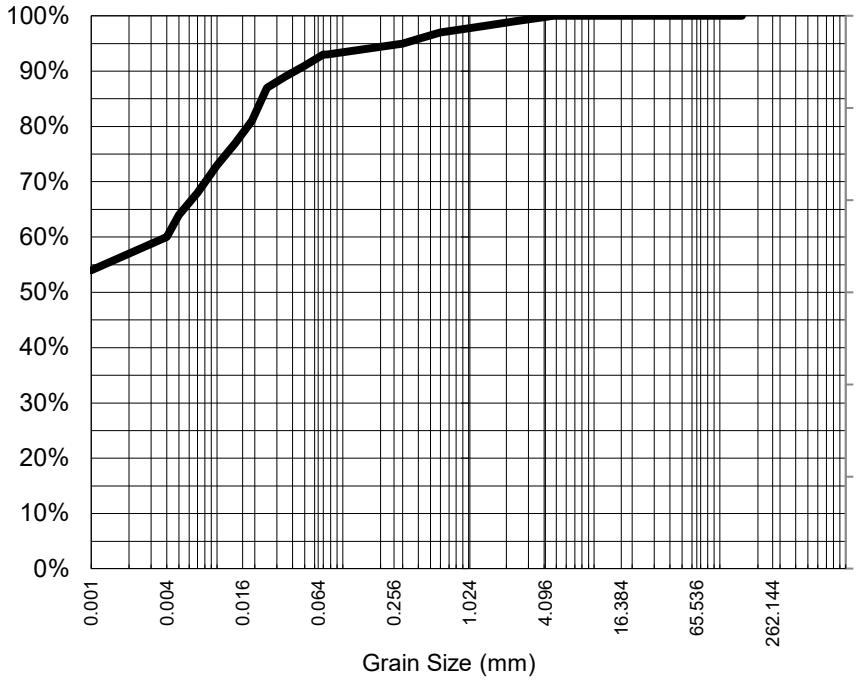
CLIENT:	MACKENZIE STACEY	**DATE REPORTED:**	25-Feb-2026
COMPANY:	BMT COMMERCIAL AUSTRALIA PTY LTD	**DATE RECEIVED:**	13-Feb-2026
ADDRESS:		**REPORT NO:**	EB2605255-049 / PSD
PROJECT:	004043 Shute Harbour SAP	**SAMPLE ID:**	SH3 1-1.5

Particle Size Distribution



Particle Size (mm)	% Passing
4.75	100%
2.36	99%
1.18	98%
0.600	97%
0.425	96%
0.300	95%
0.150	94%
0.075	93%
Particle Size (microns)	
50	91%
35	89%
25	87%
19	81%
14	77%
10	73%
7	68%
5	64%
1	54%

Analysis Notes

Samples analysed as received.

Median Particle Size (mm)*	<0.007

Median Particle Size is not covered under the current scope of ALS's NATA accreditation.

Sample Comments:

Analysed: 20-Feb-26

Loss on Pretreatment NA

Limit of Reporting: 1%

Sample Description:

Dispersion Method Shaker

Test Method: AS1289.3.6.2/AS1289.3.6.3

Soil Particle Density (<2.36mm) 2.46

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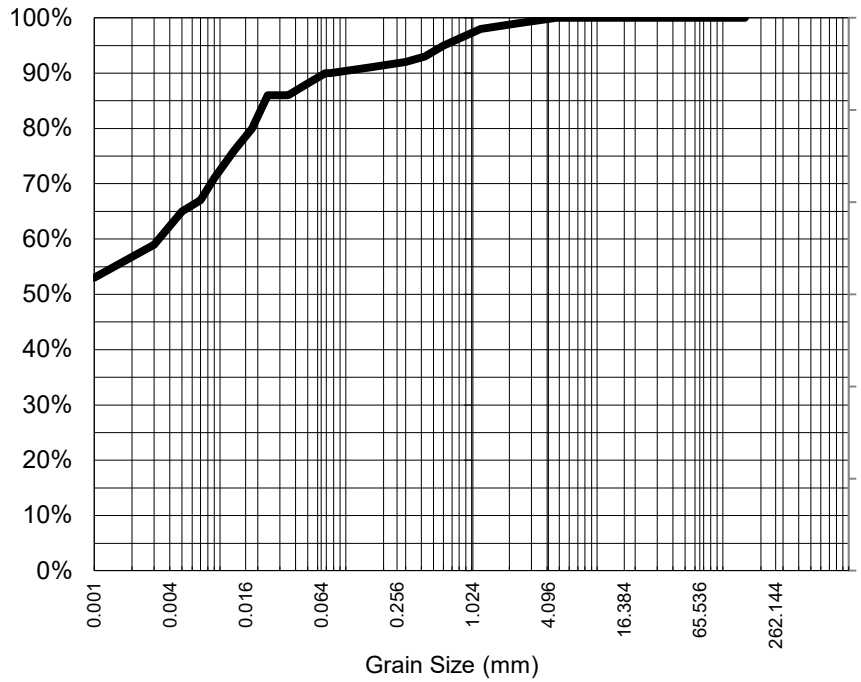
CLIENT:	MACKENZIE STACEY	**DATE REPORTED:**	25-Feb-2026
COMPANY:	BMT COMMERCIAL AUSTRALIA PTY LTD	**DATE RECEIVED:**	13-Feb-2026
ADDRESS:		**REPORT NO:**	EB2605255-050 / PSD
PROJECT:	004043 Shute Harbour SAP	**SAMPLE ID:**	SH3 1.5-2

Particle Size Distribution



Particle Size (mm)	% Passing
4.75	100%
2.36	99%
1.18	98%
0.600	95%
0.425	93%
0.300	92%
0.150	91%
0.075	90%
Particle Size (microns)	
49	88%
35	86%
24	86%
18	80%
13	76%
9	71%
7	67%
5	65%
1	53%

Median Particle Size (mm)*	<0.007

Analysis Notes

Samples analysed as received.

Median Particle Size is not covered under the current scope of ALS's NATA accreditation.

Sample Comments:

Analysed: 20-Feb-26

Loss on Pretreatment NA

Limit of Reporting: 1%

Sample Description:

Dispersion Method Shaker

Test Method: AS1289.3.6.2/AS1289.3.6.3

Soil Particle Density (<2.36mm) 2.53

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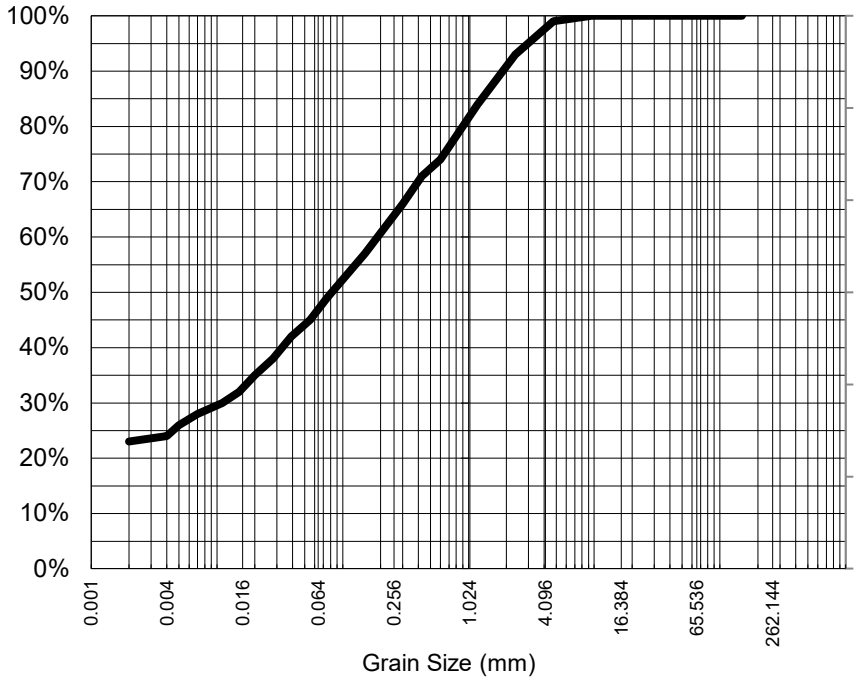
CLIENT:	MACKENZIE STACEY	**DATE REPORTED:**	25-Feb-2026
COMPANY:	BMT COMMERCIAL AUSTRALIA PTY LTD	**DATE RECEIVED:**	13-Feb-2026
ADDRESS:		**REPORT NO:**	EB2605255-053 / PSD
PROJECT:	004043 Shute Harbour SAP	**SAMPLE ID:**	SH16 0-0.5

Particle Size Distribution



Particle Size (mm)	% Passing
9.50	100%
4.75	99%
2.36	93%
1.18	84%
0.600	74%
0.425	71%
0.300	66%
0.150	57%
0.075	49%
Particle Size (microns)	
55	45%
39	42%
28	38%
20	35%
15	32%
11	30%
7	28%
5	26%
2	23%

Median Particle Size (mm)*	0.084

Analysis Notes

Samples analysed as received.

** Soil Particle Density results fell outside the scope of AS 1289.3.6.3. Typical sediment SPD values used for calculations and consequently, NATA endorsement does not apply to hydrometer results*

Median Particle Size is not covered under the current scope of ALS's NATA accreditation.

Sample Comments:

Analysed: 20-Feb-26

Loss on Pretreatment NA

Limit of Reporting: 1%

Sample Description:

Dispersion Method Shaker

Test Method: AS1289.3.6.2/AS1289.3.6.3

Soil Particle Density (<2.36mm) 2.33 (2.45)*

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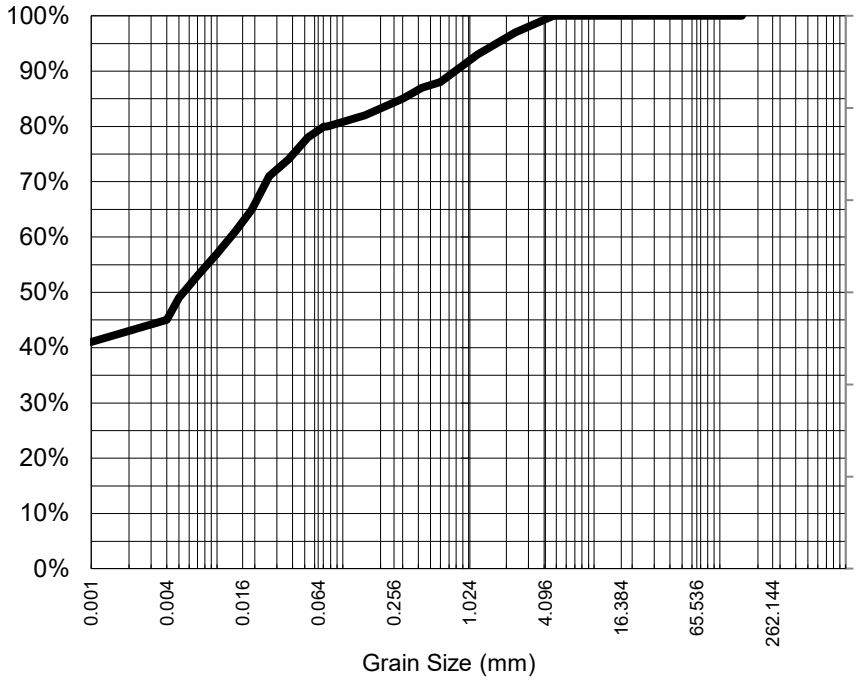
CLIENT:	MACKENZIE STACEY	**DATE REPORTED:**	25-Feb-2026
COMPANY:	BMT COMMERCIAL AUSTRALIA PTY LTD	**DATE RECEIVED:**	13-Feb-2026
ADDRESS:		**REPORT NO:**	EB2605255-054 / PSD
PROJECT:	004043 Shute Harbour SAP	**SAMPLE ID:**	SH16 0.5-1

Particle Size Distribution



Particle Size (mm)	% Passing
4.75	100%
2.36	97%
1.18	93%
0.600	88%
0.425	87%
0.300	85%
0.150	82%
0.075	80%
Particle Size (microns)	
53	78%
37	74%
26	71%
19	65%
14	61%
10	57%
7	53%
5	49%
1	41%

Median Particle Size (mm)*	<0.007

Analysis Notes

Samples analysed as received.

** Soil Particle Density results fell outside the scope of AS 1289.3.6.3. Typical sediment SPD values used for calculations and consequently, NATA endorsement does not apply to hydrometer results*

Median Particle Size is not covered under the current scope of ALS's NATA accreditation.

Sample Comments:

Analysed: 20-Feb-26

Loss on Pretreatment NA

Limit of Reporting: 1%

Sample Description:

Dispersion Method Shaker

Test Method: AS1289.3.6.2/AS1289.3.6.3

Soil Particle Density (<2.36mm) 2.27 (2.45)*

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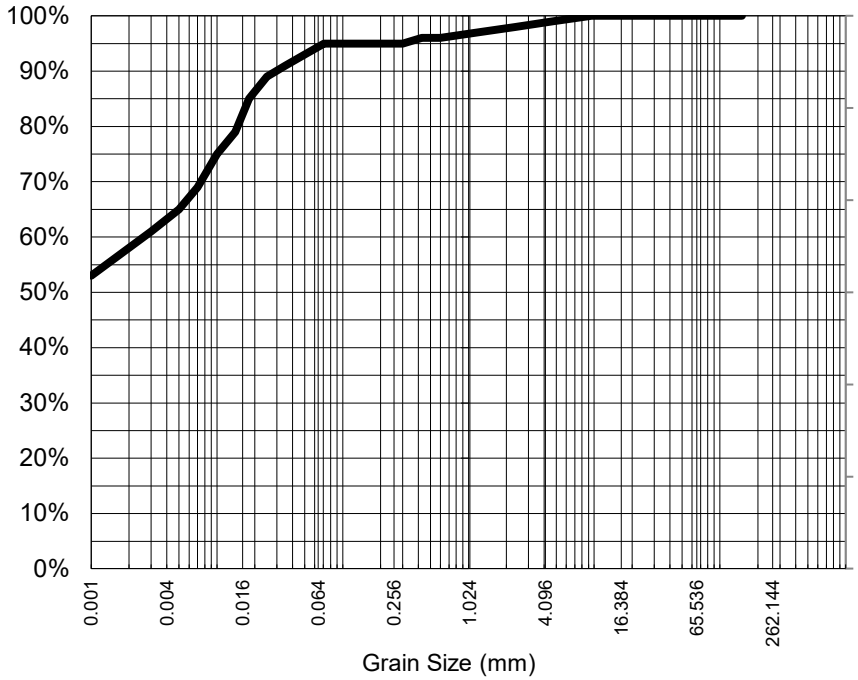
CLIENT:	MACKENZIE STACEY	**DATE REPORTED:**	25-Feb-2026
COMPANY:	BMT COMMERCIAL AUSTRALIA PTY LTD	**DATE RECEIVED:**	13-Feb-2026
ADDRESS:		**REPORT NO:**	EB2605255-055 / PSD
PROJECT:	004043 Shute Harbour SAP	**SAMPLE ID:**	SH16 1-1.5

Particle Size Distribution



Particle Size (mm)	% Passing
9.50	100%
4.75	99%
2.36	98%
1.18	97%
0.600	96%
0.425	96%
0.300	95%
0.150	95%
0.075	95%
Particle Size (microns)	
50	93%
35	91%
25	89%
18	85%
14	79%
10	75%
7	69%
5	65%
1	53%

Median Particle Size (mm)*	<0.007

Analysis Notes

Samples analysed as received.

** Soil Particle Density results fell outside the scope of AS 1289.3.6.3. Typical sediment SPD values used for calculations and consequently, NATA endorsement does not apply to hydrometer results*

Median Particle Size is not covered under the current scope of ALS's NATA accreditation.

Sample Comments:		**Analysed:**	20-Feb-26
Loss on Pretreatment	NA	**Limit of Reporting:**	1%
Sample Description:		**Dispersion Method**	Shaker
Test Method:	AS1289.3.6.2/AS1289.3.6.3		
Soil Particle Density (<2.36mm)	2.07 (2.45)*		

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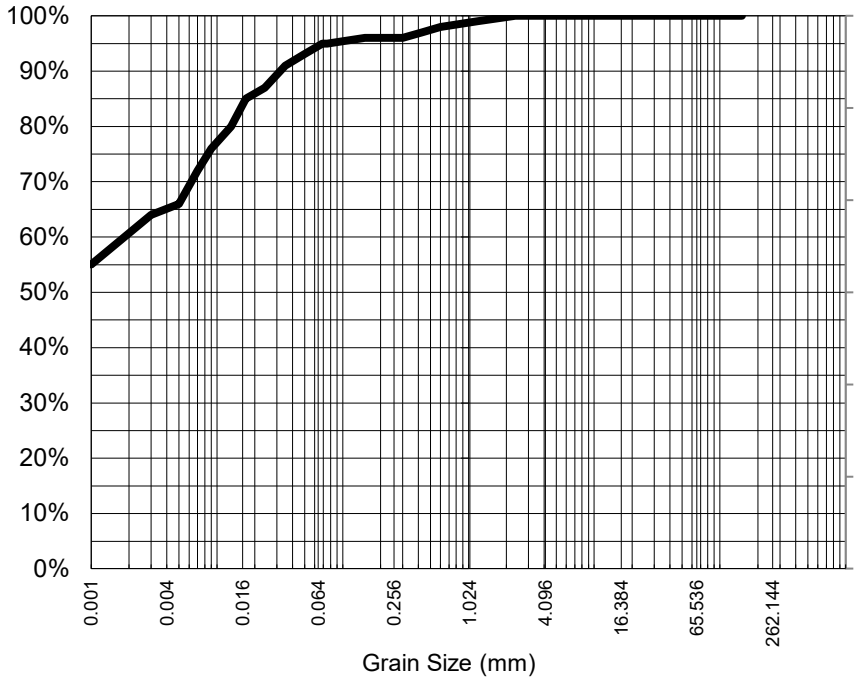
Brisbane QLD

CLIENT:	MACKENZIE STACEY	**DATE REPORTED:**	25-Feb-2026
COMPANY:	BMT COMMERCIAL AUSTRALIA PTY LTD	**DATE RECEIVED:**	13-Feb-2026
ADDRESS:		**REPORT NO:**	EB2605255-056 / PSD
PROJECT:	004043 Shute Harbour SAP	**SAMPLE ID:**	SH16 1.5-2

Particle Size Distribution



Particle Size (mm)	% Passing
2.36	100%
1.18	99%
0.600	98%
0.425	97%
0.300	96%
0.150	96%
0.075	95%
Particle Size (microns)	
49	93%
35	91%
24	87%
17	85%
13	80%
9	76%
7	72%
5	66%
1	55%

Median Particle Size (mm)*	<0.007

Analysis Notes

Samples analysed as received.

Median Particle Size is not covered under the current scope of ALS's NATA accreditation.

Sample Comments:

Analysed: 20-Feb-26

Loss on Pretreatment NA

Limit of Reporting: 1%

Sample Description:

Dispersion Method Shaker

Test Method: AS1289.3.6.2/AS1289.3.6.3

Soil Particle Density (<2.36mm) 2.51

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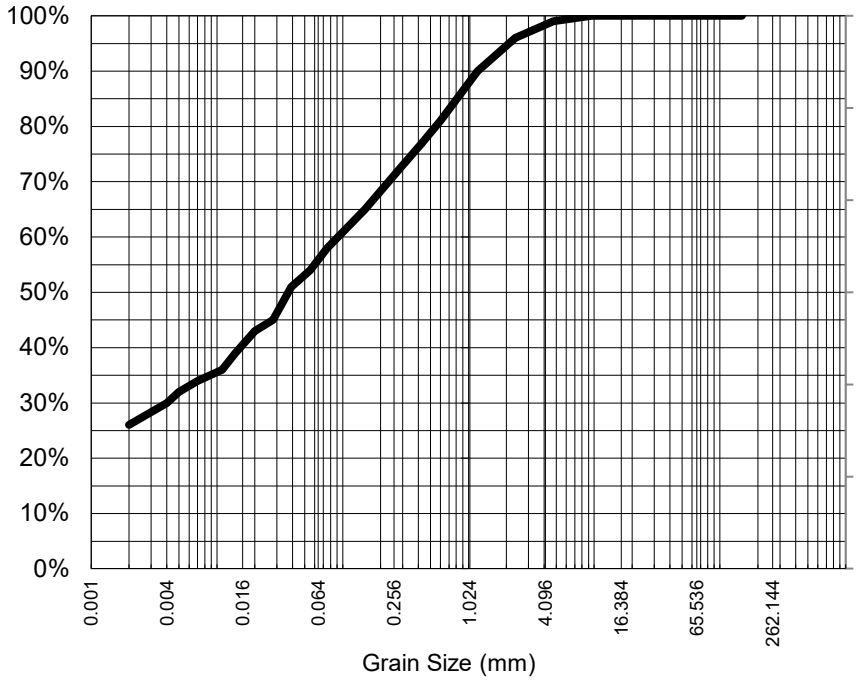
COMPANY:	BMT COMMERCIAL AUSTRALIA PTY LTD	**DATE RECEIVED:**	13-Feb-2026
ADDRESS:		**REPORT NO:**	EB2605255-057 / PSD
PROJECT:	004043 Shute Harbour SAP	**SAMPLE ID:**	SH9 0-0.5

Particle Size Distribution



Particle Size (mm)	% Passing
9.50	100%
4.75	99%
2.36	96%
1.18	90%
0.600	81%
0.425	77%
0.300	73%
0.150	65%
0.075	58%
Particle Size (microns)	
55	54%
39	51%
28	45%
20	43%
14	39%
11	36%
7	34%
5	32%
2	26%

Median Particle Size (mm)*	0.037

Analysis Notes

Samples analysed as received.

** Soil Particle Density results fell outside the scope of AS 1289.3.6.3. Typical sediment SPD values used for calculations and consequently, NATA endorsement does not apply to hydrometer results*

Median Particle Size is not covered under the current scope of ALS's NATA accreditation.

Sample Comments:

Analysed: 20-Feb-26

Loss on Pretreatment NA

Limit of Reporting: 1%

Sample Description:

Dispersion Method Shaker

Test Method: AS1289.3.6.2/AS1289.3.6.3

Soil Particle Density (<2.36mm) 2.37 (2.45)*

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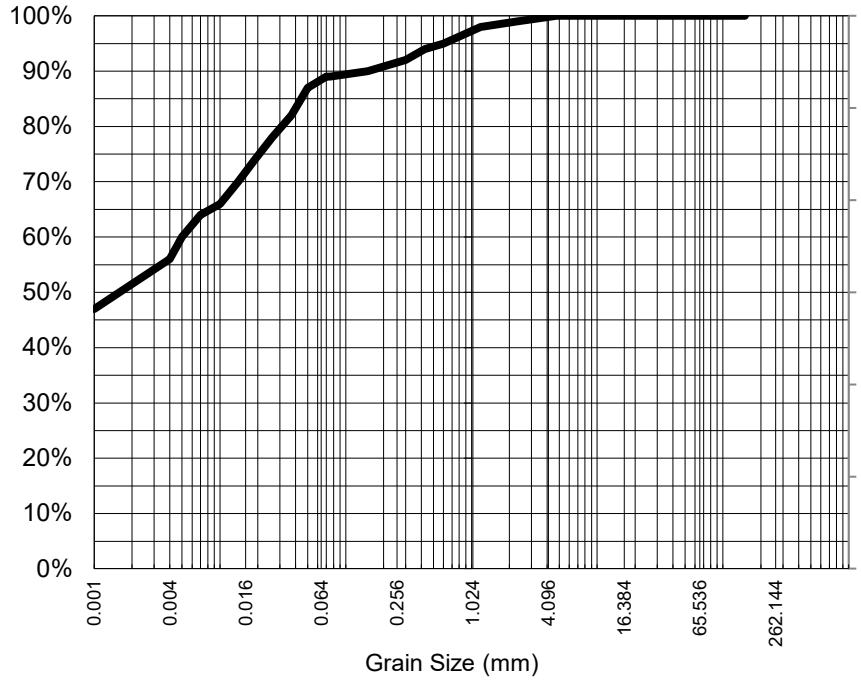
COMPANY:	BMT COMMERCIAL AUSTRALIA PTY LTD	**DATE RECEIVED:**	13-Feb-2026
ADDRESS:		**REPORT NO:**	EB2605255-058 / PSD
PROJECT:	004043 Shute Harbour SAP	**SAMPLE ID:**	SH9 0.5-1

Particle Size Distribution



Particle Size (mm)	% Passing
4.75	100%
2.36	99%
1.18	98%
0.600	95%
0.425	94%
0.300	92%
0.150	90%
0.075	89%
Particle Size (microns)	
50	87%
37	82%
26	78%
19	74%
14	70%
10	66%
7	64%
5	60%
1	47%

Median Particle Size (mm)*	<0.007

Analysis Notes

Samples analysed as received.

Median Particle Size is not covered under the current scope of ALS's NATA accreditation.

Sample Comments:

Analysed: 20-Feb-26

Loss on Pretreatment NA

Limit of Reporting: 1%

Sample Description:

Dispersion Method Shaker

Test Method: AS1289.3.6.2/AS1289.3.6.3

Soil Particle Density (<2.36mm) 2.46

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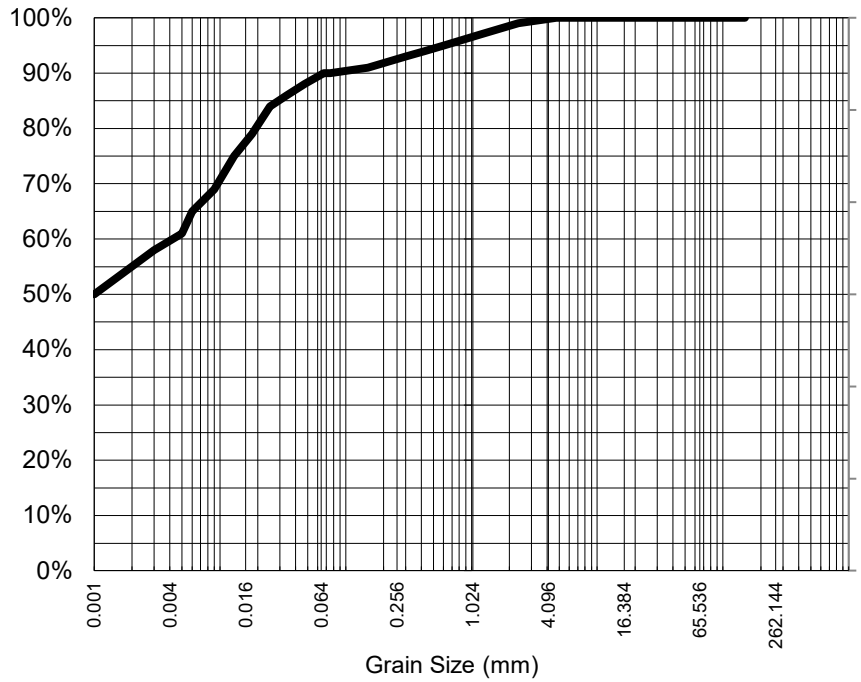
ADDRESS:		**REPORT NO:**	EB2605255-059 / PSD
PROJECT:	004043 Shute Harbour SAP	**SAMPLE ID:**	SH9 1-1.5

Particle Size Distribution



Particle Size (mm)	% Passing
4.75	100%
2.36	99%
1.18	97%
0.600	95%
0.425	94%
0.300	93%
0.150	91%
0.075	90%
Particle Size (microns)	
47	88%
34	86%
25	84%
18	79%
13	75%
9	69%
6	65%
5	61%
1	50%

Median Particle Size (mm)*	<0.006

Analysis Notes

Samples analysed as received.

Median Particle Size is not covered under the current scope of ALS's NATA accreditation.

Sample Comments:

Analysed: 20-Feb-26

Loss on Pretreatment NA

Limit of Reporting: 1%

Sample Description:

Dispersion Method Shaker

Test Method: AS1289.3.6.2/AS1289.3.6.3

Soil Particle Density (<2.36mm) 2.61

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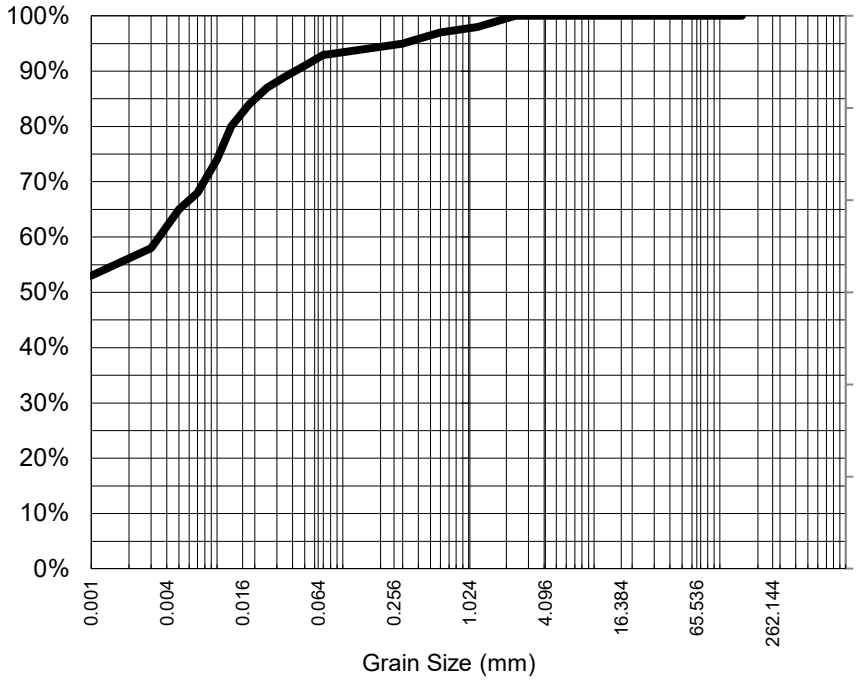
ADDRESS:		**REPORT NO:**	EB2605255-060 / PSD
PROJECT:	004043 Shute Harbour SAP	**SAMPLE ID:**	SH9 1.5-2

Particle Size Distribution



Particle Size (mm)	% Passing
2.36	100%
1.18	98%
0.600	97%
0.425	96%
0.300	95%
0.150	94%
0.075	93%
Particle Size (microns)	
50	91%
35	89%
25	87%
18	84%
13	80%
10	74%
7	68%
5	65%
1	53%

Median Particle Size (mm)*	<0.007

Analysis Notes

Samples analysed as received.

** Soil Particle Density results fell outside the scope of AS 1289.3.6.3. Typical sediment SPD values used for calculations and consequently, NATA endorsement does not apply to hydrometer results*

Median Particle Size is not covered under the current scope of ALS's NATA accreditation.

Sample Comments:

Analysed: 20-Feb-26

Loss on Pretreatment NA

Limit of Reporting: 1%

Sample Description:

Dispersion Method Shaker

Test Method: AS1289.3.6.2/AS1289.3.6.3

Soil Particle Density (<2.36mm) 2.25 (2.45)*

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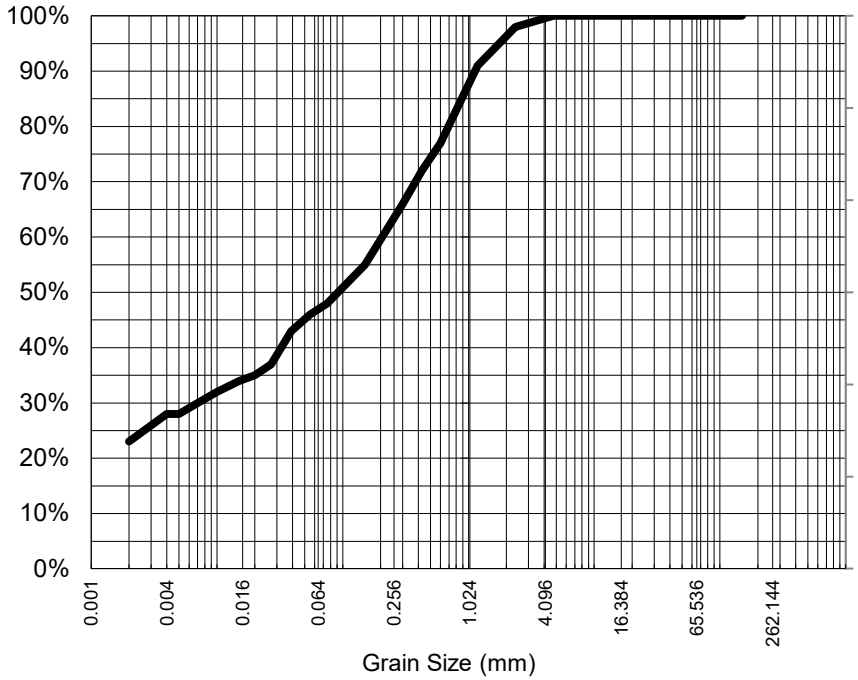
COMPANY:	BMT COMMERCIAL AUSTRALIA PTY LTD	**DATE RECEIVED:**	13-Feb-2026
ADDRESS:		**REPORT NO:**	EB2605255-061 / PSD
PROJECT:	004043 Shute Harbour SAP	**SAMPLE ID:**	SH6 0-0.5

Particle Size Distribution



Particle Size (mm)	% Passing
4.75	100%
2.36	98%
1.18	91%
0.600	77%
0.425	72%
0.300	66%
0.150	55%
0.075	48%
Particle Size (microns)	
55	46%
39	43%
27	37%
20	35%
15	34%
10	32%
7	30%
5	28%
2	23%

Median Particle Size (mm)*	0.096

Analysis Notes

Samples analysed as received.

** Soil Particle Density results fell outside the scope of AS 1289.3.6.3. Typical sediment SPD values used for calculations and consequently, NATA endorsement does not apply to hydrometer results*

Median Particle Size is not covered under the current scope of ALS's NATA accreditation.

Sample Comments:		**Analysed:**	20-Feb-26
Loss on Pretreatment	NA	**Limit of Reporting:**	1%
Sample Description:		**Dispersion Method**	Shaker
Test Method:	AS1289.3.6.2/AS1289.3.6.3		
Soil Particle Density (<2.36mm)	2.42 (2.45)*		

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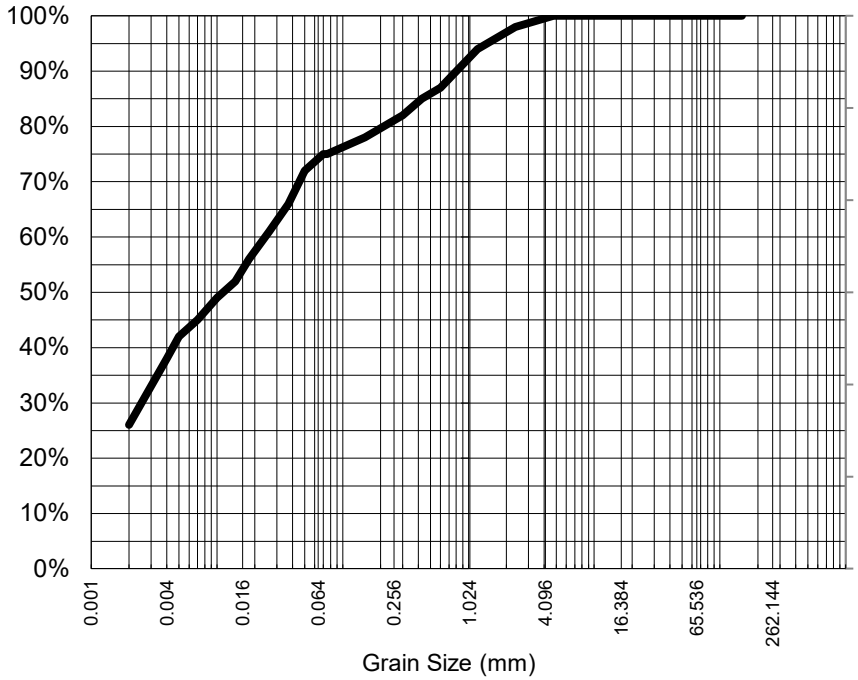
COMPANY:	BMT COMMERCIAL AUSTRALIA PTY LTD	**DATE RECEIVED:**	13-Feb-2026
ADDRESS:		**REPORT NO:**	EB2605255-062 / PSD
PROJECT:	004043 Shute Harbour SAP	**SAMPLE ID:**	SH6 0.5-1

Particle Size Distribution



Particle Size (mm)	% Passing
4.75	100%
2.36	98%
1.18	94%
0.600	87%
0.425	85%
0.300	82%
0.150	78%
0.075	75%
Particle Size (microns)	
50	72%
37	66%
26	61%
18	56%
14	52%
10	49%
7	45%
5	42%
2	26%

Median Particle Size (mm)*	0.011

Analysis Notes

Samples analysed as received.

** Soil Particle Density results fell outside the scope of AS 1289.3.6.3. Typical sediment SPD values used for calculations and consequently, NATA endorsement does not apply to hydrometer results*

Median Particle Size is not covered under the current scope of ALS's NATA accreditation.

Sample Comments:		**Analysed:**	20-Feb-26
Loss on Pretreatment	NA	**Limit of Reporting:**	1%
Sample Description:		**Dispersion Method**	Shaker
Test Method:	AS1289.3.6.2/AS1289.3.6.3		
Soil Particle Density (<2.36mm)	2.33 (2.45)*		

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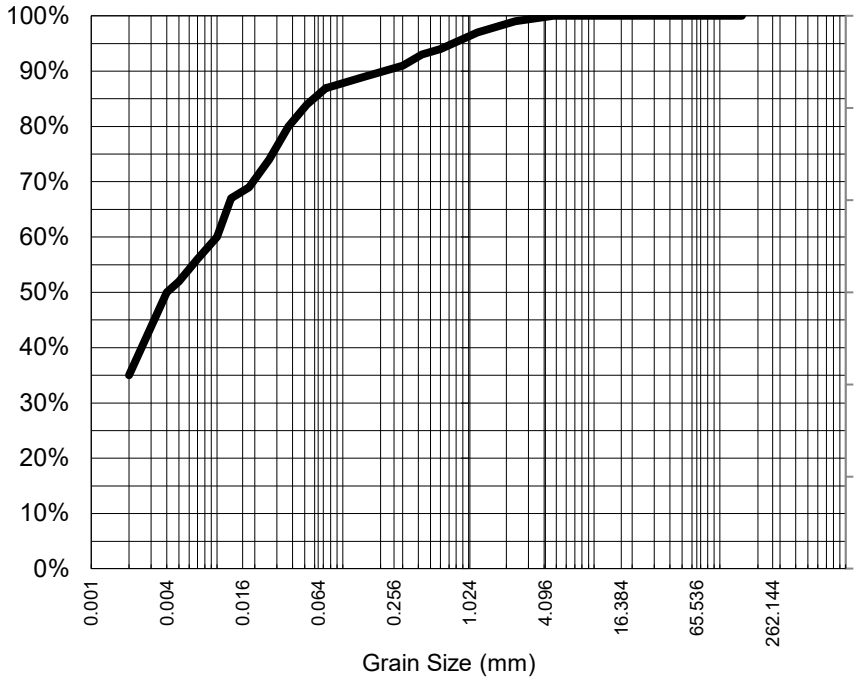
ADDRESS:		**REPORT NO:**	EB2605255-063 / PSD
PROJECT:	004043 Shute Harbour SAP	**SAMPLE ID:**	SH6 1-1.5

Particle Size Distribution



Particle Size (mm)	% Passing
4.75	100%
2.36	99%
1.18	97%
0.600	94%
0.425	93%
0.300	91%
0.150	89%
0.075	87%
Particle Size (microns)	
52	84%
37	80%
26	74%
18	69%
13	67%
10	60%
7	56%
5	52%
2	35%

Median Particle Size (mm)*	<0.007

Analysis Notes

Samples analysed as received.

** Soil Particle Density results fell outside the scope of AS 1289.3.6.3. Typical sediment SPD values used for calculations and consequently, NATA endorsement does not apply to hydrometer results*

Median Particle Size is not covered under the current scope of ALS's NATA accreditation.

Sample Comments:

Analysed: 20-Feb-26

Loss on Pretreatment NA

Limit of Reporting: 1%

Sample Description:

Dispersion Method Shaker

Test Method: AS1289.3.6.2/AS1289.3.6.3

Soil Particle Density (<2.36mm) 2.4 (2.45)*

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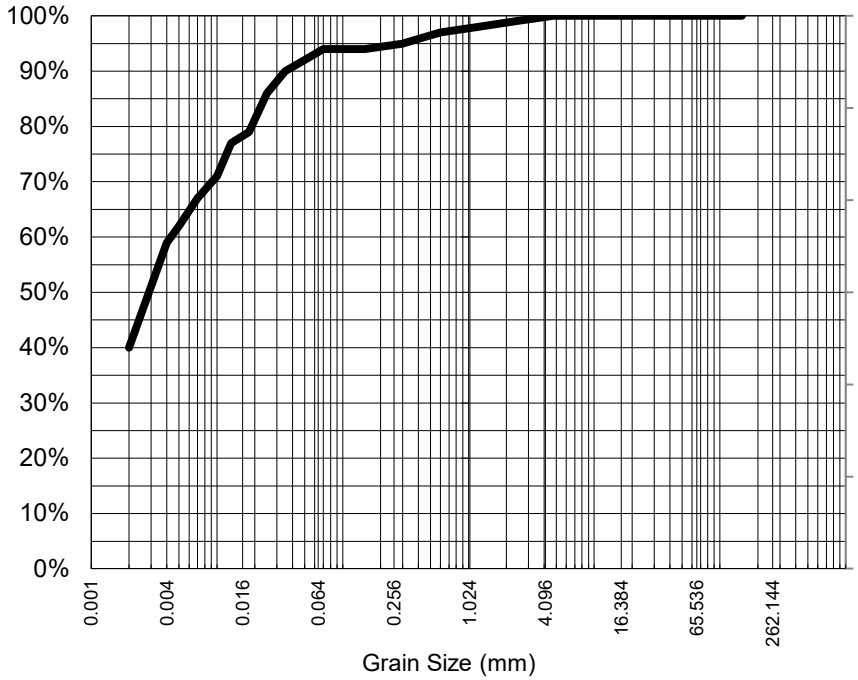
COMPANY:	BMT COMMERCIAL AUSTRALIA PTY LTD	**DATE RECEIVED:**	13-Feb-2026
ADDRESS:		**REPORT NO:**	EB2605255-064 / PSD
PROJECT:	004043 Shute Harbour SAP	**SAMPLE ID:**	SH6 1.5-2

Particle Size Distribution



Particle Size (mm)	% Passing
4.75	100%
2.36	99%
1.18	98%
0.600	97%
0.425	96%
0.300	95%
0.150	94%
0.075	94%
Particle Size (microns)	
50	92%
35	90%
25	86%
18	79%
13	77%
10	71%
7	67%
5	62%
2	40%

Median Particle Size (mm)*	<0.007

Analysis Notes

Samples analysed as received.

Median Particle Size is not covered under the current scope of ALS's NATA accreditation.

Sample Comments:

Analysed: 20-Feb-26

Loss on Pretreatment NA

Limit of Reporting: 1%

Sample Description:

Dispersion Method Shaker

Test Method: AS1289.3.6.2/AS1289.3.6.3

Soil Particle Density (<2.36mm) 2.46

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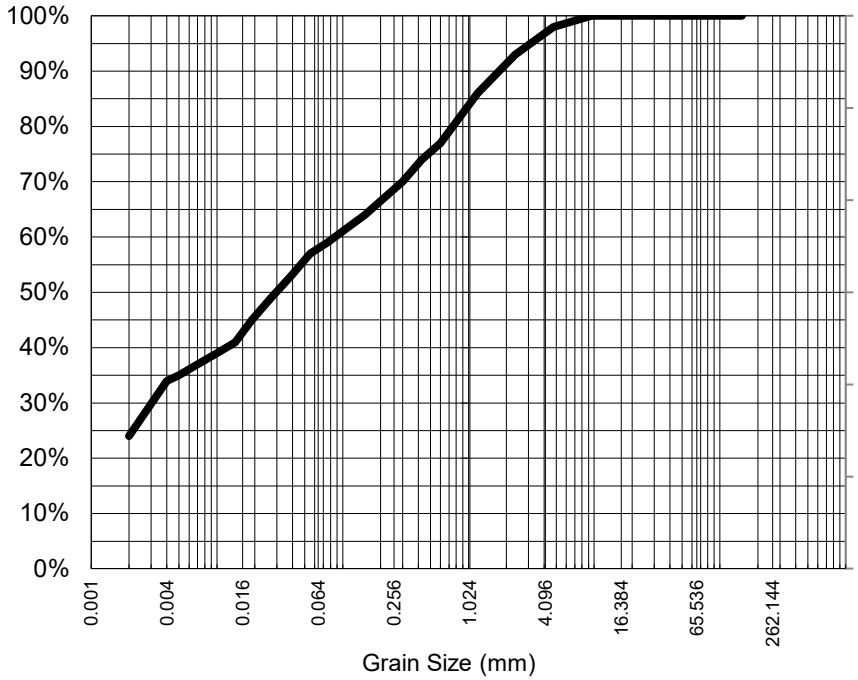
COMPANY:	BMT COMMERCIAL AUSTRALIA PTY LTD	**DATE RECEIVED:**	13-Feb-2026
ADDRESS:		**REPORT NO:**	EB2605255-065 / PSD
PROJECT:	004043 Shute Harbour SAP	**SAMPLE ID:**	SH16B 0-0.5

Particle Size Distribution



Particle Size (mm)	% Passing
9.50	100%
4.75	98%
2.36	93%
1.18	86%
0.600	77%
0.425	74%
0.300	70%
0.150	64%
0.075	59%
Particle Size (microns)	
55	57%
39	53%
27	49%
19	45%
14	41%
10	39%
7	37%
5	35%
2	24%

Median Particle Size (mm)*	0.030

Analysis Notes

Samples analysed as received.

** Soil Particle Density results fell outside the scope of AS 1289.3.6.3. Typical sediment SPD values used for calculations and consequently, NATA endorsement does not apply to hydrometer results*

Median Particle Size is not covered under the current scope of ALS's NATA accreditation.

Sample Comments:

Analysed: 20-Feb-26

Loss on Pretreatment NA

Limit of Reporting: 1%

Sample Description:

Dispersion Method Shaker

Test Method: AS1289.3.6.2/AS1289.3.6.3

Soil Particle Density (<2.36mm) 2.42 (2.45)*

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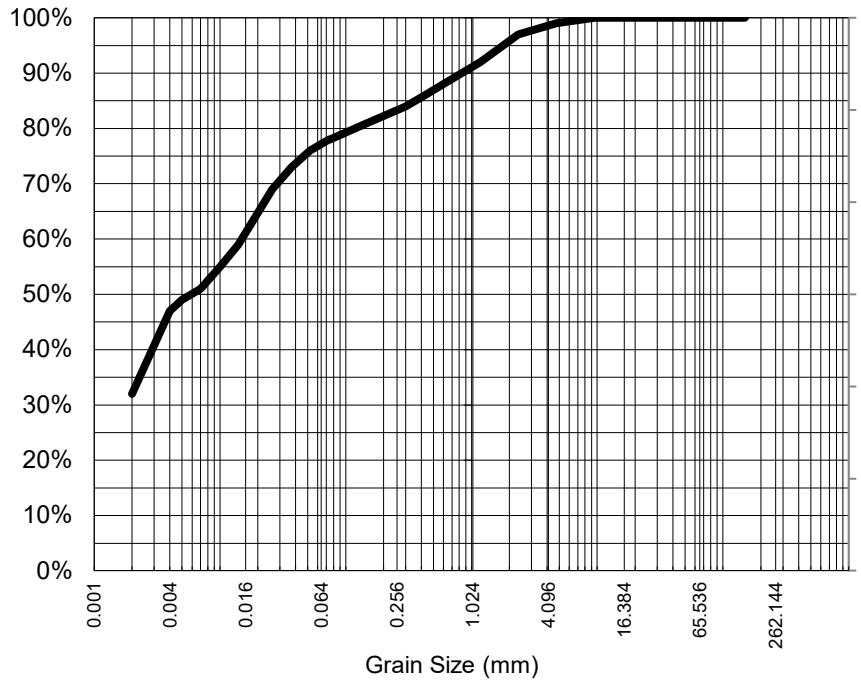
COMPANY:	BMT COMMERCIAL AUSTRALIA PTY LTD	**DATE RECEIVED:**	13-Feb-2026
ADDRESS:		**REPORT NO:**	EB2605255-066 / PSD
PROJECT:	004043 Shute Harbour SAP	**SAMPLE ID:**	SH16B 0.5-1

Particle Size Distribution



Particle Size (mm)	% Passing
9.50	100%
4.75	99%
2.36	97%
1.18	92%
0.600	88%
0.425	86%
0.300	84%
0.150	81%
0.075	78%
Particle Size (microns)	
52	76%
37	73%
26	69%
18	63%
14	59%
10	55%
7	51%
5	49%
2	32%

Median Particle Size (mm)*	<0.007

Analysis Notes

Samples analysed as received.

Median Particle Size is not covered under the current scope of ALS's NATA accreditation.

Sample Comments:

Analysed: 20-Feb-26

Loss on Pretreatment NA

Limit of Reporting: 1%

Sample Description:

Dispersion Method Shaker

Test Method: AS1289.3.6.2/AS1289.3.6.3

Soil Particle Density (<2.36mm) 2.45

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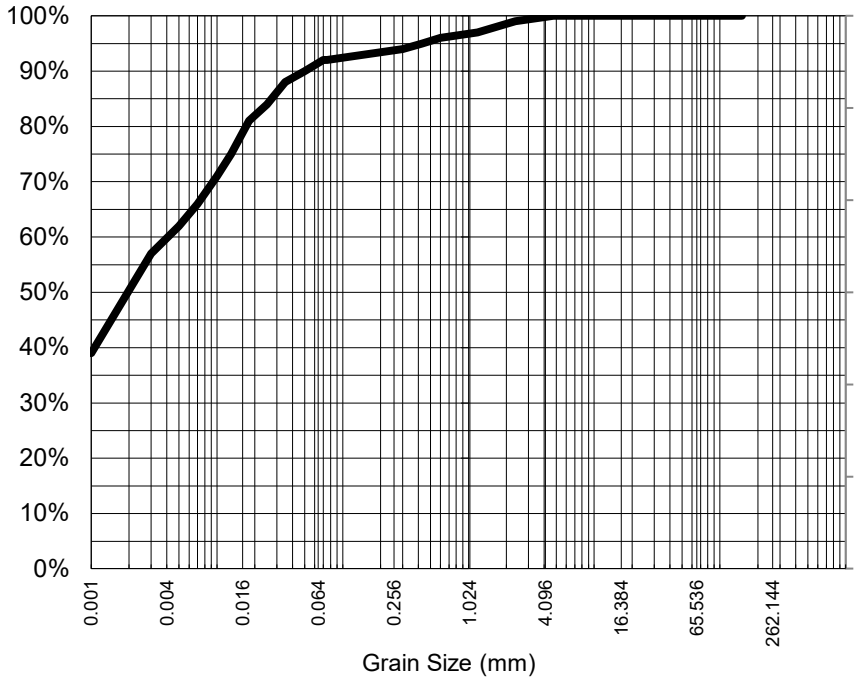
CLIENT:	MACKENZIE STACEY	**DATE REPORTED:**	25-Feb-2026
COMPANY:	BMT COMMERCIAL AUSTRALIA PTY LTD	**DATE RECEIVED:**	13-Feb-2026
ADDRESS:		**REPORT NO:**	EB2605255-067 / PSD
PROJECT:	004043 Shute Harbour SAP	**SAMPLE ID:**	SH16B 1-1.5

Particle Size Distribution



Particle Size (mm)	% Passing
4.75	100%
2.36	99%
1.18	97%
0.600	96%
0.425	95%
0.300	94%
0.150	93%
0.075	92%
Particle Size (microns)	
50	90%
35	88%
25	84%
18	81%
13	75%
10	71%
7	66%
5	62%
1	39%

Median Particle Size (mm)*	<0.007

Analysis Notes

Samples analysed as received.

** Soil Particle Density results fell outside the scope of AS 1289.3.6.3. Typical sediment SPD values used for calculations and consequently, NATA endorsement does not apply to hydrometer results*

Median Particle Size is not covered under the current scope of ALS's NATA accreditation.

Sample Comments:

Analysed: 20-Feb-26

Loss on Pretreatment NA

Limit of Reporting: 1%

Sample Description:

Dispersion Method Shaker

Test Method: AS1289.3.6.2/AS1289.3.6.3

Soil Particle Density (<2.36mm) 1.96 (2.45)*

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Satish Trivedi
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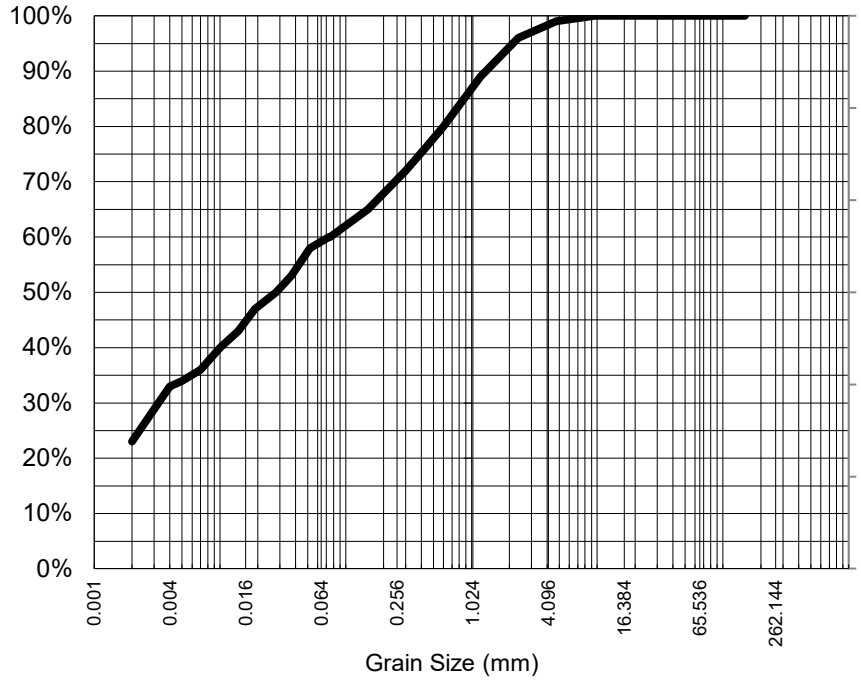
Brisbane QLD

CLIENT:	MACKENZIE STACEY	**DATE REPORTED:**	25-Feb-2026
COMPANY:	BMT COMMERCIAL AUSTRALIA PTY LTD	**DATE RECEIVED:**	13-Feb-2026
ADDRESS:		**REPORT NO:**	EB2605255-068 / PSD
PROJECT:	004043 Shute Harbour SAP	**SAMPLE ID:**	SH16C 0-0.5

Particle Size Distribution



Particle Size (mm)	% Passing
9.50	100%
4.75	99%
2.36	96%
1.18	89%
0.600	80%
0.425	76%
0.300	72%
0.150	65%
0.075	60%
Particle Size (microns)	
52	58%
37	53%
28	50%
19	47%
14	43%
10	40%
7	36%
5	34%
2	23%

Median Particle Size (mm)*	0.028

Analysis Notes

Samples analysed as received.

** Soil Particle Density results fell outside the scope of AS 1289.3.6.3. Typical sediment SPD values used for calculations and consequently, NATA endorsement does not apply to hydrometer results*

Median Particle Size is not covered under the current scope of ALS's NATA accreditation.

Sample Comments:

Analysed: 20-Feb-26

Loss on Pretreatment NA

Limit of Reporting: 1%

Sample Description:

Dispersion Method Shaker

Test Method: AS1289.3.6.2/AS1289.3.6.3

Soil Particle Density (<2.36mm) 2.41 (2.45)*

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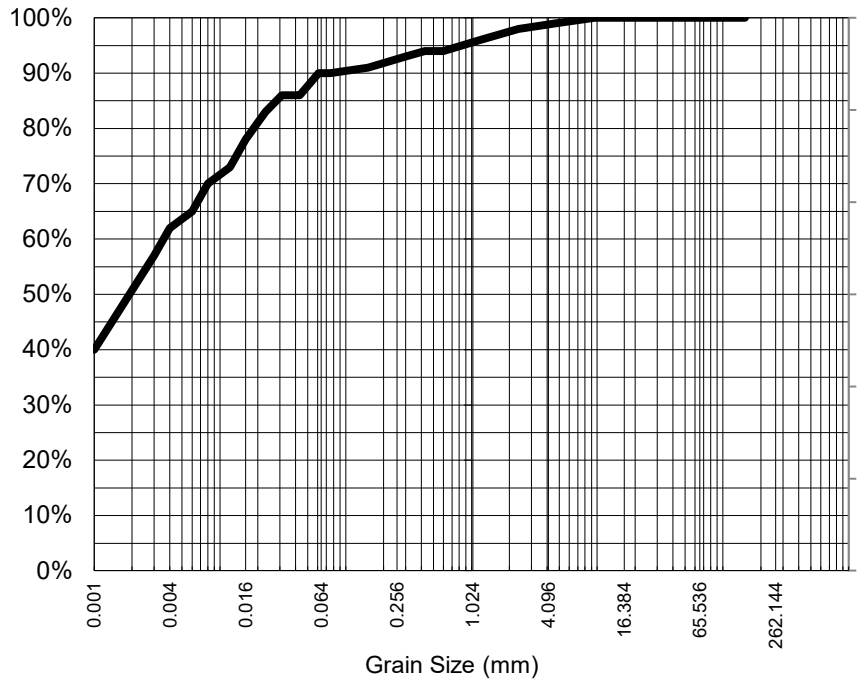
CLIENT:	MACKENZIE STACEY	**DATE REPORTED:**	25-Feb-2026
COMPANY:	BMT COMMERCIAL AUSTRALIA PTY LTD	**DATE RECEIVED:**	13-Feb-2026
ADDRESS:		**REPORT NO:**	EB2605255-069 / PSD
PROJECT:	004043 Shute Harbour SAP	**SAMPLE ID:**	SH16C 0.5-1

Particle Size Distribution



Particle Size (mm)	% Passing
9.50	100%
4.75	99%
2.36	98%
1.18	96%
0.600	94%
0.425	94%
0.300	93%
0.150	91%
0.075	90%
Particle Size (microns)	
43	86%
31	86%
23	83%
16	78%
12	73%
8	70%
6	65%
4	62%
1	40%

Median Particle Size (mm)*	<0.006

Analysis Notes

Samples analysed as received.

Median Particle Size is not covered under the current scope of ALS's NATA accreditation.

Sample Comments:

Analysed: 20-Feb-26

Loss on Pretreatment NA

Limit of Reporting: 1%

Sample Description:

Dispersion Method Shaker

Test Method: AS1289.3.6.2/AS1289.3.6.3

Soil Particle Density (<2.36mm) 2.71

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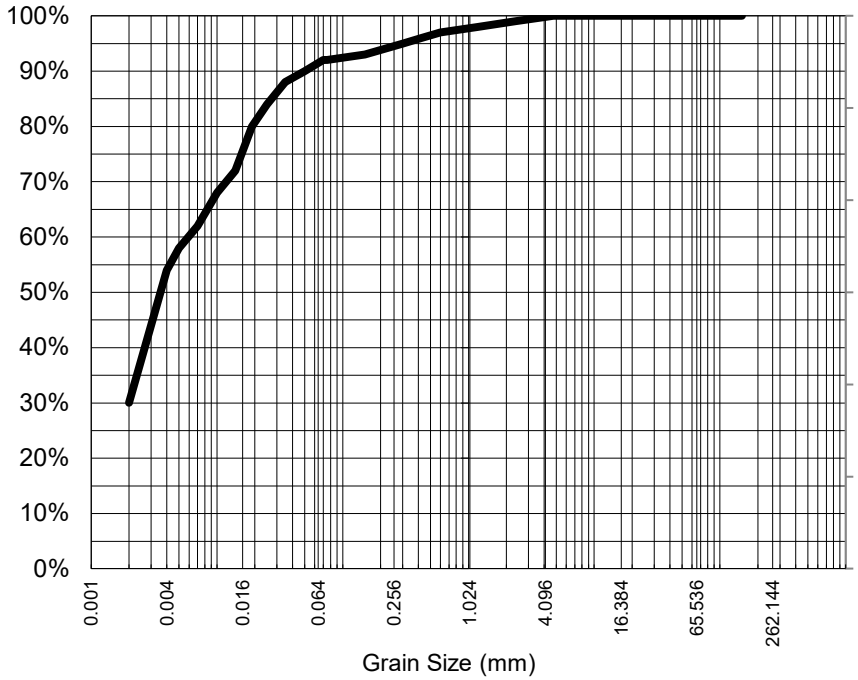
CLIENT:	MACKENZIE STACEY	**DATE REPORTED:**	25-Feb-2026
COMPANY:	BMT COMMERCIAL AUSTRALIA PTY LTD	**DATE RECEIVED:**	13-Feb-2026
ADDRESS:		**REPORT NO:**	EB2605255-070 / PSD
PROJECT:	004043 Shute Harbour SAP	**SAMPLE ID:**	SH16C 1-1.5

Particle Size Distribution



Particle Size (mm)	% Passing
4.75	100%
2.36	99%
1.18	98%
0.600	97%
0.425	96%
0.300	95%
0.150	93%
0.075	92%
Particle Size (microns)	
50	90%
35	88%
25	84%
19	80%
14	72%
10	68%
7	62%
5	58%
2	30%

Median Particle Size (mm)*	<0.007

Analysis Notes

Samples analysed as received.

** Soil Particle Density results fell outside the scope of AS 1289.3.6.3. Typical sediment SPD values used for calculations and consequently, NATA endorsement does not apply to hydrometer results*

Median Particle Size is not covered under the current scope of ALS's NATA accreditation.

Sample Comments:

Analysed: 20-Feb-26

Loss on Pretreatment NA

Limit of Reporting: 1%

Sample Description:

Dispersion Method Shaker

Test Method: AS1289.3.6.2/AS1289.3.6.3

Soil Particle Density (<2.36mm) 2.4 (2.45)*

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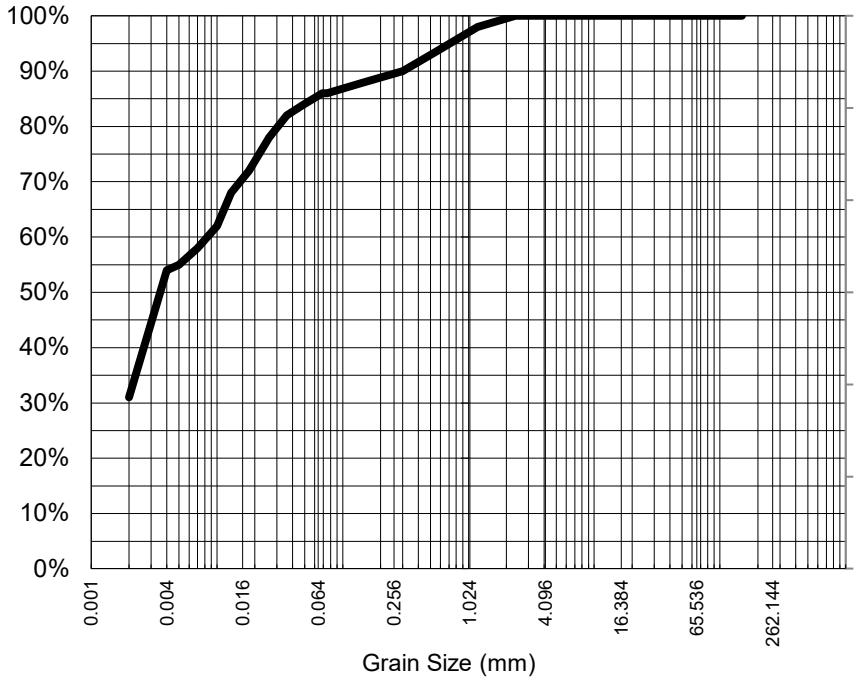
COMPANY:	BMT COMMERCIAL AUSTRALIA PTY LTD	**DATE RECEIVED:**	13-Feb-2026
ADDRESS:		**REPORT NO:**	EB2605255-071 / PSD
PROJECT:	004043 Shute Harbour SAP	**SAMPLE ID:**	SH7 0-0.5

Particle Size Distribution



Particle Size (mm)	% Passing
2.36	100%
1.18	98%
0.600	94%
0.425	92%
0.300	90%
0.150	88%
0.075	86%
Particle Size (microns)	
49	84%
36	82%
26	78%
18	72%
13	68%
10	62%
7	58%
5	55%
2	31%

Median Particle Size (mm)*	<0.007

Median Particle Size is not covered under the current scope of ALS's NATA accreditation.

Analysis Notes

Samples analysed as received.

Sample Comments:

Analysed: 20-Feb-26

Loss on Pretreatment NA

Limit of Reporting: 1%

Sample Description:

Dispersion Method Shaker

Test Method: AS1289.3.6.2/AS1289.3.6.3

Soil Particle Density (<2.36mm) 2.54

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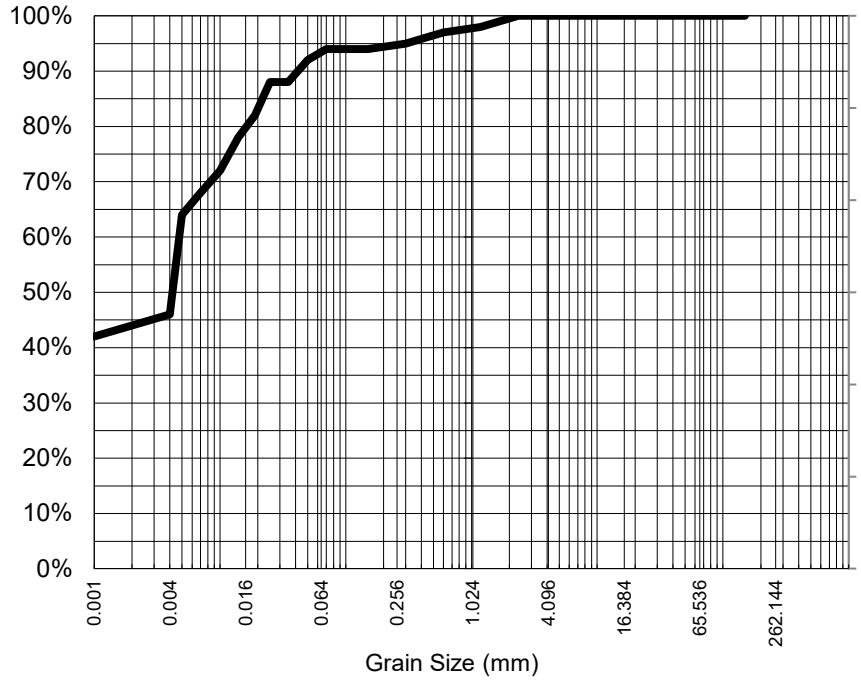
COMPANY:	BMT COMMERCIAL AUSTRALIA PTY LTD	**DATE RECEIVED:**	13-Feb-2026
ADDRESS:		**REPORT NO:**	EB2605255-072 / PSD
PROJECT:	004043 Shute Harbour SAP	**SAMPLE ID:**	SH7 0.5-1

Particle Size Distribution



Particle Size (mm)	% Passing
2.36	100%
1.18	98%
0.600	97%
0.425	96%
0.300	95%
0.150	94%
0.075	94%
Particle Size (microns)	
50	92%
35	88%
25	88%
19	82%
14	78%
10	72%
7	68%
5	64%
1	42%

Median Particle Size (mm)*	<0.007

Median Particle Size is not covered under the current scope of ALS's NATA accreditation.

Analysis Notes

Samples analysed as received.

Sample Comments:

Analysed: 20-Feb-26

Loss on Pretreatment NA

Limit of Reporting: 1%

Sample Description:

Dispersion Method Shaker

Test Method: AS1289.3.6.2/AS1289.3.6.3

Soil Particle Density (<2.36mm) 2.46

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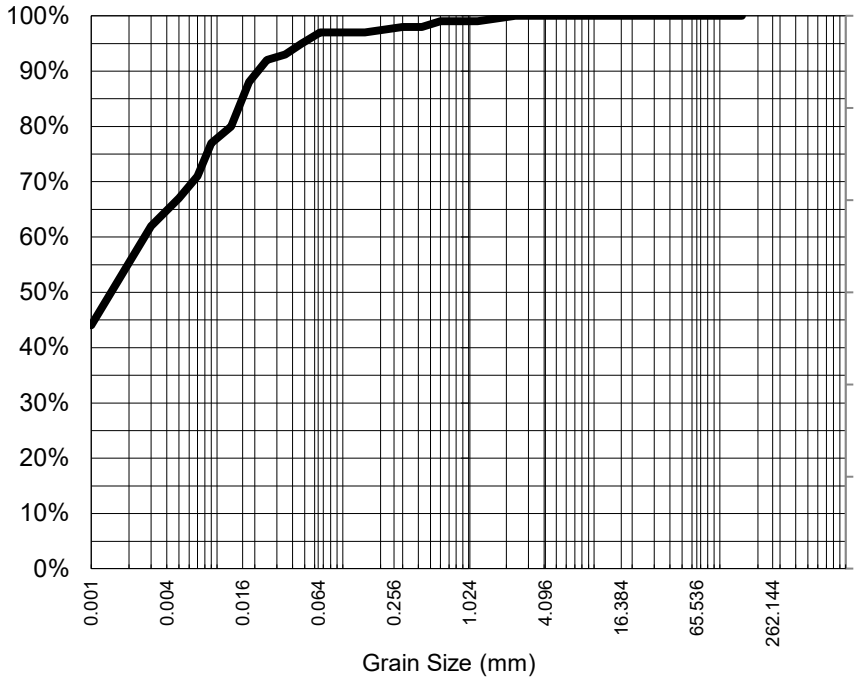
CLIENT:	MACKENZIE STACEY	**DATE REPORTED:**	25-Feb-2026
COMPANY:	BMT COMMERCIAL AUSTRALIA PTY LTD	**DATE RECEIVED:**	13-Feb-2026
ADDRESS:		**REPORT NO:**	EB2605255-073 / PSD
PROJECT:	004043 Shute Harbour SAP	**SAMPLE ID:**	SH7 1-1.5

Particle Size Distribution



Particle Size (mm)	% Passing
2.36	100%
1.18	99%
0.600	99%
0.425	98%
0.300	98%
0.150	97%
0.075	97%
Particle Size (microns)	
47	95%
35	93%
25	92%
18	88%
13	80%
9	77%
7	71%
5	67%
1	44%

Median Particle Size (mm)*	<0.007

Analysis Notes

Samples analysed as received.

** Soil Particle Density results fell outside the scope of AS 1289.3.6.3. Typical sediment SPD values used for calculations and consequently, NATA endorsement does not apply to hydrometer results*

Median Particle Size is not covered under the current scope of ALS's NATA accreditation.

Sample Comments:

Analysed: 20-Feb-26

Loss on Pretreatment NA

Limit of Reporting: 1%

Sample Description:

Dispersion Method Shaker

Test Method: AS1289.3.6.2/AS1289.3.6.3

Soil Particle Density (<2.36mm) 2.18 (2.45)*

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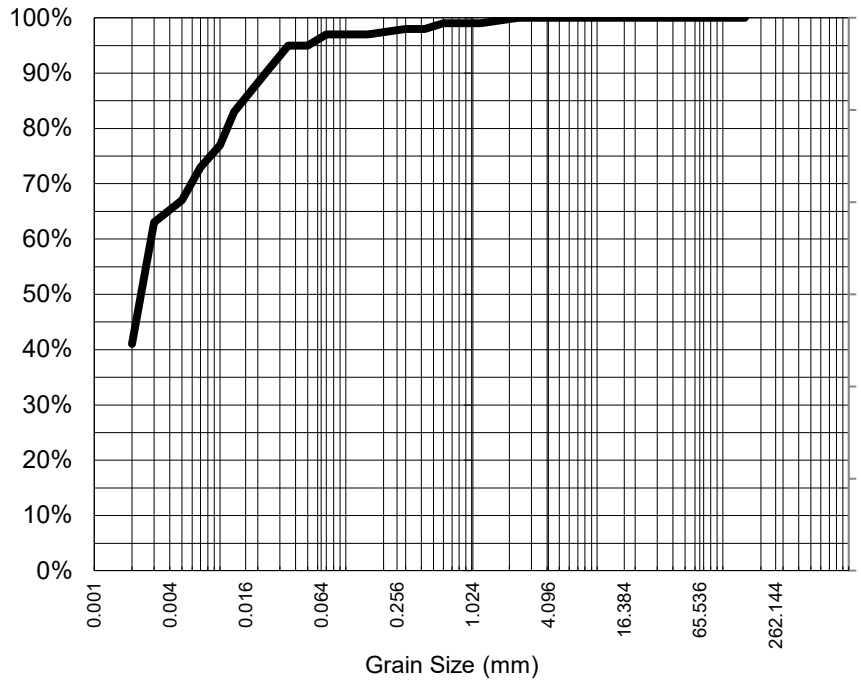
CLIENT:	MACKENZIE STACEY	**DATE REPORTED:**	25-Feb-2026
COMPANY:	BMT COMMERCIAL AUSTRALIA PTY LTD	**DATE RECEIVED:**	13-Feb-2026
ADDRESS:		**REPORT NO:**	EB2605255-074 / PSD
PROJECT:	004043 Shute Harbour SAP	**SAMPLE ID:**	SH7 1.5-2

Particle Size Distribution



Particle Size (mm)	% Passing
2.36	100%
1.18	99%
0.600	99%
0.425	98%
0.300	98%
0.150	97%
0.075	97%
Particle Size (microns)	
50	95%
35	95%
25	91%
18	87%
13	83%
10	77%
7	73%
5	67%
2	41%

Median Particle Size (mm)*	<0.007

Analysis Notes

Samples analysed as received.

** Soil Particle Density results fell outside the scope of AS 1289.3.6.3. Typical sediment SPD values used for calculations and consequently, NATA endorsement does not apply to hydrometer results*

Median Particle Size is not covered under the current scope of ALS's NATA accreditation.

Sample Comments:

Analysed: 20-Feb-26

Loss on Pretreatment NA

Limit of Reporting: 1%

Sample Description:

Dispersion Method Shaker

Test Method: AS1289.3.6.2/AS1289.3.6.3

Soil Particle Density (<2.36mm) 2.33 (2.45)*

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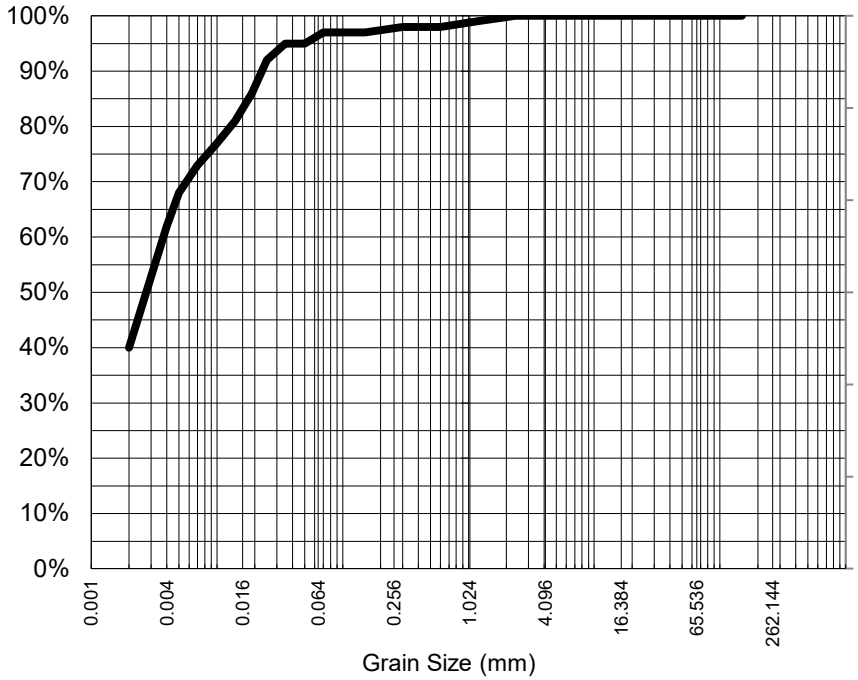
CLIENT:	MACKENZIE STACEY	**DATE REPORTED:**	25-Feb-2026
COMPANY:	BMT COMMERCIAL AUSTRALIA PTY LTD	**DATE RECEIVED:**	13-Feb-2026
ADDRESS:		**REPORT NO:**	EB2605255-075 / PSD
PROJECT:	004043 Shute Harbour SAP	**SAMPLE ID:**	SH7 2-2.5

Particle Size Distribution



Particle Size (mm)	% Passing
2.36	100%
1.18	99%
0.600	98%
0.425	98%
0.300	98%
0.150	97%
0.075	97%
Particle Size (microns)	
50	95%
35	95%
25	92%
19	86%
14	81%
10	77%
7	73%
5	68%
2	40%

Median Particle Size (mm)*	<0.007

Analysis Notes

Samples analysed as received.

** Soil Particle Density results fell outside the scope of AS 1289.3.6.3. Typical sediment SPD values used for calculations and consequently, NATA endorsement does not apply to hydrometer results*

Median Particle Size is not covered under the current scope of ALS's NATA accreditation.

Sample Comments:

Analysed: 20-Feb-26

Loss on Pretreatment NA

Limit of Reporting: 1%

Sample Description:

Dispersion Method Shaker

Test Method: AS1289.3.6.2/AS1289.3.6.3

Soil Particle Density (<2.36mm) 2.45

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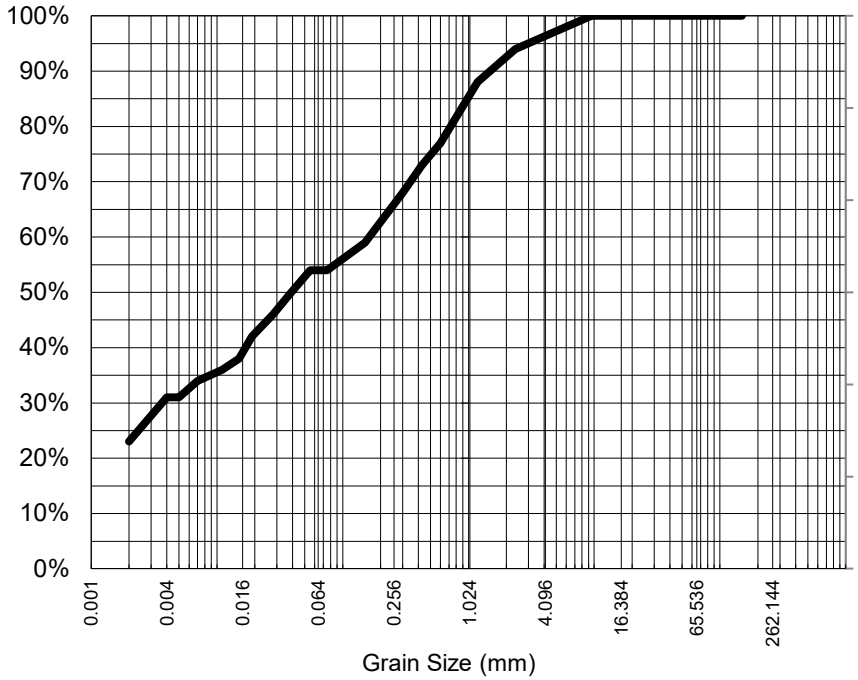
CLIENT:	MACKENZIE STACEY	**DATE REPORTED:**	25-Feb-2026
COMPANY:	BMT COMMERCIAL AUSTRALIA PTY LTD	**DATE RECEIVED:**	13-Feb-2026
ADDRESS:		**REPORT NO:**	EB2605255-076 / PSD
PROJECT:	004043 Shute Harbour SAP	**SAMPLE ID:**	SH12 0-0.5

Particle Size Distribution



Particle Size (mm)	% Passing
9.50	100%
4.75	97%
2.36	94%
1.18	88%
0.600	77%
0.425	73%
0.300	68%
0.150	59%
0.075	54%
Particle Size (microns)	
55	54%
39	50%
28	46%
19	42%
15	38%
11	36%
7	34%
5	31%
2	23%

Median Particle Size (mm)*	0.039

Analysis Notes

Samples analysed as received.

** Soil Particle Density results fell outside the scope of AS 1289.3.6.3. Typical sediment SPD values used for calculations and consequently, NATA endorsement does not apply to hydrometer results*

Median Particle Size is not covered under the current scope of ALS's NATA accreditation.

Sample Comments:

Analysed: 20-Feb-26

Loss on Pretreatment NA

Limit of Reporting: 1%

Sample Description:

Dispersion Method Shaker

Test Method: AS1289.3.6.2/AS1289.3.6.3

Soil Particle Density (<2.36mm) 2.45

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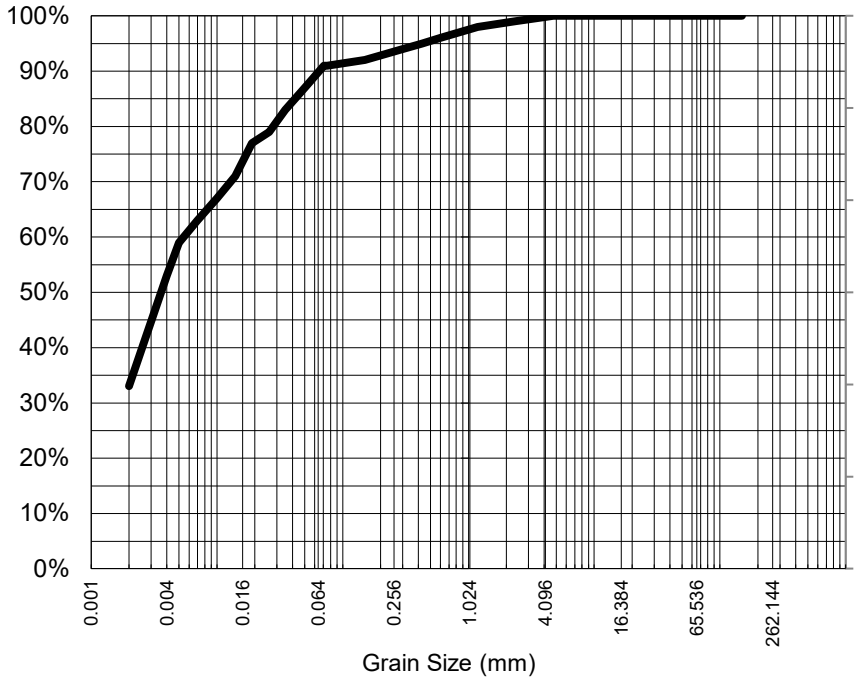
CLIENT:	MACKENZIE STACEY	**DATE REPORTED:**	25-Feb-2026
COMPANY:	BMT COMMERCIAL AUSTRALIA PTY LTD	**DATE RECEIVED:**	13-Feb-2026
ADDRESS:		**REPORT NO:**	EB2605255-077 / PSD
PROJECT:	004043 Shute Harbour SAP	**SAMPLE ID:**	SH12 0.5-1

Particle Size Distribution



Particle Size (mm)	% Passing
4.75	100%
2.36	99%
1.18	98%
0.600	96%
0.425	95%
0.300	94%
0.150	92%
0.075	91%
Particle Size (microns)	
50	87%
35	83%
26	79%
19	77%
14	71%
10	67%
7	63%
5	59%
2	33%

Median Particle Size (mm)*	<0.007

Analysis Notes

Samples analysed as received.

** Soil Particle Density results fell outside the scope of AS 1289.3.6.3. Typical sediment SPD values used for calculations and consequently, NATA endorsement does not apply to hydrometer results*

Median Particle Size is not covered under the current scope of ALS's NATA accreditation.

Sample Comments:

Analysed: 20-Feb-26

Loss on Pretreatment NA

Limit of Reporting: 1%

Sample Description:

Dispersion Method Shaker

Test Method: AS1289.3.6.2/AS1289.3.6.3

Soil Particle Density (<2.36mm) 2.35 (2.45)*

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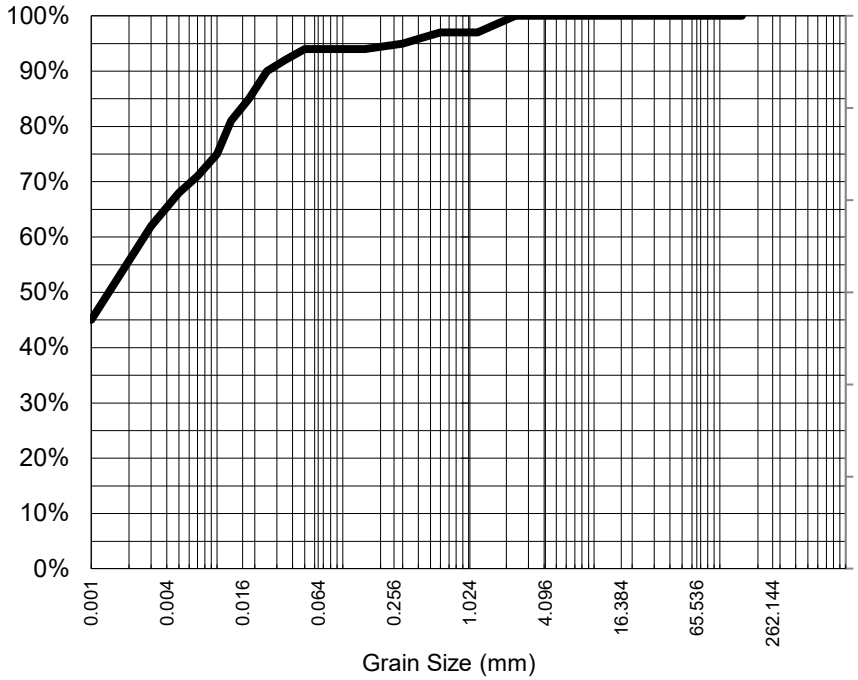
CLIENT:	MACKENZIE STACEY	**DATE REPORTED:**	25-Feb-2026
COMPANY:	BMT COMMERCIAL AUSTRALIA PTY LTD	**DATE RECEIVED:**	13-Feb-2026
ADDRESS:		**REPORT NO:**	EB2605255-078 / PSD
PROJECT:	004043 Shute Harbour SAP	**SAMPLE ID:**	SH12 1-1.5

Particle Size Distribution



Particle Size (mm)	% Passing
2.36	100%
1.18	97%
0.600	97%
0.425	96%
0.300	95%
0.150	94%
0.075	94%
Particle Size (microns)	
50	94%
35	92%
25	90%
18	85%
13	81%
10	75%
7	71%
5	68%
1	45%

Median Particle Size (mm)*	<0.007

Analysis Notes

Samples analysed as received.

Median Particle Size is not covered under the current scope of ALS's NATA accreditation.

Sample Comments:

Analysed: 20-Feb-26

Loss on Pretreatment NA

Limit of Reporting: 1%

Sample Description:

Dispersion Method Shaker

Test Method: AS1289.3.6.2/AS1289.3.6.3

Soil Particle Density (<2.36mm) 2.47

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Satish Trivedi
Soil Senior Chemist
Authorised Signatory

Certificate of Analysis

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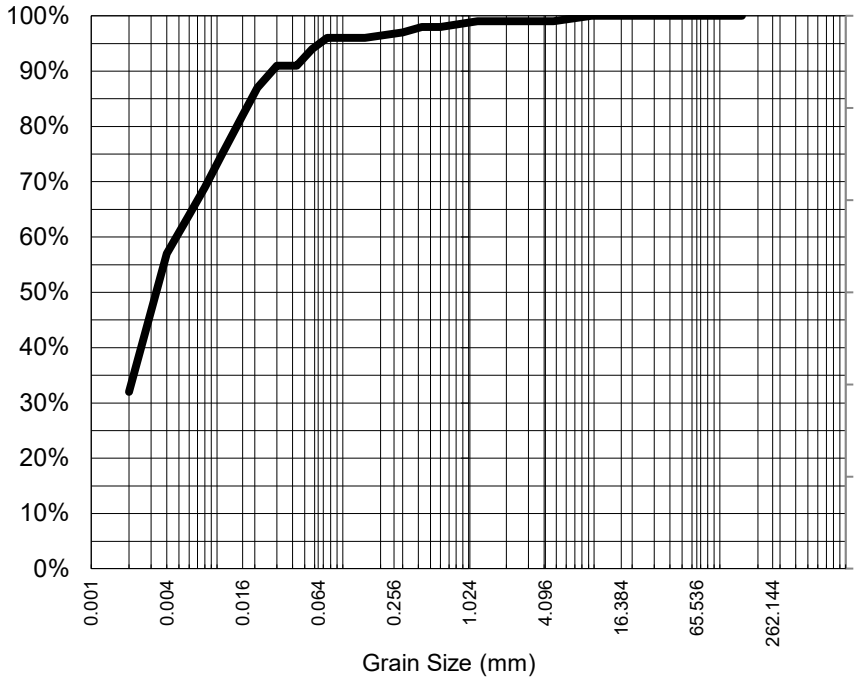
pH 07 3243 7222
samples.brisbane@alsenviro.com

ALS Environmental

Brisbane QLD

CLIENT:	MACKENZIE STACEY	**DATE REPORTED:**	25-Feb-2026
COMPANY:	BMT COMMERCIAL AUSTRALIA PTY LTD	**DATE RECEIVED:**	13-Feb-2026
ADDRESS:		**REPORT NO:**	EB2605255-079 / PSD
PROJECT:	004043 Shute Harbour SAP	**SAMPLE ID:**	SH12 1.5-2

Particle Size Distribution



Particle Size (mm)	% Passing
9.50	100%
4.75	99%
2.36	99%
1.18	99%
0.600	98%
0.425	98%
0.300	97%
0.150	96%
0.075	96%
Particle Size (microns)	
57	94%
43	91%
30	91%
21	87%
16	82%
11	75%
8	69%
6	64%
2	32%

Median Particle Size (mm)*	<0.008

Analysis Notes

Samples analysed as received.

** Soil Particle Density results fell outside the scope of AS 1289.3.6.3. Typical sediment SPD values used for calculations and consequently, NATA endorsement does not apply to hydrometer results*

Median Particle Size is not covered under the current scope of ALS's NATA accreditation.

Sample Comments:

Analysed: 20-Feb-26

Loss on Pretreatment NA

Limit of Reporting: 1%

Sample Description:

Dispersion Method Shaker

Test Method: AS1289.3.6.2/AS1289.3.6.3

Soil Particle Density (<2.36mm) 2.01

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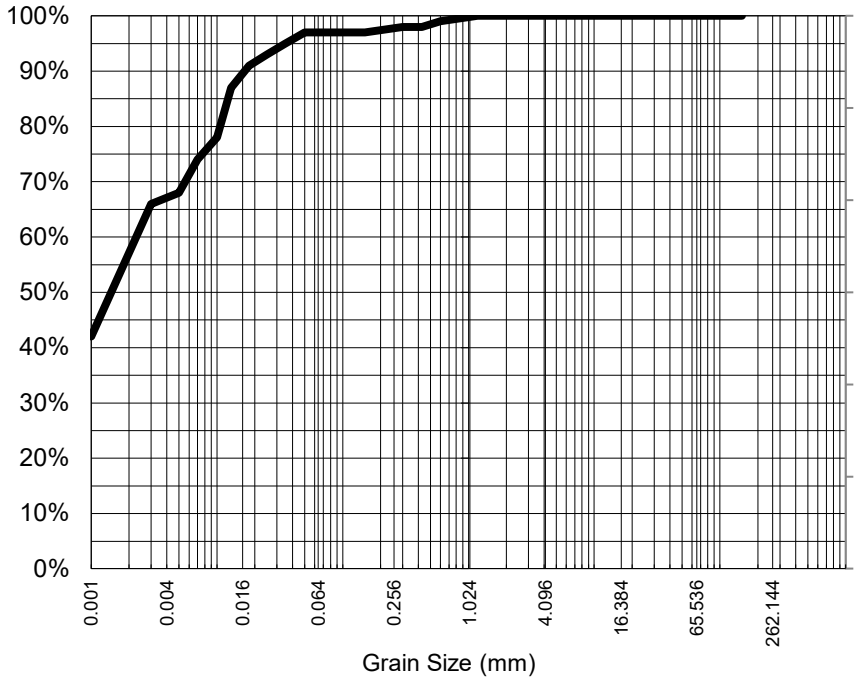
Brisbane QLD

CLIENT:	MACKENZIE STACEY	**DATE REPORTED:**	25-Feb-2026
COMPANY:	BMT COMMERCIAL AUSTRALIA PTY LTD	**DATE RECEIVED:**	13-Feb-2026
ADDRESS:		**REPORT NO:**	EB2605255-080 / PSD
PROJECT:	004043 Shute Harbour SAP	**SAMPLE ID:**	SH12 2-2.5

Particle Size Distribution



Particle Size (mm)	% Passing
1.18	100%
0.600	99%
0.425	98%
0.300	98%
0.150	97%
0.075	97%
Particle Size (microns)	
50	97%
35	95%
25	93%
18	91%
13	87%
10	78%
7	74%
5	68%
1	42%

Median Particle Size (mm)*	<0.007

Analysis Notes

Samples analysed as received.

** Soil Particle Density results fell outside the scope of AS 1289.3.6.3. Typical sediment SPD values used for calculations and consequently, NATA endorsement does not apply to hydrometer results*

Median Particle Size is not covered under the current scope of ALS's NATA accreditation.

Sample Comments:

Analysed: 20-Feb-26

Loss on Pretreatment NA

Limit of Reporting: 1%

Sample Description:

Dispersion Method Shaker

Test Method: AS1289.3.6.2/AS1289.3.6.3

Soil Particle Density (<2.36mm) 2.37 (2.45)*

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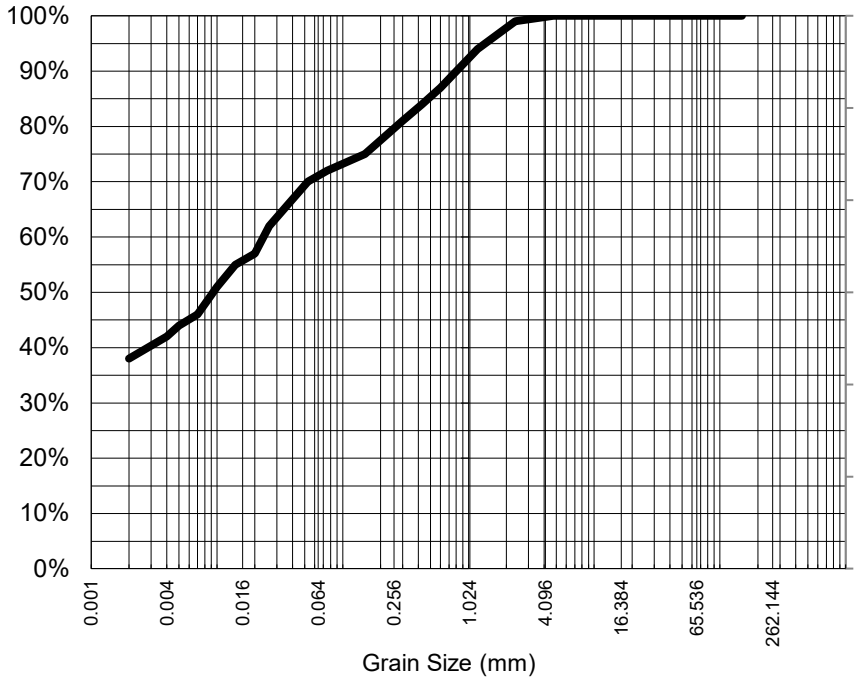
CLIENT:	MACKENZIE STACEY	**DATE REPORTED:**	25-Feb-2026
COMPANY:	BMT COMMERCIAL AUSTRALIA PTY LTD	**DATE RECEIVED:**	13-Feb-2026
ADDRESS:		**REPORT NO:**	EB2605255-084 / PSD
PROJECT:	004043 Shute Harbour SAP	**SAMPLE ID:**	SH15 0-0.5

Particle Size Distribution



Particle Size (mm)	% Passing
4.75	100%
2.36	99%
1.18	94%
0.600	87%
0.425	84%
0.300	81%
0.150	75%
0.075	72%
Particle Size (microns)	
53	70%
37	66%
26	62%
20	57%
14	55%
10	51%
7	46%
5	44%
2	38%

Median Particle Size (mm)*	0.009

Analysis Notes

Samples analysed as received.

** Soil Particle Density results fell outside the scope of AS 1289.3.6.3. Typical sediment SPD values used for calculations and consequently, NATA endorsement does not apply to hydrometer results*

Median Particle Size is not covered under the current scope of ALS's NATA accreditation.

Sample Comments:

Analysed: 20-Feb-26

Loss on Pretreatment NA

Limit of Reporting: 1%

Sample Description:

Dispersion Method Shaker

Test Method: AS1289.3.6.2/AS1289.3.6.3

Soil Particle Density (<2.36mm) 2.39 (2.45)*

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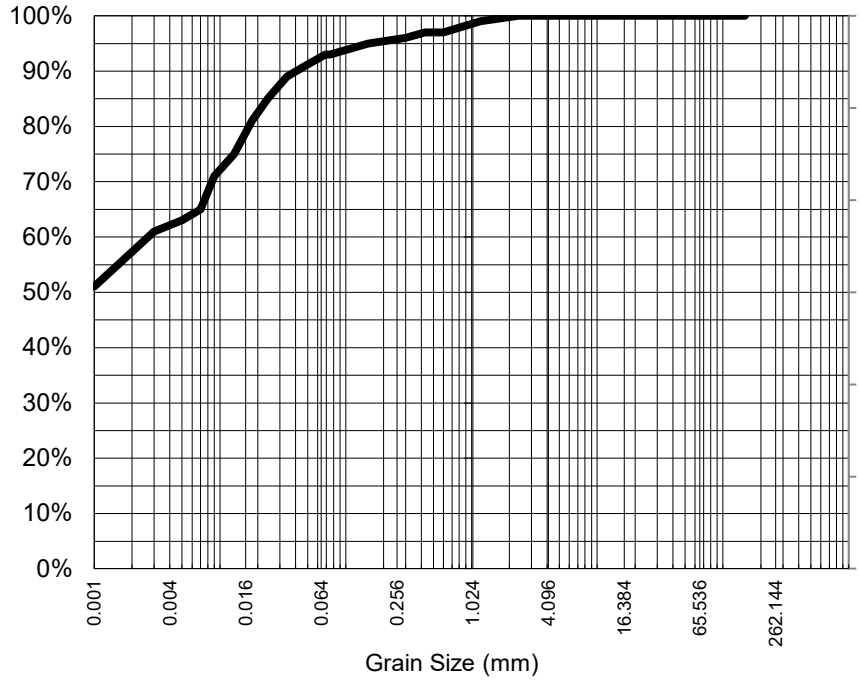
CLIENT:	MACKENZIE STACEY	**DATE REPORTED:**	25-Feb-2026
COMPANY:	BMT COMMERCIAL AUSTRALIA PTY LTD	**DATE RECEIVED:**	13-Feb-2026
ADDRESS:		**REPORT NO:**	EB2605255-085 / PSD
PROJECT:	004043 Shute Harbour SAP	**SAMPLE ID:**	SH15 0.5-1

Particle Size Distribution



Particle Size (mm)	% Passing
2.36	100%
1.18	99%
0.600	97%
0.425	97%
0.300	96%
0.150	95%
0.075	93%
Particle Size (microns)	
48	91%
34	89%
24	85%
18	81%
13	75%
9	71%
7	65%
5	63%
1	51%

Median Particle Size (mm)*	<0.007

Analysis Notes

Samples analysed as received.

Median Particle Size is not covered under the current scope of ALS's NATA accreditation.

Sample Comments:

Analysed: 20-Feb-26

Loss on Pretreatment NA

Limit of Reporting: 1%

Sample Description:

Dispersion Method Shaker

Test Method: AS1289.3.6.2/AS1289.3.6.3

Soil Particle Density (<2.36mm) 2.58

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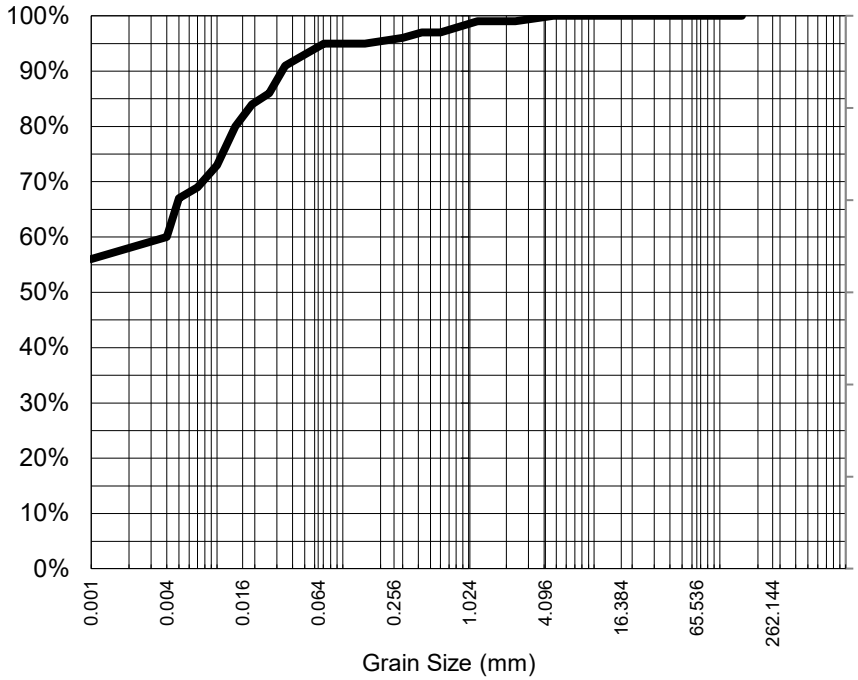
CLIENT:	MACKENZIE STACEY	**DATE REPORTED:**	25-Feb-2026
COMPANY:	BMT COMMERCIAL AUSTRALIA PTY LTD	**DATE RECEIVED:**	13-Feb-2026
ADDRESS:		**REPORT NO:**	EB2605255-086 / PSD
PROJECT:	004043 Shute Harbour SAP	**SAMPLE ID:**	SH15 1-1.5

Particle Size Distribution



Particle Size (mm)	% Passing
4.75	100%
2.36	99%
1.18	99%
0.600	97%
0.425	97%
0.300	96%
0.150	95%
0.075	95%
Particle Size (microns)	
50	93%
35	91%
26	86%
19	84%
14	80%
10	73%
7	69%
5	67%
1	56%

Median Particle Size (mm)*	<0.007

Analysis Notes

Samples analysed as received.

** Soil Particle Density results fell outside the scope of AS 1289.3.6.3. Typical sediment SPD values used for calculations and consequently, NATA endorsement does not apply to hydrometer results*

Median Particle Size is not covered under the current scope of ALS's NATA accreditation.

Sample Comments:

Analysed: 20-Feb-26

Loss on Pretreatment NA

Limit of Reporting: 1%

Sample Description:

Dispersion Method Shaker

Test Method: AS1289.3.6.2/AS1289.3.6.3

Soil Particle Density (<2.36mm) 2.45

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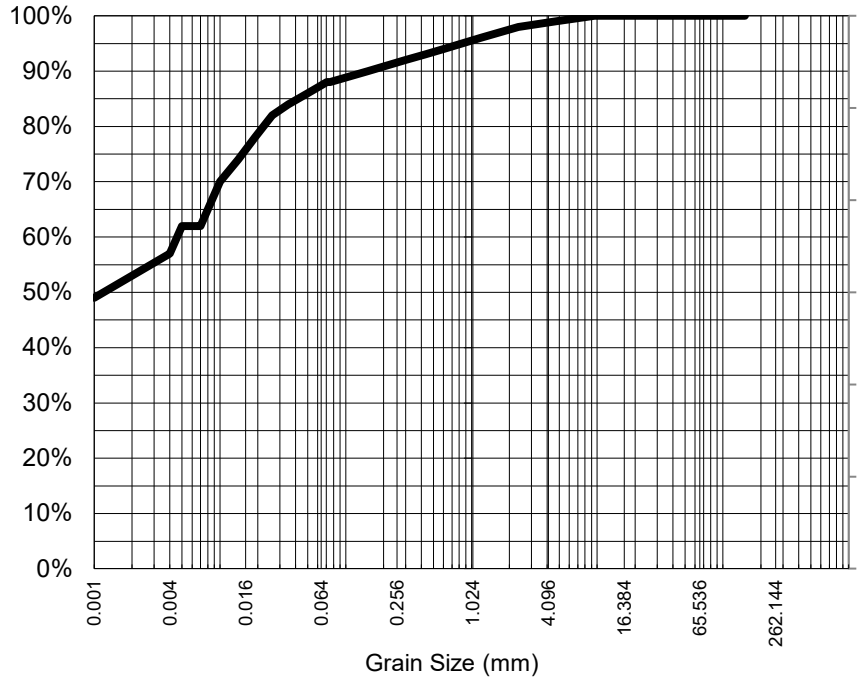
CLIENT:	MACKENZIE STACEY	**DATE REPORTED:**	25-Feb-2026
COMPANY:	BMT COMMERCIAL AUSTRALIA PTY LTD	**DATE RECEIVED:**	13-Feb-2026
ADDRESS:		**REPORT NO:**	EB2605255-087 / PSD
PROJECT:	004043 Shute Harbour SAP	**SAMPLE ID:**	SH15 1.5-2

Particle Size Distribution



Particle Size (mm)	% Passing
9.50	100%
4.75	99%
2.36	98%
1.18	96%
0.600	94%
0.425	93%
0.300	92%
0.150	90%
0.075	88%
Particle Size (microns)	
50	86%
35	84%
26	82%
19	78%
14	74%
10	70%
7	62%
5	62%
1	49%

Analysis Notes

Samples analysed as received.

Median Particle Size (mm)*	<0.007

Median Particle Size is not covered under the current scope of ALS's NATA accreditation.

Sample Comments:

Analysed: 20-Feb-26

Loss on Pretreatment NA

Limit of Reporting: 1%

Sample Description:

Dispersion Method Shaker

Test Method: AS1289.3.6.2/AS1289.3.6.3

Soil Particle Density (<2.36mm) 2.48

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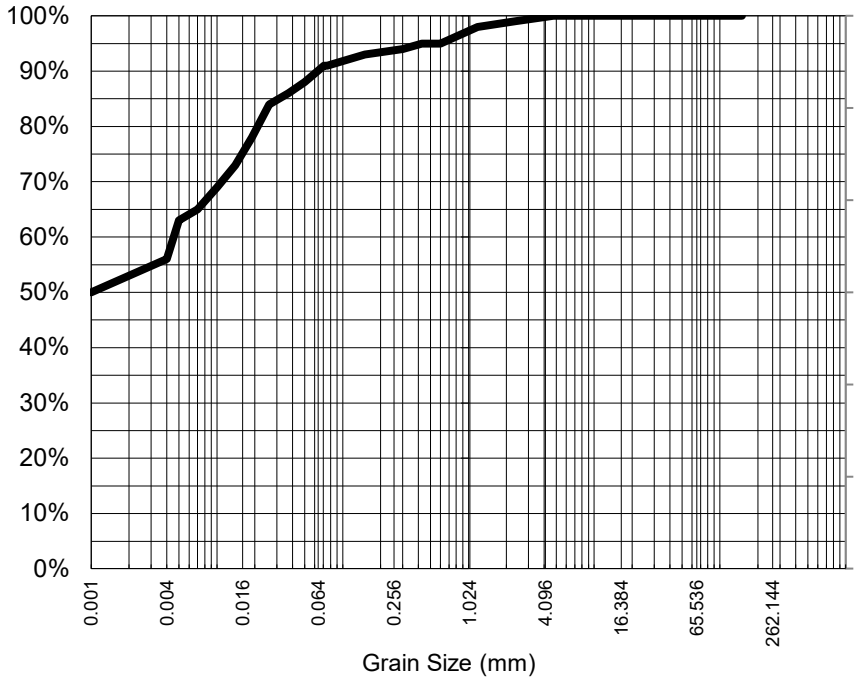
Brisbane QLD

CLIENT:	MACKENZIE STACEY	**DATE REPORTED:**	25-Feb-2026
COMPANY:	BMT COMMERCIAL AUSTRALIA PTY LTD	**DATE RECEIVED:**	13-Feb-2026
ADDRESS:		**REPORT NO:**	EB2605255-088 / PSD
PROJECT:	004043 Shute Harbour SAP	**SAMPLE ID:**	SH2 0-0.5

Particle Size Distribution



Particle Size (mm)	% Passing
4.75	100%
2.36	99%
1.18	98%
0.600	95%
0.425	95%
0.300	94%
0.150	93%
0.075	91%
Particle Size (microns)	
50	88%
37	86%
26	84%
19	78%
14	73%
10	69%
7	65%
5	63%
1	50%

Median Particle Size (mm)*	<0.007

Analysis Notes

Samples analysed as received.

** Soil Particle Density results fell outside the scope of AS 1289.3.6.3. Typical sediment SPD values used for calculations and consequently, NATA endorsement does not apply to hydrometer results*

Median Particle Size is not covered under the current scope of ALS's NATA accreditation.

Sample Comments:		**Analysed:**	20-Feb-26
Loss on Pretreatment	NA	**Limit of Reporting:**	1%
Sample Description:		**Dispersion Method**	Shaker
Test Method:	AS1289.3.6.2/AS1289.3.6.3		
Soil Particle Density (<2.36mm)	2.43 (2.45)*		

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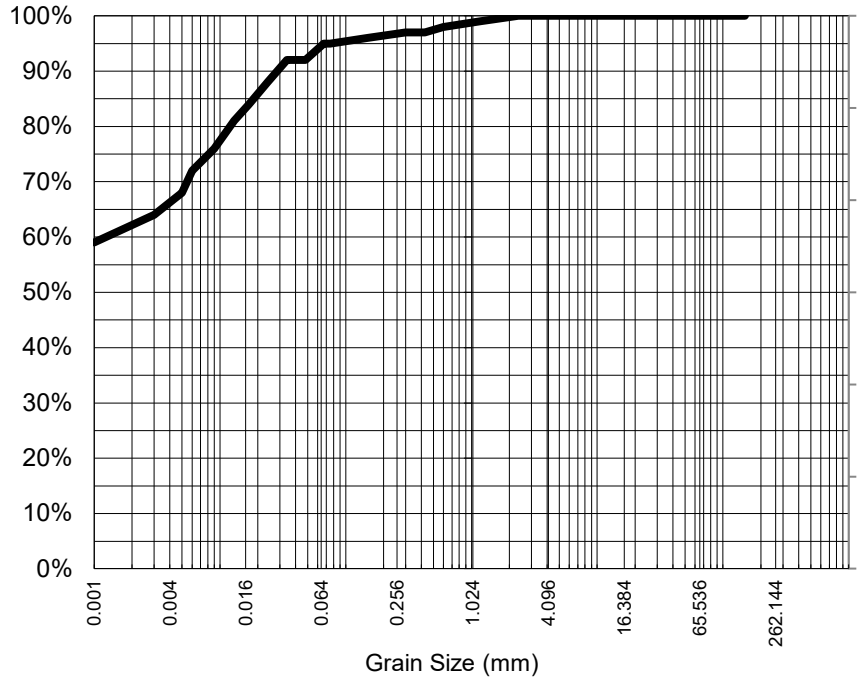
CLIENT:	MACKENZIE STACEY	**DATE REPORTED:**	25-Feb-2026
COMPANY:	BMT COMMERCIAL AUSTRALIA PTY LTD	**DATE RECEIVED:**	13-Feb-2026
ADDRESS:		**REPORT NO:**	EB2605255-089 / PSD
PROJECT:	004043 Shute Harbour SAP	**SAMPLE ID:**	SH2 0.5-1

Particle Size Distribution



Particle Size (mm)	% Passing
2.36	100%
1.18	99%
0.600	98%
0.425	97%
0.300	97%
0.150	96%
0.075	95%
Particle Size (microns)	
48	92%
34	92%
24	88%
17	84%
13	81%
9	76%
6	72%
5	68%
1	59%

Median Particle Size (mm)*	<0.006

Median Particle Size is not covered under the current scope of ALS's NATA accreditation.

Analysis Notes

Samples analysed as received.

Sample Comments:

Analysed: 20-Feb-26

Loss on Pretreatment NA

Limit of Reporting: 1%

Sample Description:

Dispersion Method Shaker

Test Method: AS1289.3.6.2/AS1289.3.6.3

Soil Particle Density (<2.36mm) 2.6

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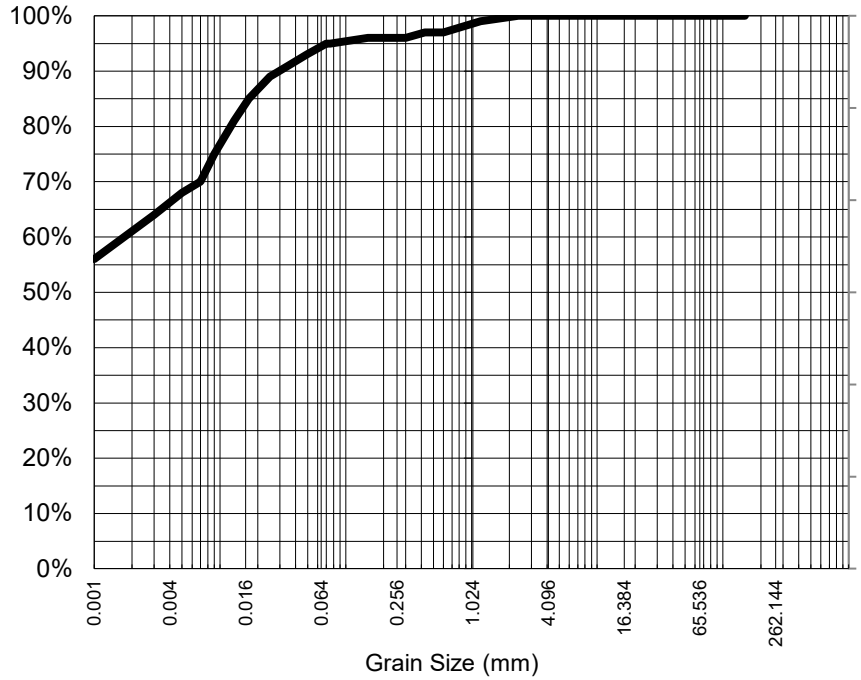
Brisbane QLD

CLIENT:	MACKENZIE STACEY	**DATE REPORTED:**	25-Feb-2026
COMPANY:	BMT COMMERCIAL AUSTRALIA PTY LTD	**DATE RECEIVED:**	13-Feb-2026
ADDRESS:		**REPORT NO:**	EB2605255-090 / PSD
PROJECT:	004043 Shute Harbour SAP	**SAMPLE ID:**	SH2 1-1.5

Particle Size Distribution



Particle Size (mm)	% Passing
2.36	100%
1.18	99%
0.600	97%
0.425	97%
0.300	96%
0.150	96%
0.075	95%
Particle Size (microns)	
49	93%
35	91%
25	89%
17	85%
13	81%
9	75%
7	70%
5	68%
1	56%

Median Particle Size (mm)*	<0.007

Analysis Notes

Samples analysed as received.

Median Particle Size is not covered under the current scope of ALS's NATA accreditation.

Sample Comments:

Analysed: 20-Feb-26

Loss on Pretreatment NA

Limit of Reporting: 1%

Sample Description:

Dispersion Method Shaker

Test Method: AS1289.3.6.2/AS1289.3.6.3

Soil Particle Density (<2.36mm) 2.53

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Soil Senior Chemist
Authorised Signatory

CHAIN OF CUSTODY

Mandatory Fields

Page ___ of ___

CLIENT CODE:	BMTWBM	*PROJECT MANAGER:	Mackenzie Stacey	SAMPLER:	Craig Heatherington/ Elyssa McLeod
*CLIENT:	BMT COMMERCIAL AUSTRALIA PTY LTD	*PM MOBILE:	0477926858	SAMPLER MOBILE:	0405411707/0416402720
OFFICE: (Invoiced Office)		ALS QUOTE # (Client PL if blank)	EB26BMTWBM0001	PURCHASE ORDER NO.:	
PROJECT NO./PROJECT:	004043	004043 Shute Harbour SAP		SITE:	

CoC #: (if applicable)

*INVOICE TO: (client default if nil) mackenzie.stacey@apac.bmt.org ☐ CC Invoice to PM

BIOSECURITY

Country of Origin:

*EMAIL REPORTS TO: (default to PM if blank) mackenzie.stacey@apac.bmt.org;angus.williams@apac.bmt.org
mackenzie.stacey@apac.bmt.org
angus.williams@apac.bmt.org

*** STORAGE REQUIREMENTS** Please check box →
Standard Storage time from receipt of samples: Waters - 3 weeks; Soils - 2 months

☐ Standard Storage
☐ Extended Storage
Specify Disposal Date:
Note: Extended storage incurs a fee and requires a signed agreement.

*** TURNAROUND** Please check box →
(Not all tests can be expedited, contact Client Services for more information)

☐ 5+ days (no surcharge)
☐ 3 day (+15%)
☐ 2 day (+30%)
☐ 1 day (+50%)

***ANALYSIS REQUIRED**
(NB. ALS Quote No. and/or Analysis Suite Codes must be listed to attract suite/quoted price)
Where Metals are required, specify Total (unfiltered bottle required) or Dissolved (field filtered bottle required).
Mark an X in the boxes below analysis to indicate the parameter listed above to be tested on that sample.

Comments:

ALS Use Only Lab ID	Sample ID	Depth	Date/Time	No. Bottles	MATRIX: Soil/Solid(S), Water(W), Sediments (SD), Dust (D), Product (P), Biota (B), Biosolid (BS)	Table 1: Basic	Table 2: Comprehensive	Table 3: Chip tray incubation	Table 4: Optional PFAS / OP	Table 5: Optional PCB analysis	Settleability 10% (EA151-10)						Lab QC (additional bottles req.) Dup	Lab QC (additional bottles req.) MS	Additional Information (Comment on hazards - e.g., asbestos, known high contamination)
1	SH14A 0-0.5		06/2/26	7	S	X	X										☐	☐	
2	SH14A 0.5-1		"	7	"	X	X										☐	☐	
3	SH14A 1-1.5		"	3	"	X											☐	☐	
4	SH14A 1.5-2		"	3	"	X											☐	☐	
5	SH14A 2-2.5		"	3	"	X											☐	☐	
6	SH14B 0-0.5		"	7	"	X	X										☐	☐	
7	SH14B 0.5-1		"	7	"	X	X										☐	☐	
8	SH14B 1-1.5		"	3	"	X											☐	☐	
9	SH14B 1.5-2		"	3	"	X											☐	☐	
10	SH14B 2-2.5		"	3	"	X											☐	☐	

Receipt Detail (Lab Use ONLY): Chilling Method: Ice: Frozen / Melted; Ice Bricks: Frozen / Thawed; None
Sample Temp at Receipt: °C °C °C
Security Seal Intact (circle): Yes / No / NA(None)
Carrier Details: ☐ Courier/Post ☐ Client
Con Note #
Packaging: (Circle) Hard Esky; Foam Esky; Box/Bag/Other
Count: # # #

Relinquished by: Signature: Date/Time:
Received by: A.MCC Signature: Date/Time: 10/02/26 12/02

Relinquished by: Signature: Date/Time:
Received by: Signature: Date/Time: 13/02/26 08:30

Environmental Division Brisbane
Work Order Reference
EB2605255

Telephone : +61-7-3552-8685

Mandatory Fields

CHAIN OF CUSTODY

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CLIENT CODE:	BMTWBM	*PROJECT MANAGER:	Mackenzie Stacey	SAMPLER:	Craig Heatherington/ Elyssa McLeod
*CLIENT:	BMT COMMERCIAL AUSTRALIA PTY LTD	*PM MOBILE:	477926858	SAMPLER MOBILE:	0405411707/0416402720
OFFICE: (Invoiced Office)		ALS QUOTE # (Client PL if blank)	EB26BMTWBM0001	PURCHASE ORDER NO.:	
PROJECT NO./PROJECT:		004043 Shute Harbour SAP		SITE:	
*INVOICE TO: (client default if nil)		mackenzie.stacey@apac.bmt.org		☐ CC Invoice to PM	
*EMAIL REPORTS TO: (default to PM if blank)		mackenzie.stacey@apac.bmt.org;angus.williams@apac.bmt.org			

CoC #: (if applicable)

BIOSECURITY

Country of Origin: (if not Australia)

*** STORAGE REQUIREMENTS**
Please check box. →
Standard Storage time from receipt of samples:
Waters - 3 weeks
Soils - 2 months

☐ Standard Storage
☐ Extended Storage
Specify Disposal Date:
Note: Extended storage incurs a fee and requires a signed agreement.

*** TURNAROUND**
Please check box. →
(Not all tests can be expedited, contact Client Services for more information)

☐ 5+ days (no surcharge)
☐ 3 day (+15%)
☐ 2 day (+30%)
☐ 1 day (+50%)

***ANALYSIS REQUIRED**
(NB. ALS Quote No. and/or Analysis Suite Codes must be listed to attract suite/quoted price)
Where Metals are required, specify Total (unfiltered bottle required) or Dissolved (field filtered bottle required).
Mark an X in the boxes below analysis to indicate the parameter listed above to be tested on that sample.

WO Sticker to go here.
(ALS use only)

Comments:

ALS Use Only Lab ID	Sample ID	Depth	Date/Time	No. Bottles	MATRIX: Soil/Solid(S) Water(W) Sediments (SD), Dust (D), Product (P), Biota (B), Biosolid (BS)	Table 1: Basic	Table 2: Comprehensive	Table 3: Chip tray Incubation	Table 4: Optional PFAS / OP	Table 5: Optional PCB analysis	Settleability 10% (EA151-10)						Lab QC (additional bottles req.) Dup	Lab QC (additional bottles req.) MS	Additional Information (Comment on hazards - e.g., asbestos, known high contamination)
11	SH14C 0-0.5		08/02/26	7	S	X	X										☐	☐	
12	SH14C 0.5-1		"	7	"	X	X										☐	☐	
13	SH14C 1-1.5		"	3	"	X											☐	☐	
14	SH14C 1.5-2		"	3	"	X											☐	☐	
15	SH14C 2-2.5		"	3	"	X											☐	☐	
16	SH13 0-0.5		"	7	"	X	X										☐	☐	
17	SH13 0.5-1		"	7	"	X	X										☐	☐	
18	SH13 1-1.5		"	3	"	X											☐	☐	
19	SH13 1.5-2		"	3	"	X											☐	☐	
20	SH13 2-2.5		"	3	"	X											☐	☐	

Receipt Detail (Lab Use ONLY)	Chilling Method:	Ice: Frozen / Melted	Ice Bricks: Frozen / Thawed	None	Sample Temp at Receipt	°C °C °C
Security Seal Intact (circle)	Yes / No / NA(None)					
Carrier Details	☐ Courier/Post	☐ Client	Con Note #			
Packaging: (Circle)	Hard Esky	Foam Esky	Box/Bag/Other			
Count	#	#	#			

Relinquished by:		Signature:		Date/ Time:	
Relinquished by:		Signature:		Date/ Time:	
Received by:		Signature		Date/ Time:	
Received by:		Signature		Date/ Time:	

CHAIN OF CUSTODY

Mandatory Fields

Page ___of___

CLIENT CODE:	BMTWBM	*PROJECT MANAGER:	Mackenzie Stacey	SAMPLER:	Craig Heatherington/ Elyssa McLeod
*CLIENT:	BMT COMMERCIAL AUSTRALIA PTY LTD	*PM MOBILE:	477926858	SAMPLER MOBILE:	0405411707/0416402720
OFFICE: *(Invoiced Office)*		ALS QUOTE # *(Client PL if blank)*	EB26BMTWBM0001	PURCHASE ORDER NO.:	
PROJECT NO./PROJECT:	004043 Shute Harbour SAP			SITE:	
*INVOICE TO: *(client default if nil)*	mackenzie.stacey@apac.bmt.org			☐ CC Invoice to PM	
*EMAIL REPORTS TO: *(default to PM if blank)*	mackenzie.stacey@apac.bmt.org;lacus.williams@apac.bmt.org				

CoC #: *(if applicable)*

BIOSECURITY

Country of Origin: *(if not Australia)*

WO Sticker to go here.
(ALS use only)

*** STORAGE REQUIREMENTS**
Please check box. →
Standard Storage time from receipt of samples:
Waters - 3 weeks
Soils - 2 months

☐ Standard Storage
☐ Extended Storage
Specify Disposal Date:
Note: Extended storage incurs a fee and requires a signed agreement.

*** TURNAROUND**
Please check box. →
(Not all tests can be expedited, contact Client Services for more information)

☐ 5+ days (no surcharge)
☐ 3 day (+15%)
☐ 2 day (+30%)
☐ 1 day (+50%)

***ANALYSIS REQUIRED**
(NB. ALS Quote No. and/or Analysis Suite Codes must be listed to attract suite/quoted price)
Where Metals are required, specify Total (unfiltered bottle required) or Dissolved (field filtered bottle required).
Mark an X in the boxes below analysis to indicate the parameter listed above to be tested on that sample.

Comments:

ALS Use Only Lab ID	Sample ID	Depth	Date/Time	No. Bottles	MATRIX: Soil/Solid(S) Water(W), Sediments (SD), Dust (D), Product (P), Biota (B), Biosolid (BS)	Table 1: Basic	Table 2: Comprehensive	Table 3: Chip tray Incubation	Table 4: Optional PFAS / OP	Table 5: Optional PCB analysis	Settleability 10% (EA151-10)							Lab QC *(additional bottles req.)* Dup	Lab QC MS	Additional Information *(Comment on hazards - e.g., asbestos, known high contamination)*
21	SH8 0-0.5		08/02/26	7	S	X	X			X								☐	☐	
22	SH8 0.5-1		"	7	"	X	X			X								☐	☐	
23	SH8 1-1.5		"	3	"	X												☐	☐	
24	SH8 1.5-2		"	3	"	X												☐	☐	
25	SH8 2-2.5		"	3	"	X												☐	☐	
26	SH8 2.5-3		"	3	"	X												☐	☐	
27	SH8 3-3.5		"	3	"	X												☐	☐	
28	SH5 0-0.5		"	7	"	X	X											☐	☐	
29	SH5 0.5-1		"	7	"	X	X											☐	☐	
30	SH5 1-1.5		"	3	"	X												☐	☐	

Receipt Detail (Lab Use ONLY)
Chilling Method: Ice: Frozen / Melted Ice Bricks: Frozen / Thawed None
Sample Temp at Receipt °C °C °C
Security Seal Intact *(circle)* Yes / No / NA(None)
Carrier Details ☐ Courier/Post ☐ Client
Con Note #
Packaging: *(Circle)* Hard Esky Foam Esky Box/Bag/Other
Count # # #

Relinquished by:	Signature:	Date/ Time:	Received by:	Signature	Date/ Time:
Relinquished by:	Signature:	Date/ Time:	Received by:	Signature	Date/ Time:

CHAIN OF CUSTODY

Mandatory Fields

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CLIENT CODE:	BMTWBM	*PROJECT MANAGER:	Mackenzie Stacey	SAMPLER:	Craig Heatherington/ Elyssa McLeod
*CLIENT:	BMT COMMERCIAL AUSTRALIA PTY LTD	*PM MOBILE:	477926858	SAMPLER MOBILE:	0405411707/0416402720
OFFICE: (Invoiced Office)		ALS QUOTE # (Client PL if blank)	EB26BMTWBM0001	PURCHASE ORDER NO.:	
PROJECT NO./PROJECT:	004043 Shute Harbour SAP			SITE:	

CoC #: (if applicable)

*INVOICE TO: (client default if nil) mackenzie.stacey@apac.bmt.org ☐ CC Invoice to PM

BIOSECURITY

*EMAIL REPORTS TO: (default to PM if blank) mackenzie.stacey@apac.bmt.org;angus.williams@apac.bmt.org

Country of Origin: (if not Australia)

*** STORAGE REQUIREMENTS**
Please check box. →
Standard Storage time from receipt of samples:
Waters - 3 weeks
Soils - 2 months

☐ Standard Storage
☐ Extended Storage
Specify Disposal Date:
Note: Extended storage incurs a fee and requires a signed agreement.

*** TURNAROUND**
Please check box. →
(Not all tests can be expedited, contact Client Services for more information)

☐ 5+ days (no surcharge)
☐ 3 day (+15%)
☐ 2 day (+30%)
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(NB. ALS Quote No. and/or Analysis Suite Codes must be listed to attract suite/quoted price)
Where Metals are required, specify Total (unfiltered bottle required) or Dissolved (field filtered bottle required).
Mark an X in the boxes below analysis to indicate the parameter listed above to be tested on that sample.

WO Sticker to go here.
(ALS use only)

Comments:

ALS Use Only Lab ID	Sample ID	Depth	Date/Time	No. Bottles	MATRIX: Soil/Solid(S) Water(W) Sediments (SD), Dust (D), Product (P), Biota (B), Biosolid (BS)	Table 1: Basic	Table 2: Comprehensive	Table 3: Chip tray incubation	Table 4: Optional PFAS / OP	Table 5: Optional PCB analysis	Settleability 10% (EA151-10)							Lab QC (additional bottles req.) Dup	Lab QC (additional bottles req.) MS	Additional Information (Comment on hazards - e.g., asbestos, known high contamination)
31	SH5 1.5-2		8/2/26	3	S	X												☐	☐	
32	SH5 2-2.5		8/2/26	3	"	X												☐	☐	
33	SH4 0-0.5		9/2/26	7	"	X	X			X								☐	☐	
34	SH4 0.5-1		9/2/26	7	"	X	X			X								☐	☐	
35	SH4 1-1.5		9/2/26	3	"	X												☐	☐	
36	SH1 0-0.5		"	7	"	X	X											☐	☐	
37	SH1 0.5-1		"	7	"	X	X											☐	☐	
38	SH1 1-1.5		"	3	"	X												☐	☐	
39	SH1 1.5-2		"	3	"	X												☐	☐	
40	SH11A 0-0.5		"	~~3~~ 2	"	X	X											☐	☐	

Receipt Detail (Lab Use ONLY)
Chilling Method: Ice: Frozen / Melted Ice Bricks: Frozen / Thawed None
Sample Temp at Receipt °C °C °C
Security Seal Intact (circle) Yes / No / NA(None)
Carrier Details ☐ Courier/Post ☐ Client
Con Note #
Packaging: (Circle) Hard Esky Foam Esky Box/Bag/Other
Count # # #

Relinquished by:	Signature:	Date/ Time:	Received by:	Signature	Date/ Time:
Relinquished by:	Signature:	Date/ Time:	Received by:	Signature	Date/ Time:

Mandatory Fields

CHAIN OF CUSTODY

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CLIENT CODE:	BMTWBM	*PROJECT MANAGER:	Mackenzie Stacey	SAMPLER:	Craig Heatherington/ Elyssa McLeod
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OFFICE: (Invoiced Office)		ALS QUOTE # (Client PL if blank)	EB26BMTWBM0001	PURCHASE ORDER NO.:	
PROJECT NO./PROJECT:	004043 Shute Harbour SAP			SITE:	
*INVOICE TO: (client default if nil)	mackenzie.stacey@aqua.bmt.org			☐ CC Invoice to PM	
*EMAIL REPORTS TO: (default to PM if blank)	mackenzie.stacey@aqua.bmt.org;angus.williams@aqua.bmt.org				

CoC #: (if applicable)

BIOSECURITY

Country of Origin: (if not Australia)

*** STORAGE REQUIREMENTS** (Please check box. →)
Standard Storage time from receipt of samples: Waters - 3 weeks; Soils - 2 months
☐ Standard Storage
☐ Extended Storage
Specify Disposal Date:
Note: Extended storage incurs a fee and requires a signed agreement.

*** TURNAROUND** (Please check box. →) (Not all tests can be expedited, contact Client Services for more information)
☐ 5+ days (no surcharge)
☐ 3 day (+15%)
☐ 2 day (+30%)
☐ 1 day (+50%)

***ANALYSIS REQUIRED**
(NB. ALS Quote No. and/or Analysis Suite Codes must be listed to attract suite/quoted price)
Where Metals are required, specify Total (unfiltered bottle required) or Dissolved (field filtered bottle required).
Mark an X in the boxes below analysis to indicate the parameter listed above to be tested on that sample.

WO Sticker to go here. (ALS use only)

Comments:

ALS Use Only Lab ID	Sample ID	Depth	Date/Time	No. Bottles	MATRIX: Soil/Solid(S) Water(W) Sediments (SD), Dust (D), Product (P), Biota (B), Biosolid (BS)	Table 1: Basic	Table 2: Comprehensive	Table 3: Chlp tray Incubation	Table 4: Optional PFAS / OP	Table 5: Optional PCB analysis	Settleability 10% (EA151-10)	Lab QC (additional bottles req.) Dup	Lab QC (additional bottles req.) MS	Additional Information (Comment on hazards - e.g., asbestos, known high contamination)
41	SH11 0.5-1		9/2/26	7	S	X	X					☐	☐	
42	SH11 1-1.5		"	3	"	X						☐	☐	
43	SH11 1.5-2		"	3	"	X						☐	☐	
	*SH11B 0-0.5		"	7	"	X	X					☐	☐	Please send to Eurofens*
44	SH11C 0-0.5		"	7	"	X	X					☐	☐	
45	SH11 0-1		"	1	"						X	☐	☐	
46	SH11 1-2		"	1	"						X	☐	☐	
47	SH3 0-0.5		9/2/26 & 10/2/26	12	"	X	X					☐	☐	
48	SH3 0.5-1		" & "	12	"	X	X					☐	☐	
49	SH3 1-1.5		9/2/26	3	"	X						☐	☐	

Receipt Detail (Lab Use ONLY)	Chilling Method:	Ice: Frozen / Melted	Ice Bricks: Frozen / Thawed	None	Sample Temp at Receipt	°C °C °C	Security Seal Intact (circle) Yes / No / NA(None)

Carrier Details: ☐ Courier/Post ☐ Client
Con Note #
Packaging: (Circle) Hard Esky; Foam Esky; Box/Bag/Other
Count # # #

Relinquished by:		Signature:		Date/ Time:	
Relinquished by:		Signature:		Date/ Time:	
Received by:		Signature		Date/ Time:	
Received by:		Signature		Date/ Time:	

Mandatory Fields

CHAIN OF CUSTODY

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CoC #: *(if applicable)*

CLIENT CODE:	BMTWBM	*PROJECT MANAGER:	Mackenzie Stacey	SAMPLER:	Craig Heatherington/ Elyssa McLeod
*CLIENT:	BMT COMMERCIAL AUSTRALIA PTY LTD	*PM MOBILE:	477926858	SAMPLER MOBILE:	0405411707/0416402720
OFFICE: *(Invoiced Office)*		ALS QUOTE # *(Client PL if blank)*	EB26BMTWBM0001	PURCHASE ORDER NO.:	
PROJECT NO./PROJECT:	004043 Shute Harbour SAP			SITE:	
*INVOICE TO: *(client default if nil)*	mackenzie.stacey@apac.bmt.org			☐ CC Invoice to PM	
*EMAIL REPORTS TO: *(default to PM if blank)*	mackenzie.stacey@apac.bmt.org;angus.williams@apac.bmt.org				

BIOSECURITY

Country of Origin: *(if not Australia)*

*** STORAGE REQUIREMENTS** *Please check box.* →
Standard Storage time from receipt of samples:
Waters - 3 weeks
Soils - 2 months

☐ Standard Storage
☐ Extended Storage
Specify Disposal Date:
Note: Extended storage incurs a fee and requires a signed agreement.

*** TURNAROUND** *Please check box.* →
(Not all tests can be expedited, contact Client Services for more information)

☐ 5+ days (no surcharge)
☐ 3 day (+15%)
☐ 2 day (+30%)
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(NB. ALS Quote No. and/or Analysis Suite Codes must be listed to attract suite/quoted price)
Where Metals are required, specify Total (unfiltered bottle required) or Dissolved (field filtered bottle required).
Mark an X in the boxes below analysis to indicate the parameter listed above to be tested on that sample.

WO Sticker to go here.
(ALS use only)

Comments:

ALS Use Only Lab ID	Sample ID	Depth	Date/Time	No. Bottles	MATRIX: Soil/Solid(S) Water(W) Sediments (SD), Dust (D), Product (P), Biota (B), Biosolid (BS)	Table 1: Basic	Table 2: Comprehensive	Table 3: Chip tray Incubation	Table 4: Optional PFAS / OP	Table 5: Optional PCB analysis	Settleability 10% [EA151-10]						Lab QC *(additional bottles req.)* Dup	Lab QC MS	Additional Information *(Comment on hazards - e.g., asbestos, known high contamination)*
50	SH3 1.5-2		9/2/26 [redacted]	3	S	X											☐	☐	
51	SH3 0-1		10/2/26	1	"						X						☐	☐	
52	SH3 1-2		10/2/26	1	"						X						☐	☐	
53	SH16 0-0.5		9/2/26 & 10/2/26	12	"	X	X										☐	☐	
54	SH16 0.5-1		" "	12	"	X	X										☐	☐	
55	SH16 1-1.5		9/2/26	3	"	X											☐	☐	
56	SH16 1.5-2		9/2/26	3	"	X											☐	☐	
57	SH9 0-0.5		9/2/26 & 10/2/26	12	"	X	X			X							☐	☐	
58	SH9 0.5-1		" "	12	"	X	X			X							☐	☐	
59	SH9 1-1.5		9/2/26	3	"	X											☐	☐	

Receipt Detail (Lab Use ONLY)	Chilling Method: Ice: Frozen / Melted Ice Bricks: Frozen / Thawed None	Sample Temp at Receipt °C °C °C	Security Seal Intact: *(circle)* Yes / No / NA(None)	Carrier Details ☐ Courier/Post ☐ Client Con Note #	Packaging: *(Circle)* Hard Esky Foam Esky Box/Bag/Other Count # # #

Relinquished by:	Signature:	Date/ Time:	Received by:	Signature	Date/ Time:
Relinquished by:	Signature:	Date/ Time:	Received by:	Signature	Date/ Time:

Mandatory Fields	CHAIN OF CUSTODY	Page ___of___

CLIENT CODE:	BMTWBM	*PROJECT MANAGER:	Mackenzie Stacey	SAMPLER:	Craig Heatherington/ Elyssa McLeod
*CLIENT:	BMT COMMERCIAL AUSTRALIA PTY LTD	*PM MOBILE:	477926858	SAMPLER MOBILE:	0405411707/0416402720
OFFICE: (Invoiced Office)		ALS QUOTE # (Client PL if blank)	EB26BMTWBM0001	PURCHASE ORDER NO.:	
PROJECT NO./PROJECT:	004043 Shute Harbour SAP			SITE:	
*INVOICE TO: (client default if nil)	mackenzie.stacey@apac.bmt.org			☐ CC Invoice to PM	
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CoC #: (if applicable)

BIOSECURITY

Country of Origin: (if not Australia)

*ANALYSIS REQUIRED

(NB. ALS Quote No. and/or Analysis Suite Codes must be listed to attract suite/quoted price)
Where Metals are required, specify Total (unfiltered bottle required) or Dissolved (field filtered bottle required).
Mark an X in the boxes below analysis to indicate the parameter listed above to be tested on that sample.

*** STORAGE REQUIREMENTS**
Please check box.
→
Standard storage time from receipt of samples:
Waters - 3 weeks
Soils - 2 months

☐ Standard Storage
☐ Extended Storage
Specify Disposal Date:
Note: Extended storage incurs a fee and requires a signed agreement.

*** TURNAROUND**
Please check box.
→
(Not all tests can be expedited, contact Client Services for more information)

☐ 5+ days (no surcharge)
☐ 3 day (+15%)
☐ 2 day (+30%)
☐ 1 day (+50%)

Comments:

W/O Sticker to go here.
(ALS use only)

ALS Use Only Lab ID	Sample ID	Depth	Date/Time	No. Bottles	MATRIX: Soil/Solid(S) Water(W) Sediments (SD), Dust (D), Product (P), Biota (B), Biosolid (BS)	Table 1: Basic	Table 2: Comprehensive	Table 3: Clip tray incubation	Table 4: Optional PFAS / OP	Table 5: Optional PCB analysis	Settleability 10% (EA151-10)							Lab QC (additional bottles req.) Dup	Lab QC (additional bottles req.) MS	Additional Information (Comment on hazards - e.g., asbestos, known high contamination)
60	SH9 1.5-2		9/2/26	3	S	X												☐	☐	
61	SH6 0-0.5		10/2/26	12	"	X	X											☐	☐	
62	SH6 0.5-1		"	12	"	X	X											☐	☐	
63	SH6 1-1.5		"	3	"	X												☐	☐	
64	SH6 1.5-2		"	3	"	X												☐	☐	
65	SH16B 0-0.5		"	7	"	X	X											☐	☐	
66	SH16B 0.5-1		"	7	"	X	X											☐	☐	
67	SH16B 1-1.5		"	3	"	X												☐	☐	
68	SH16C 0-0.5		"	7	"	X	X											☐	☐	
69	SH16 C 0.5-1		"	7	"	X	X											☐	☐	

Receipt Detail (Lab Use ONLY)	Chilling Method:	Ice: Frozen / Melted	Ice Bricks: Frozen / Thawed	None	Sample Temp at Receipt	°C °C °C
Security Seal Intact (circle)	Yes / No / NA(None)	Carrier Details	☐ Courier/Post	☐ Client	Con Note #	
Packaging: (Circle)	Hard Esky	Foam Esky	Box/Bag/Other	Count	#	# #

Relinquished by:		Signature:		Date/ Time:	
Relinquished by:		Signature:		Date/ Time:	
Received by:		Signature		Date/ Time:	
Received by:		Signature		Date/ Time:	

Mandatory Fields

CHAIN OF CUSTODY

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CLIENT CODE:	BMTWBM	*PROJECT MANAGER:	Mackenzie Stacey	SAMPLER:	Craig Heatherington/ Elyssa McLeod
*CLIENT:	BMT COMMERCIAL AUSTRALIA PTY LTD	*PM MOBILE:	477926858	SAMPLER MOBILE:	0405411707/0416402720
OFFICE: (Invoiced Office)		ALS QUOTE # (Client PL if blank)	EB26BMTWBM0001	PURCHASE ORDER NO.:	
PROJECT NO./PROJECT:	004043 Shute Harbour SAP			SITE:	
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CoC #: (if applicable)

BIOSECURITY

Country of Origin: (if not Australia)

*** STORAGE REQUIREMENTS** (Please check box. →)
Standard storage time from receipt of samples:
Waters - 3 weeks
Soils - 2 months

☐ Standard Storage
☐ Extended Storage
Specify Disposal Date:
Note: Extended storage incurs a fee and requires a signed agreement.

*** TURNAROUND** (Please check box. →)
(Not all tests can be expedited, contact Client Services for more information)

☐ 5+ days (no surcharge)
☐ 3 day (+15%)
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Comments:

ALS Use Only Lab ID	Sample ID	Depth	Date/Time	No. Bottles	MATRIX: Soil/Solid(S) Water(W) Sediments (SD), Dust (D), Product (P), Biota (B), Biosolid (BS)	Table 1: Basic	Table 2: Comprehensive	Table 3: Chip tray Incubation	Table 4: Optional PFAS / OP	Table 5: Optional PCB analysis	Settleability 10% (EA151-10)	Lab QC (additional bottles req.) Dup	Lab QC (additional bottles req.) MS	Additional Information (Comment on hazards - e.g., asbestos, known high contamination)
70	SH16C 1-1.5		10/2/26	3	S	X						☐	☐	
71	SH7 0-0.5		11/2/26	7	"	X	X					☐	☐	
72	SH7 0.5-1		"	7	"	X	X					☐	☐	
73	SH7 1-1.5		"	3	"	X						☐	☐	
74	SH7 1.5-2		"	3	"	X						☐	☐	
75	SH7 2-2.5		"	3	"	X						☐	☐	
76	SH12 0-0.5		"	7	"	X	X					☐	☐	
77	SH12 0.5-1		"	7	"	X						☐	☐	
78	SH12 1-1.5		"	3	"	X						☐	☐	
79	SH12 1.5-2		"	3	"	X						☐	☐	

Receipt Detail (Lab Use ONLY)	Chilling Method:	Ice: Frozen / Melted	Ice Bricks: Frozen / Thawed	None	Sample Temp at Receipt: °C °C °C
Security Seal Intact (circle)	Yes / No / NA(None)	Carrier Details	☐ Courier/Post	☐ Client	Con Note #
Packaging: (Circle)	Hard Esky	Foam Esky	Box/Bag/Other		Count # # #

Relinquished by:		Signature:		Date/ Time:	
Relinquished by:		Signature:		Date/ Time:	
Received by:		Signature		Date/ Time:	
Received by:		Signature		Date/ Time:	

CHAIN OF CUSTODY

Mandatory Fields

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OFFICE: (Invoiced Office)		ALS QUOTE # (Client PL if blank)	EB26BMTWBM0001	PURCHASE ORDER NO.:	
PROJECT NO./PROJECT:	004043 Shute Harbour SAP			SITE:	
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CoC #: (if applicable)

BIOSECURITY

Country of Origin: (If not Australia)

*** STORAGE REQUIREMENTS** (Please check box. →)
Standard Storage time from receipt of samples: Waters - 3 weeks; Soils - 2 months
☐ Standard Storage
☐ Extended Storage
Specify Disposal Date:
Note: Extended storage incurs a fee and requires a signed agreement.

*** TURNAROUND** (Please check box. →) (Not all tests can be expedited, contact Client Services for more information)
☐ 5+ days (no surcharge)
☐ 3 day (+15%)
☐ 2 day (+30%)
☐ 1 day (+50%)

***ANALYSIS REQUIRED**
(NB. ALS Quote No. and/or Analysis Suite Codes must be listed to attract suite/quoted price)
Where Metals are required, specify Total (unfiltered bottle required) or Dissolved (field filtered bottle required).
Mark an X in the boxes below analysis to indicate the parameter listed above to be tested on that sample.

WO Sticker to go here. (ALS use only)

Comments:

ALS Use Only Lab ID	Sample ID	Depth	Date/Time	No. Bottles	MATRIX: Soil/Solid(S) Water(W) Sediments (SD), Dust (D), Product (P), Biota (B), Biosolid (BS)	Table 1: Basic	Table 2: Comprehensive	Table 3: Chip tray Incubation	Table 4: Optional PFAS / OP	Table 5: Optional PCB analysis	Settleability 10% (EA151-10)							Lab QC (additional bottles req.) Dup	Lab QC (additional bottles req.) MS	Additional Information (Comment on hazards - e.g., asbestos, known high contamination)
80	SH12 2-2.5		11/2/26	3	S	X												☐	☐	
81	SH12 0-1		"	1	"						X							☐	☐	
82	SH12 1-2		"	1	"						X							☐	☐	
83	SH12 2-3		"	1	"						X							☐	☐	
84	SH15 0.-0.5		"	7	"	X	X											☐	☐	
85	SH15 0.5-1		"	7	"	X	X											☐	☐	
86	SH15 1-1.5		"	3	"	X												☐	☐	
87	SH15 1.5-2		"	3	"	X												☐	☐	
88	SH2 0-0.5		"	7	"	X	X			X								☐	☐	
89	SH2 0.5-1		"	7	"	X	X			X								☐	☐	

Receipt Detail (Lab Use ONLY): Chilling Method: Ice: Frozen / Melted; Ice Bricks: Frozen / Thawed; None
Sample Temp at Receipt: °C °C °C
Security Seal Intact (circle): Yes / No / NA(None)
Carrier Details: ☐ Courier/Post ☐ Client
Con Note #
Packaging: (Circle) Hard Esky; Foam Esky; Box/Bag/Other
Count # # #

Relinquished by:	Signature:	Date/ Time:	Received by: Signature Date/ Time:
Relinquished by:	Signature:	Date/ Time:	Received by: Signature Date/ Time:

CHAIN OF CUSTODY

Mandatory Fields

Page ___of___

CoC #: *(if applicable)*

CLIENT CODE:	BMTWBM	*PROJECT MANAGER:	Mackenzie Stacey	SAMPLER:	Craig Heatherington/ Elyssa McLeod
*CLIENT:	BMT COMMERCIAL AUSTRALIA PTY LTD	*PM MOBILE:	477926858	SAMPLER MOBILE:	0405411707/0416402720
OFFICE: *(Invoiced Office)*		ALS QUOTE # *(Client PL if blank)*	EB26BMTWBM0001	PURCHASE ORDER NO.:	
PROJECT NO./PROJECT:	004043 Shute Harbour SAP			SITE:	
*INVOICE TO: *(client default if nil)*	mackenzie.stacey@apac.bmt.org			☐ CC Invoice to PM	
*EMAIL REPORTS TO: *(default to PM if blank)*	mackenzie.stacey@apac.bmt.org;elyssa.williams@apac.bmt.org				

BIOSECURITY

Country of Origin: *(If not Australia)*

WO Sticker to go here. (ALS use only)

*** STORAGE REQUIREMENTS** *Please check box.* →

Standard Storage time from receipt of samples:
Waters - 3 weeks
Soils - 2 months

☐ Standard Storage
☐ Extended Storage
Specify Disposal Date:
Note: Extended storage incurs a fee and requires a signed agreement.

*** TURNAROUND** *Please check box.* →

(Not all tests can be expedited, contact Client Services for more information)

☐ 5+ days (no surcharge)
☐ 3 day (+15%)
☐ 2 day (+30%)
☐ 1 day (+50%)

***ANALYSIS REQUIRED**

(NB. ALS Quote No. and/or Analysis Suite Codes must be listed to attract suite/quoted price)
Where Metals are required, specify Total (unfiltered bottle required) or Dissolved (field filtered bottle required).
Mark an X in the boxes below analysis to indicate the parameter listed above to be tested on that sample.

Comments:

ALS Use Only Lab ID	Sample ID	Depth	Date/Time	No. Bottles	MATRIX: Soil/Solid(S) Water(W) Sediments (SD), Dust (D), Product (P), Biota (B), Biosolid (BS)	Table 1: Basic	Table 2: Comprehensive	Table 3: Chip tray Incubation	Table 4: Optional PFAS / OP	Table 5: Optional PCB analysis	Settleability 10% (EA151-10)							Lab QC (additional bottles req.) Dup	Lab QC (additional bottles req.) MS	Additional Information *(Comment on hazards - e.g., asbestos, known high contamination)*
90	SH2 1-1.5		11/2/26	3	S	X												☐	☐	
91	(Seawater) BMT 4043		11/2/26	2	W													☐	☐	
																		☐	☐	
																		☐	☐	
																		☐	☐	
																		☐	☐	
																		☐	☐	
																		☐	☐	
																		☐	☐	
																		☐	☐	
																		☐	☐	

Receipt Detail (Lab Use ONLY)	Chilling Method:	Ice: Frozen / Melted	Ice Bricks: Frozen / Thawed	None	Sample Temp at Receipt	°C °C °C	Security Seal Intact *(circle)* Yes / No / NA(None)

Carrier Details ☐ Courier/Post ☐ Client
Con Note #

Packaging: *(Circle)* Hard Esky Foam Esky Box/Bag/Other
Count # # #

Relinquished by:	Signature:	Date/ Time:	Received by: Signature Date/ Time:
Relinquished by:	Signature:	Date/ Time:	Received by: Signature Date/ Time:

From: Angus Williams <Angus.Williams@apac.bmt.org>
Sent: Thursday, 5 March 2026 11:31 AM
To: Nathan King <Nathan.King@alsglobal.com>
Cc: Mackenzie Stacey <Mackenzie.Stacey@apac.bmt.org>
Subject: RE: [EXTERNAL] - RE: Shute Harbour SAP EB2605255 delay

Hey Nathan,

Can you please proceed with the ANC corroboration testing on all samples except :

EB2605255006
EB2605255007
EB2605255008
EB2605255009
EB2605255010
EB2605255011
EB2605255012
EB2605255013
EB2605255014
EB2605255015
EB2605255044
EB2605255065
EB2605255066
EB2605255067
EB2605255068
EB2605255069
EB2605255070

This should leave 66 samples to receive ANC corroboration.

Many thanks,

Angus Williams

Senior Environmental Scientist
BMT

Tel: +61 (0) 7 3831 6744
Fax: +61 (0) 7 3832 3627
Website: www.bmt.org

BMT

Environmental Division
Brisbane
Work Order Reference
EB2608381

Telephone : +61-7-3552-8688

Annex C QA/QC RPD Results

BMT Pty Ltd
Shute Harbour SAP

QAQC Results

				Acid Sulphate Soils						Acid Sulphate Soils - Acid Base Accounting	Acid Sulphate Soils - Acidity Trail		Acid Sulphate Soils - ANC			Acid Sulphate Soils - Liming Rate			Acid Sulphate Soils - Potential Acidity									
				Net Acidity - (Excluding ANC)	HCl Extractable Sulfur Correction Factor	Net Acidity (Acidity Units) - CRS Suite	Net Acidity (Sulfur Units) - CRS Suite	s-CRS Suite - Net Acidity - NASSG (Excluding ANC)	pH (KCl)	ANC Fineness Factor	Titratable Actual Acidity (sulfur units)	Titratable Actual Acidity	Acid Neutralising Capacity (acidity units)	Acid Neutralising Capacity	Acid Neutralising Capacity (sulfur units)	CRS Suite - Liming Rate	Liming Rate	Liming Rate excluding ANC	Chromium Reducible Sulphur (acidity units)	Chromium Reducible Sulfur	% Clay*	+1180µm	+150µm	+19.0mm	+2.36mm	+300µm	+37.5mm	+4.75mm
				MOL H+/T	FACTOR	MOL H+/T	% S	% S	-	-	%S	mole H+/t	mole H+/t	%CaCO3	%S	KG CACO3/T	kg CaCO3/t	kg CaCO3/t	mole H+/t	%S	%	%	%	%	%	%	%	%
EQL				10	1	10	0.02	0.02	0.1	0.5	0.003	2	2	0.01	0.01	1	1	1	3	0.005	2.5	1	1	1	1	1	1	1
Lab Report Number	**Field ID**	**Date**	**Matrix Type**																									
EB2605255	**SH14A 0.5-1**	**08 Feb 2026**	**Soil**	411		<10	<0.02	0.66	8.8	1.5	<0.02	<2	4,120	20.6	6.60		<1	31	411	0.659		2	8	<1	<1	6	<1	<1
EB2605255	**SH14C 0.5-1**	**08 Feb 2026**	**Soil**	351		<10	<0.02	0.56	8.9	1.5	<0.02	<2	5,110	25.6	8.19		<1	26	351	0.562		3	10	<1	<1	8	<1	<1
RPD				16		0	0	16	1	0	0	0	21	22	22		0	18	16	16		40	22	0	0	29	0	0
EB2605255	**SH14A 0.5-1**	**08 Feb 2026**	**Soil**	411		<10	<0.02	0.66	8.8	1.5	<0.02	<2	4,120	20.6	6.60		<1	31	411	0.659		2	8	<1	<1	6	<1	<1
EB2605255	**SH14B 0.5-1**	**08 Feb 2026**	**Soil**	498		<10	<0.02	0.80	8.9	1.5	<0.02	<2	4,370	21.9	7.00		<1	37	498	0.799		<1	5	<1	<1	3	<1	<1
RPD				19		0	0	19	1	0	0	0	6	6	6		0	18	19	19		67	46	0	0	67	0	0
EB2605255	**SH14A 0-0.5**	**08 Feb 2026**	**Soil**	189		<10	<0.02	0.30	9.0	1.5	<0.02	<2	8,040	40.3	12.9		<1	14	189	0.303		8	24	<1	3	19	<1	<1
EB2605255	**SH14C 0-0.5**	**08 Feb 2026**	**Soil**	194		<10	<0.02	0.31	9.2	1.5	<0.02	<2	9,280	46.4	14.9		<1	15	194	0.310		10	39	<1	3	29	<1	<1
RPD				3		0	0	3	2	0	0	0	14	14	14		0	7	3	2		22	48	0	0	42	0	0
EB2605255	**SH14A 0-0.5**	**08 Feb 2026**	**Soil**	189		<10	<0.02	0.30	9.0	1.5	<0.02	<2	8,040	40.3	12.9		<1	14	189	0.303		8	24	<1	3	19	<1	<1
EB2605255	**SH14B 0-0.5**	**08 Feb 2026**	**Soil**	178		<10	<0.02	0.29	9.2	1.5	<0.02	<2	9,210	46.1	14.8		<1	13	178	0.286		11	37	<1	4	29	<1	<1
RPD				6		0	0	3	2	0	0	0	14	13	14		0	7	6	6		32	43	0	29	42	0	0
EB2605255	**SH14A 1.5-2**	**08 Feb 2026**	**Soil**	499		<10	<0.02	0.80	8.7	1.5	<0.02	<2	2,470	12.3	3.95		<1	37	499	0.800		1	4	<1	<1	3	<1	<1
EB2605255	**SH14C 1.5-2**	**08 Feb 2026**	**Soil**	653		<10	<0.02	1.05	8.8	1.5	<0.02	<2	2,630	13.2	4.22		<1	49	653	1.05		2	7	<1	1	6	<1	<1
RPD				27		0	0	27	1	0	0	0	6	7	7		0	28	27	27		67	55	0	0	67	0	0
EB2605255	**SH14A 1.5-2**	**08 Feb 2026**	**Soil**	499		<10	<0.02	0.80	8.7	1.5	<0.02	<2	2,470	12.3	3.95		<1	37	499	0.800		1	4	<1	<1	3	<1	<1
EB2605255	**SH14B 1.5-2**	**08 Feb 2026**	**Soil**	625		<10	<0.02	1.00	8.8	1.5	<0.02	<2	2,390	12.0	3.83		<1	47	625	1.00		2	6	<1	1	5	<1	<1
RPD				22		0	0	22	1	0	0	0	3	2	3		0	24	22	22		67	40	0	0	50	0	0
EB2605255	**SH14A 1-1.5**	**08 Feb 2026**	**Soil**	595		<10	<0.02	0.95	8.8	1.5	<0.02	<2	3,320	16.6	5.32		<1	45	595	0.954		2	8	<1	<1	6	<1	<1
EB2605255	**SH14C 1-1.5**	**08 Feb 2026**	**Soil**	446		<10	<0.02	0.72	8.8	1.5	<0.02	<2	3,560	17.8	5.71		<1	33	446	0.715		1	7	<1	<1	6	<1	<1
RPD				29		0	0	28	0	0	0	0	7	7	7		0	31	29	29		67	13	0	0	0	0	0
EB2605255	**SH14A 1-1.5**	**08 Feb 2026**	**Soil**	595		<10	<0.02	0.95	8.8	1.5	<0.02	<2	3,320	16.6	5.32		<1	45	595	0.954		2	8	<1	<1	6	<1	<1
EB2605255	**SH14B 1-1.5**	**08 Feb 2026**	**Soil**	671		<10	<0.02	1.08	8.8	1.5	<0.02	<2	2,570	12.9	4.13		<1	50	671	1.08		<1	2	<1	<1	1	<1	<1
RPD				12		0	0	13	0	0	0	0	25	25	25		0	11	12	12		67	120	0	0	143	0	0
EB2605255	**SH14A 2-2.5**	**08 Feb 2026**	**Soil**	549		<10	<0.02	0.88	8.6	1.5	<0.02	<2	2,150	10.8	3.45		<1	41	549	0.881		<1	3	<1	<1	3	<1	<1
EB2605255	**SH14C 2-2.5**	**08 Feb 2026**	**Soil**	452		<10	<0.02	0.72	8.8	1.5	<0.02	<2	2,110	10.6	3.39		<1	34	452	0.724		1	4	<1	<1	3	<1	<1
RPD				19		0	0	20	2	0	0	0	2	2	2		0	19	19	20		0	29	0	0	0	0	0
EB2605255	**SH14A 2-2.5**	**08 Feb 2026**	**Soil**	549		<10	<0.02	0.88	8.6	1.5	<0.02	<2	2,150	10.8	3.45		<1	41	549	0.881		<1	3	<1	<1	3	<1	<1
EB2605255	**SH14B 2-2.5**	**08 Feb 2026**	**Soil**	616		<10	<0.02	0.99	8.7	1.5	<0.02	<2	2,490	12.5	3.99		<1	46	616	0.988		<1	4	<1	<1	3	<1	<1
RPD				12		0	0	12	1	0	0	0	15	15	15		0	11	12	11		0	29	0	0	0	0	0
EB2605255	**SH11A 0-0.5**	**09 Feb 2026**	**Soil**	151		<10	<0.02	0.24	9.3	1.5	<0.02	<2	11,500	57.6	18.5		<1	11	151	0.242		19	47	<1	9	39	<1	4
1325676	**SH11B 0-0.5**	**09 Feb 2026**	**Soil**	180	2.0	<10	<0.02	0.29	9.1	1.5	<0.003	<2	9,100	45	15	<1		13	180	0.29	7.0						
RPD				18		0	0	19	2	0	0	0	23	25	21			17	18	18							
EB2605255	**SH16 0.5-1**	**09 Feb 2026**	**Soil**	418		<10	<0.02	0.67	9.0	1.5	<0.02	<2	6,960	34.8	11.2		<1	31	418	0.671		7	18	<1	3	15	<1	<1
EB2605255	**SH16C 0.5-1**	**10 Feb 2026**	**Soil**	434		<10	<0.02	0.70	9.1	1.5	<0.02	<2	4,600	23.0	7.38		<1	33	434	0.696		4	9	<1	2	7	<1	<1
RPD				4		0	0	4	1	0	0	0	41	41	41		0	6	4	4		55	67	0	40	73	0	0
EB2605255	**SH16 0.5-1**	**09 Feb 2026**	**Soil**	418		<10	<0.02	0.67	9.0	1.5	<0.02	<2	6,960	34.8	11.2		<1	31	418	0.671		7	18	<1	3	15	<1	<1
EB2605255	**SH16B 0.5-1**	**10 Feb 2026**	**Soil**	445		<10	<0.02	0.71	8.8	1.5	<0.02	<2	5,690	28.5	9.13		<1	33	445	0.714		8	19	<1	3	16	<1	<1
RPD				6		0	0	6	2	0	0	0	20	20	20		0	6	6	6		13	5	0	0	6	0	0
EB2605255	**SH16 0-0.5**	**09 Feb 2026**	**Soil**	180		<10	<0.02	0.29	9.2	1.5	<0.02	<2	9,110	45.6	14.6		<1	13	180	0.288		16	43	<1	7	34	<1	1
EB2605255	**SH16C 0-0.5**	**10 Feb 2026**	**Soil**	203		<10	<0.02	0.33	9.1	1.5	<0.02	<2	8,190	41.0	13.1		<1	15	203	0.325		11	35	<1	4	28	<1	1
RPD				12		0	0	13	1	0	0	0	11	11	11		0	14	12	12		37	21	0	55	19	0	0
EB2605255	**SH16 0-0.5**	**09 Feb 2026**	**Soil**	180		<10	<0.02	0.29	9.2	1.5	<0.02	<2	9,110	45.6	14.6		<1	13	180	0.288		16	43	<1	7	34	<1	1
EB2605255	**SH16B 0-0.5**	**10 Feb 2026**	**Soil**	274		<10	<0.02	0.44	9.1	1.5	<0.02	<2	9,230	46.2	14.8		<1	21	274	0.440		14	36	<1	7	30	<1	2
RPD				41		0	0	41	1	0	0	0	1	1	1		0	47	41	42		13	18	0	0	12	0	67
EB2605255	**SH16 1-1.5**	**09 Feb 2026**	**Soil**	583		<10	<0.02	0.93	8.6	1.5	<0.02	<2	3,020	15.1	4.84		<1	44	583	0.935		3	5	<1	2	5	<1	1
EB2605255	**SH16C 1-1.5**	**10 Feb 2026**	**Soil**	122		<10	<0.02	0.20	8.7	1.5	<0.02	<2	2,550	12.8	4.09		<1	9	122	0.196		2	7	<1	<1	5	<1	<1
RPD				131		0	0	129	1	0	0	0	17	16	17		0	132	131	131		40	33	0	67	0	0	0
EB2605255	**SH16 1-1.5**	**09 Feb 2026**	**Soil**	583		<10	<0.02	0.93	8.6	1.5	<0.02	<2	3,020	15.1	4.84		<1	44	583	0.935		3	5	<1	2	5	<1	1
EB2605255	**SH16B 1-1.5**	**10 Feb 2026**	**Soil**	527		<10	<0.02	0.84	8.7	1.5	<0.02	<2	2,600	13.0	4.16		<1	40	527	0.844		2	7	<1	1	6	<1	<1
RPD				10		0	0	10	1	0	0	0	15	15	15		0	10	10	10		40	33	0	67	18	0	0

Environmental Standards

***RPDs have only been considered where a concentration is greater than 1 times the EQL.**
****Elevated RPDs are highlighted as per QAQC Profile settings (Acceptable RPDs for each EQL multiplier range are: 100 (1 - 5 x EQL); 75 (5 - 10 x EQL); 50 (> 10 x EQL))**
*****Interlab Duplicates are matched on a per compound basis as methods vary between laboratories. Any methods in the row header relate to those used in the primary laboratory**

BMT Pty Ltd
Shute Harbour SAP

QAQC Results

				Particle Size												TRH							NA		Particulates	Sample Preparation	
				+425µm	+600µm	+75.0mm	+75µm	+9.5mm	<2mm Fraction	>2mm Fraction	Clay in soils <2um	Cobbles (>6cm)	Gravel (>2mm)	Sand (0.06-2.00 mm)	Silt (2-60 µm)	Density	C6-C10 Fraction (F1)	C6-C10 (F1 minus BTEX)	>C10-C16 Fraction (F2)	>C10-C16 Fraction (F2 minus Naphthalene)	>C16-C34 Fraction (F3)	>C34-C40 Fraction (F4)	>C10-C40 Fraction (Sum)	% Sand*	% Silt*	Extraneous Material	Analysed Material	C6-C9 Fraction
				%	%	%	%	%	G	G	%	%	%	%	%	g/cm3	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	%	%	%	%	mg/kg
EQL				1	1	1	1	1	0.005	0.005	1	1	1	1	1	0.01	3	3	3	3	3	5	3			0.1	0.1	3
Lab Report Number	**Field ID**	**Date**	**Matrix Type**																								
EB2605255	**SH14A 0.5-1**	**08 Feb 2026**	**Soil**	5	4	<1	10	<1			54	<1	1	10	35	2.77	<3	<3.0	<3	<3	<3	<5	<3					<3
EB2605255	**SH14C 0.5-1**	**08 Feb 2026**	**Soil**	7	6	<1	12	<1			44	<1	1	12	43	2.44	<3	<3.0	<3	<3	<3	<5	<3					<3
RPD				33	40	0	18	0			20	0	0	18	21	13	0	0	0	0	0	0	0					0
EB2605255	**SH14A 0.5-1**	**08 Feb 2026**	**Soil**	5	4	<1	10	<1			54	<1	1	10	35	2.77	<3	<3.0	<3	<3	<3	<5	<3					<3
EB2605255	**SH14B 0.5-1**	**08 Feb 2026**	**Soil**	2	2	<1	6	<1			54	<1	<1	8	38	2.64	<3	<3.0	<3	<3	<3	<5	<3					<3
RPD				86	67	0	50	0			0	0	0	22	8	5	0	0	0	0	0	0	0					0
EB2605255	**SH14A 0-0.5**	**08 Feb 2026**	**Soil**	17	14	<1	28	<1			35	<1	4	27	34	2.53	<3	<3.0	<3	<3	<3	<5	<3					<3
EB2605255	**SH14C 0-0.5**	**08 Feb 2026**	**Soil**	24	20	<1	47	<1			22	<1	5	45	28	2.43	<3	<3.0	<3	<3	<3	<5	<3					<3
RPD				34	35	0	51	0			46	0	22	50	19	4	0	0	0	0	0	0	0					0
EB2605255	**SH14A 0-0.5**	**08 Feb 2026**	**Soil**	17	14	<1	28	<1			35	<1	4	27	34	2.53	<3	<3.0	<3	<3	<3	<5	<3					<3
EB2605255	**SH14B 0-0.5**	**08 Feb 2026**	**Soil**	25	22	<1	43	<1			21	<1	6	42	31	2.48	<3	<3.0	<3	<3	<3	<5	<3					<3
RPD				38	44	0	42	0			50	0	40	43	9	2	0	0	0	0	0	0	0					0
EB2605255	**SH14A 1.5-2**	**08 Feb 2026**	**Soil**	3	2	<1	4	<1			53	<1	<1	5	42	2.50												
EB2605255	**SH14C 1.5-2**	**08 Feb 2026**	**Soil**	5	4	<1	8	<1			48	<1	1	8	43	2.14												
RPD				50	67	0	67	0			10	0	0	46	2	16												
EB2605255	**SH14A 1.5-2**	**08 Feb 2026**	**Soil**	3	2	<1	4	<1			53	<1	<1	5	42	2.50												
EB2605255	**SH14B 1.5-2**	**08 Feb 2026**	**Soil**	5	4	<1	7	<1			54	<1	1	7	38	2.62												
RPD				50	67	0	55	0			2	0	0	33	10	5												
EB2605255	**SH14A 1-1.5**	**08 Feb 2026**	**Soil**	6	5	<1	8	<1			52	<1	1	8	39	2.78												
EB2605255	**SH14C 1-1.5**	**08 Feb 2026**	**Soil**	5	4	<1	8	<1			53	<1	1	7	39	2.89												
RPD				18	22	0	0	0			2	0	0	13	0	4												
EB2605255	**SH14A 1-1.5**	**08 Feb 2026**	**Soil**	6	5	<1	8	<1			52	<1	1	8	39	2.78												
EB2605255	**SH14B 1-1.5**	**08 Feb 2026**	**Soil**	<1	<1	<1	2	<1			56	<1	<1	3	41	2.15												
RPD				143	133	0	120	0			7	0	0	91	5	26												
EB2605255	**SH14A 2-2.5**	**08 Feb 2026**	**Soil**	2	2	<1	4	<1			57	<1	<1	4	39	2.35												
EB2605255	**SH14C 2-2.5**	**08 Feb 2026**	**Soil**	3	2	<1	5	<1			58	<1	1	5	36	2.55												
RPD				40	0	0	22	0			2	0	0	22	8	8												
EB2605255	**SH14A 2-2.5**	**08 Feb 2026**	**Soil**	2	2	<1	4	<1			57	<1	<1	4	39	2.35												
EB2605255	**SH14B 2-2.5**	**08 Feb 2026**	**Soil**	3	2	<1	4	<1			56	<1	<1	5	39	2.47												
RPD				40	0	0	0	0			2	0	0	22	0	5												
EB2605255	**SH11A 0-0.5**	**09 Feb 2026**	**Soil**	34	29	<1	54	1			19	<1	12	43	26	2.39	<3	<3.0	<3	<3	<3	<5	<3					<3
1325676	**SH11B 0-0.5**	**09 Feb 2026**	**Soil**						250	40						1.6	<20	<20	<50	<50	<100	<100	<100	37	7.0	21	130	<20
RPD																40	0	0	0	0	0	0	0					0
EB2605255	**SH16 0.5-1**	**09 Feb 2026**	**Soil**	13	12	<1	20	<1			42	<1	4	17	37	2.27	<3	<3.0	<3	<3	<3	<5	<3					<3
EB2605255	**SH16C 0.5-1**	**10 Feb 2026**	**Soil**	6	6	<1	10	<1			49	<1	2	8	41	2.71	<3	<3.0	<3	<3	<3	<5	<3					<3
RPD				74	67	0	67	0			15	0	67	72	10	18	0	0	0	0	0	0	0					0
EB2605255	**SH16 0.5-1**	**09 Feb 2026**	**Soil**	13	12	<1	20	<1			42	<1	4	17	37	2.27	<3	<3.0	<3	<3	<3	<5	<3					<3
EB2605255	**SH16B 0.5-1**	**10 Feb 2026**	**Soil**	14	12	<1	22	<1			32	<1	5	18	45	2.45	<3	<3.0	<3	<3	<3	<5	<3					<3
RPD				7	0	0	10	0			27	0	22	6	20	8	0	0	0	0	0	0	0					0
EB2605255	**SH16 0-0.5**	**09 Feb 2026**	**Soil**	29	26	<1	50	<1			23	<1	9	45	23	2.33	<3	<3.0	<3	<3	<3	<5	<3					<3
EB2605255	**SH16C 0-0.5**	**10 Feb 2026**	**Soil**	24	20	<1	40	<1			23	<1	6	35	36	2.41	<3	<3.0	<3	<3	<3	<5	<3					<3
RPD				19	26	0	22	0			0	0	40	25	44	3	0	0	0	0	0	0	0					0
EB2605255	**SH16 0-0.5**	**09 Feb 2026**	**Soil**	29	26	<1	50	<1			23	<1	9	45	23	2.33	<3	<3.0	<3	<3	<3	<5	<3					<3
EB2605255	**SH16B 0-0.5**	**10 Feb 2026**	**Soil**	26	23	<1	40	<1			24	<1	9	33	34	2.42	<3	<3.0	<3	<3	<3	<5	<3					<3
RPD				11	12	0	22	0			4	0	0	31	39	4	0	0	0	0	0	0	0					0
EB2605255	**SH16 1-1.5**	**09 Feb 2026**	**Soil**	4	4	<1	5	<1			57	<1	3	3	37	2.07												
EB2605255	**SH16C 1-1.5**	**10 Feb 2026**	**Soil**	4	3	<1	8	<1			30	<1	1	8	61	2.40												
RPD				0	29	0	46	0			62	0	100	91	49	15												
EB2605255	**SH16 1-1.5**	**09 Feb 2026**	**Soil**	4	4	<1	5	<1			57	<1	3	3	37	2.07												
EB2605255	**SH16B 1-1.5**	**10 Feb 2026**	**Soil**	5	4	<1	8	<1			48	<1	2	7	43	1.96												
RPD				22	0	0	46	0			17	0	40	80	15	5												

Environmental Standards

***RPDs have only been considered where a concentration is greater than 1 times the EQL.**
****Elevated RPDs are highlighted as per QAQC Profile settings (Acceptable RPDs for each EQL multiplier range**
*****Interlab Duplicates are matched on a per compound basis as methods vary between laboratories. Any m**

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QAQC Results

				TPH				BTEX								PAHs													
				C10-C14 Fraction	C15-C28 Fraction	C29-C36 Fraction	C10-C36 Fraction (Sum)	Naphthalene (VOC)	Benzene	Toluene	Ethylbenzene	Xylene (m & p)	Xylene (o)	Xylene Total	Total BTEX	2-methylnaphthalene	Acenaphthene	Acenaphthylene	Anthracene	Coronene	Benzo(a)anthracene	Benzo(a) pyrene	Benzo(b+j)fluoranthene	Benzo(e)pyrene	Benzo(g,h,i)perylene	Benzo(k)fluoranthene	Chrysene	Dibenz(a,h)anthracene
				mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
EQL				3	3	5	3	0.2	0.1	0.1	0.1	0.2	0.1	0.3	0.2	0.005	0.004	0.004	0.004	0.005	0.004	0.004	0.004	0.004	0.004	0.004	0.004	0.004	0.004
Lab Report Number	**Field ID**	**Date**	**Matrix Type**																										
EB2605255	**SH14A 0.5-1**	**08 Feb 2026**	**Soil**	<3	<3	<5	<3	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.5	<0.2	<0.005	<0.004	<0.004	<0.004	<0.005	<0.004	<0.004	<0.004	<0.004	<0.004	<0.004	<0.004	<0.004	<0.004
EB2605255	**SH14C 0.5-1**	**08 Feb 2026**	**Soil**	<3	<3	<5	<3	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.5	<0.2	<0.005	<0.004	<0.004	<0.004	<0.005	<0.004	<0.004	<0.004	<0.004	<0.004	<0.004	<0.004	<0.004	<0.004
RPD				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
EB2605255	**SH14A 0.5-1**	**08 Feb 2026**	**Soil**	<3	<3	<5	<3	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.5	<0.2	<0.005	<0.004	<0.004	<0.004	<0.005	<0.004	<0.004	<0.004	<0.004	<0.004	<0.004	<0.004	<0.004	<0.004
EB2605255	**SH14B 0.5-1**	**08 Feb 2026**	**Soil**	<3	<3	<5	<3	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.5	<0.2	<0.005	<0.004	<0.004	<0.004	<0.005	<0.004	<0.004	<0.004	<0.004	<0.004	<0.004	<0.004	<0.004	<0.004
RPD				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
EB2605255	**SH14A 0-0.5**	**08 Feb 2026**	**Soil**	<3	<3	<5	<3	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.5	<0.2	<0.005	<0.004	<0.004	<0.004	<0.005	<0.004	<0.004	<0.004	<0.004	<0.004	<0.004	<0.004	<0.004	<0.004
EB2605255	**SH14C 0-0.5**	**08 Feb 2026**	**Soil**	<3	<3	<5	<3	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.5	<0.2	<0.005	<0.004	<0.004	<0.004	<0.005	<0.004	<0.004	<0.004	<0.004	<0.004	<0.004	<0.004	<0.004	<0.004
RPD				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
EB2605255	**SH14A 0-0.5**	**08 Feb 2026**	**Soil**	<3	<3	<5	<3	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.5	<0.2	<0.005	<0.004	<0.004	<0.004	<0.005	<0.004	<0.004	<0.004	<0.004	<0.004	<0.004	<0.004	<0.004	<0.004
EB2605255	**SH14B 0-0.5**	**08 Feb 2026**	**Soil**	<3	<3	<5	<3	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.5	<0.2	<0.005	<0.004	<0.004	<0.004	<0.005	<0.004	<0.004	<0.004	<0.004	<0.004	<0.004	<0.004	<0.004	<0.004
RPD				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
EB2605255	**SH14A 1.5-2**	**08 Feb 2026**	**Soil**																										
EB2605255	**SH14C 1.5-2**	**08 Feb 2026**	**Soil**																										
RPD																													
EB2605255	**SH14A 1.5-2**	**08 Feb 2026**	**Soil**																										
EB2605255	**SH14B 1.5-2**	**08 Feb 2026**	**Soil**																										
RPD																													
EB2605255	**SH14A 1-1.5**	**08 Feb 2026**	**Soil**																										
EB2605255	**SH14C 1-1.5**	**08 Feb 2026**	**Soil**																										
RPD																													
EB2605255	**SH14A 1-1.5**	**08 Feb 2026**	**Soil**																										
EB2605255	**SH14B 1-1.5**	**08 Feb 2026**	**Soil**																										
RPD																													
EB2605255	**SH14A 2-2.5**	**08 Feb 2026**	**Soil**																										
EB2605255	**SH14C 2-2.5**	**08 Feb 2026**	**Soil**																										
RPD																													
EB2605255	**SH14A 2-2.5**	**08 Feb 2026**	**Soil**																										
EB2605255	**SH14B 2-2.5**	**08 Feb 2026**	**Soil**																										
RPD																													
EB2605255	**SH11A 0-0.5**	**09 Feb 2026**	**Soil**	<3	<3	<5	<3	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.5	<0.2	<0.005	<0.004	<0.004	<0.004	<0.005	<0.004	<0.004	<0.004	<0.004	<0.004	<0.004	<0.004	<0.004	<0.004
1325676	**SH11B 0-0.5**	**09 Feb 2026**	**Soil**	<20	<50	<50	<50	<0.5	<0.1	<0.1	<0.1	<0.2	<0.1	<0.3		<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
RPD				0	0	0	0	0	0	0	0	0	0	0		0	0	0	0	0	0	0	0	0	0	0	0	0	0
EB2605255	**SH16 0.5-1**	**09 Feb 2026**	**Soil**	<3	<3	<5	<3	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.5	<0.2	<0.005	<0.004	<0.004	<0.004	<0.005	<0.004	<0.004	<0.004	<0.004	<0.004	<0.004	<0.004	<0.004	<0.004
EB2605255	**SH16C 0.5-1**	**10 Feb 2026**	**Soil**	<3	<3	<5	<3	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.5	<0.2	<0.005	<0.004	<0.004	<0.004	<0.005	<0.004	<0.004	<0.004	<0.004	<0.004	<0.004	<0.004	<0.004	<0.004
RPD				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
EB2605255	**SH16 0.5-1**	**09 Feb 2026**	**Soil**	<3	<3	<5	<3	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.5	<0.2	<0.005	<0.004	<0.004	<0.004	<0.005	<0.004	<0.004	<0.004	<0.004	<0.004	<0.004	<0.004	<0.004	<0.004
EB2605255	**SH16B 0.5-1**	**10 Feb 2026**	**Soil**	<3	<3	<5	<3	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.5	<0.2	<0.005	<0.004	<0.004	<0.004	<0.005	<0.004	<0.004	<0.004	<0.004	<0.004	<0.004	<0.004	<0.004	<0.004
RPD				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
EB2605255	**SH16 0-0.5**	**09 Feb 2026**	**Soil**	<3	<3	<5	<3	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.5	<0.2	<0.005	<0.004	<0.004	<0.004	<0.005	<0.004	<0.004	<0.004	<0.004	<0.004	<0.004	<0.004	<0.004	<0.004
EB2605255	**SH16C 0-0.5**	**10 Feb 2026**	**Soil**	<3	<3	<5	<3	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.5	<0.2	<0.005	<0.004	<0.004	<0.004	<0.005	<0.004	<0.004	<0.004	<0.004	<0.004	<0.004	<0.004	<0.004	<0.004
RPD				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
EB2605255	**SH16 0-0.5**	**09 Feb 2026**	**Soil**	<3	<3	<5	<3	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.5	<0.2	<0.005	<0.004	<0.004	<0.004	<0.005	<0.004	<0.004	<0.004	<0.004	<0.004	<0.004	<0.004	<0.004	<0.004
EB2605255	**SH16B 0-0.5**	**10 Feb 2026**	**Soil**	<3	<3	<5	<3	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.5	<0.2	<0.005	<0.004	<0.004	<0.004	<0.005	<0.004	<0.004	<0.004	<0.004	<0.004	<0.004	<0.004	<0.004	<0.004
RPD				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
EB2605255	**SH16 1-1.5**	**09 Feb 2026**	**Soil**																										
EB2605255	**SH16C 1-1.5**	**10 Feb 2026**	**Soil**																										
RPD																													
EB2605255	**SH16 1-1.5**	**09 Feb 2026**	**Soil**																										
EB2605255	**SH16B 1-1.5**	**10 Feb 2026**	**Soil**																										
RPD																													

Environmental Standards

***RPDs have only been considered where a concentration is greater than 1 times the EQL.**
****Elevated RPDs are highlighted as per QAQC Profile settings (Acceptable RPDs for each EQL multiplier range**
*****Interlab Duplicates are matched on a per compound basis as methods vary between laboratories. Any m**

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QAQC Results

															Halogenated Benzenes	Metals											
				Fluoranthene	Fluorene	Indeno(1,2,3-c,d)pyrene	Naphthalene	Phenanthrene	Perylene	Pyrene	Benzo(a)pyrene TEQ calc (Half)	Benzo(a)pyrene TEQ (LOR)	Benzo(a)pyrene TEQ calc (Zero)	PAHs (Sum of total)	Hexachlorobenzene	Aluminium	Antimony	Arsenic	Cadmium	Chromium (III+VI)	Cobalt	Copper	Iron	Lead	Manganese	Mercury	Nickel	Selenium
				mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
EQL				0.004	0.004	0.004	0.005	0.004	0.004	0.004	0.004	0.004	0.004	0.004	0.0005	20	0.5	1	0.1	1	0.5	1	20	1	5	0.01	1	0.1
Lab Report Number	**Field ID**	**Date**	**Matrix Type**																									
EB2605255	**SH14A 0.5-1**	**08 Feb 2026**	**Soil**	<0.004	<0.004	<0.004	<0.005	<0.004	<0.004	<0.004	0.005	0.01	<0.004	<0.004	<0.00050	10,200	<0.50	10.7	<0.1	22.2	6.5	6.8	21,100	8.3	235	<0.01	10.8	0.7
EB2605255	**SH14C 0.5-1**	**08 Feb 2026**	**Soil**	<0.004	<0.004	<0.004	<0.005	<0.004	<0.004	<0.004	0.005	0.01	<0.004	<0.004	<0.00050	8,930	<0.50	9.91	<0.1	19.4	5.9	6.0	16,900	8.3	250	<0.01	9.8	0.8
RPD				0	0	0	0	0	0	0	0	0	0	0	0	13	0	8	0	13	10	12	22	0	6	0	10	13
EB2605255	**SH14A 0.5-1**	**08 Feb 2026**	**Soil**	<0.004	<0.004	<0.004	<0.005	<0.004	<0.004	<0.004	0.005	0.01	<0.004	<0.004	<0.00050	10,200	<0.50	10.7	<0.1	22.2	6.5	6.8	21,100	8.3	235	<0.01	10.8	0.7
EB2605255	**SH14B 0.5-1**	**08 Feb 2026**	**Soil**	<0.004	<0.004	<0.004	<0.005	<0.004	<0.004	<0.004	0.005	0.01	<0.004	<0.004	<0.00050	8,890	<0.50	12.4	<0.1	20.2	6.4	6.9	18,500	9.6	321	<0.01	10.4	0.9
RPD				0	0	0	0	0	0	0	0	0	0	0	0	14	0	15	0	9	2	1	13	15	31	0	4	25
EB2605255	**SH14A 0-0.5**	**08 Feb 2026**	**Soil**	<0.004	<0.004	<0.004	<0.005	<0.004	<0.004	<0.004	0.005	0.01	<0.004	<0.004	<0.00050	4,670	<0.50	6.83	<0.1	12.2	2.8	3.1	7,340	4.1	151	<0.01	5.5	0.5
EB2605255	**SH14C 0-0.5**	**08 Feb 2026**	**Soil**	<0.004	<0.004	<0.004	<0.005	<0.004	<0.004	<0.004	0.005	0.01	<0.004	<0.004	<0.00050	5,880	<0.50	7.12	<0.1	14.8	3.6	3.6	8,710	4.8	173	<0.01	6.7	0.6
RPD				0	0	0	0	0	0	0	0	0	0	0	0	23	0	4	0	19	25	15	17	16	14	0	20	18
EB2605255	**SH14A 0-0.5**	**08 Feb 2026**	**Soil**	<0.004	<0.004	<0.004	<0.005	<0.004	<0.004	<0.004	0.005	0.01	<0.004	<0.004	<0.00050	4,670	<0.50	6.83	<0.1	12.2	2.8	3.1	7,340	4.1	151	<0.01	5.5	0.5
EB2605255	**SH14B 0-0.5**	**08 Feb 2026**	**Soil**	<0.004	<0.004	<0.004	<0.005	<0.004	<0.004	<0.004	0.005	0.01	<0.004	<0.004	<0.00050	4,060	<0.50	5.51	<0.1	11.2	2.5	2.8	6,490	4.1	165	<0.01	4.9	0.5
RPD				0	0	0	0	0	0	0	0	0	0	0	0	14	0	21	0	9	11	10	12	0	9	0	12	0
EB2605255	**SH14A 1.5-2**	**08 Feb 2026**	**Soil**																									
EB2605255	**SH14C 1.5-2**	**08 Feb 2026**	**Soil**																									
RPD																												
EB2605255	**SH14A 1.5-2**	**08 Feb 2026**	**Soil**																									
EB2605255	**SH14B 1.5-2**	**08 Feb 2026**	**Soil**																									
RPD																												
EB2605255	**SH14A 1-1.5**	**08 Feb 2026**	**Soil**																									
EB2605255	**SH14C 1-1.5**	**08 Feb 2026**	**Soil**																									
RPD																												
EB2605255	**SH14A 1-1.5**	**08 Feb 2026**	**Soil**																									
EB2605255	**SH14B 1-1.5**	**08 Feb 2026**	**Soil**																									
RPD																												
EB2605255	**SH14A 2-2.5**	**08 Feb 2026**	**Soil**																									
EB2605255	**SH14C 2-2.5**	**08 Feb 2026**	**Soil**																									
RPD																												
EB2605255	**SH14A 2-2.5**	**08 Feb 2026**	**Soil**																									
EB2605255	**SH14B 2-2.5**	**08 Feb 2026**	**Soil**																									
RPD																												
EB2605255	**SH11A 0-0.5**	**09 Feb 2026**	**Soil**	<0.004	<0.004	<0.004	<0.005	<0.004	<0.004	<0.004	0.005	0.01	<0.004	<0.004	<0.00050	5,330	<0.50	6.82	<0.1	13.2	3.2	3.5	8,310	4.8	165	<0.01	6.3	0.6
1325676	**SH11B 0-0.5**	**09 Feb 2026**	**Soil**	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005				<0.005	<0.001	6,800	<0.5	6.1	<0.1	12	<5	3.4	8,700	4.8	130	<0.01	6.1	<2
RPD				0	0	0	0	0	0	0				0	0	24	0	11	0	10	0	3	5	0	24	0	3	0
EB2605255	**SH16 0.5-1**	**09 Feb 2026**	**Soil**	<0.004	<0.004	<0.004	<0.005	<0.004	<0.004	<0.004	0.005	0.01	<0.004	<0.004	<0.00050	7,610	<0.50	8.29	<0.1	16.6	4.8	5.1	14,200	6.7	188	<0.01	8.3	0.7
EB2605255	**SH16C 0.5-1**	**10 Feb 2026**	**Soil**	<0.004	<0.004	<0.004	<0.005	<0.004	<0.004	<0.004	0.005	0.01	<0.004	<0.004	<0.00050	10,700	<0.50	9.14	<0.1	20.7	7.0	7.6	23,200	9.6	228	<0.01	11.2	0.7
RPD				0	0	0	0	0	0	0	0	0	0	0	0	34	0	10	0	22	37	39	48	36	19	0	30	0
EB2605255	**SH16 0.5-1**	**09 Feb 2026**	**Soil**	<0.004	<0.004	<0.004	<0.005	<0.004	<0.004	<0.004	0.005	0.01	<0.004	<0.004	<0.00050	7,610	<0.50	8.29	<0.1	16.6	4.8	5.1	14,200	6.7	188	<0.01	8.3	0.7
EB2605255	**SH16B 0.5-1**	**10 Feb 2026**	**Soil**	<0.004	<0.004	<0.004	<0.005	<0.004	<0.004	<0.004	0.005	0.01	<0.004	<0.004	<0.00050	8,770	<0.50	8.20	<0.1	17.0	4.5	4.5	15,100	6.4	189	<0.01	8.1	0.7
RPD				0	0	0	0	0	0	0	0	0	0	0	0	14	0	1	0	2	6	12	6	5	1	0	2	0
EB2605255	**SH16 0-0.5**	**09 Feb 2026**	**Soil**	<0.004	<0.004	<0.004	<0.005	<0.004	<0.004	<0.004	0.005	0.01	<0.004	<0.004	<0.00050	6,650	<0.50	6.84	<0.1	14.7	3.6	4.1	9,920	5.4	167	<0.01	7.3	0.6
EB2605255	**SH16C 0-0.5**	**10 Feb 2026**	**Soil**	<0.004	<0.004	<0.004	<0.005	<0.004	<0.004	<0.004	0.005	0.01	<0.004	<0.004	<0.00050	5,310	<0.50	6.27	<0.1	11.4	2.7	3.0	8,360	4.4	142	<0.01	5.4	0.6
RPD				0	0	0	0	0	0	0	0	0	0	0	0	22	0	9	0	25	29	31	17	20	16	0	30	0
EB2605255	**SH16 0-0.5**	**09 Feb 2026**	**Soil**	<0.004	<0.004	<0.004	<0.005	<0.004	<0.004	<0.004	0.005	0.01	<0.004	<0.004	<0.00050	6,650	<0.50	6.84	<0.1	14.7	3.6	4.1	9,920	5.4	167	<0.01	7.3	0.6
EB2605255	**SH16B 0-0.5**	**10 Feb 2026**	**Soil**	<0.004	<0.004	<0.004	<0.005	<0.004	<0.004	<0.004	0.005	0.01	<0.004	<0.004	<0.00050	6,360	<0.50	6.40	<0.1	14.6	3.6	3.9	9,560	5.1	154	<0.01	7.0	0.5
RPD				0	0	0	0	0	0	0	0	0	0	0	0	4	0	7	0	1	0	5	4	6	8	0	4	18
EB2605255	**SH16 1-1.5**	**09 Feb 2026**	**Soil**																									
EB2605255	**SH16C 1-1.5**	**10 Feb 2026**	**Soil**																									
RPD																												
EB2605255	**SH16 1-1.5**	**09 Feb 2026**	**Soil**																									
EB2605255	**SH16B 1-1.5**	**10 Feb 2026**	**Soil**																									
RPD																												

Environmental Standards

***RPDs have only been considered where a concentration is greater than 1 times the EQL.**
****Elevated RPDs are highlighted as per QAQC Profile settings (Acceptable RPDs for each EQL multiplier range**
*****Interlab Duplicates are matched on a per compound basis as methods vary between laboratories. Any m**

BMT Pty Ltd
Shute Harbour SAP

QAQC Results

							Organic	Organochlorine Pesticides																					
				Silver	Vanadium	Zinc	Total Organic Carbon	4,4-DDE	a-BHC	Aldrin	Aldrin + Dieldrin	b-BHC	Chlordane	Chlordane (cis)	Chlordane (trans)	d-BHC	DDD	DDT	DDT+DDE+DDD	Dieldrin	Endosulfan	Endosulfan I	Endosulfan II	Endosulfan sulphate	Endrin	Endrin aldehyde	Endrin ketone	g-BHC (Lindane)
				mg/kg	mg/kg	mg/kg	%	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
EQL				0.1	2	1	0.02	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.00025
Lab Report Number	**Field ID**	**Date**	**Matrix Type**																									
EB2605255	**SH14A 0.5-1**	**08 Feb 2026**	**Soil**	<0.1	29.8	23.9	0.71	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00025
EB2605255	**SH14C 0.5-1**	**08 Feb 2026**	**Soil**	<0.1	25.7	21.0	0.67	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00025
RPD				0	15	13	6	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
EB2605255	**SH14A 0.5-1**	**08 Feb 2026**	**Soil**	<0.1	29.8	23.9	0.71	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00025
EB2605255	**SH14B 0.5-1**	**08 Feb 2026**	**Soil**	<0.1	28.3	22.2	0.71	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00025
RPD				0	5	7	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
EB2605255	**SH14A 0-0.5**	**08 Feb 2026**	**Soil**	<0.1	14.4	11.7	0.53	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00025
EB2605255	**SH14C 0-0.5**	**08 Feb 2026**	**Soil**	<0.1	17.7	14.5	0.49	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00025
RPD				0	21	21	8	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
EB2605255	**SH14A 0-0.5**	**08 Feb 2026**	**Soil**	<0.1	14.4	11.7	0.53	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00025
EB2605255	**SH14B 0-0.5**	**08 Feb 2026**	**Soil**	<0.1	13.0	10.5	0.46	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00025
RPD				0	10	11	14	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
EB2605255	**SH14A 1.5-2**	**08 Feb 2026**	**Soil**																									
EB2605255	**SH14C 1.5-2**	**08 Feb 2026**	**Soil**																									
RPD																												
EB2605255	**SH14A 1.5-2**	**08 Feb 2026**	**Soil**																									
EB2605255	**SH14B 1.5-2**	**08 Feb 2026**	**Soil**																									
RPD																												
EB2605255	**SH14A 1-1.5**	**08 Feb 2026**	**Soil**																									
EB2605255	**SH14C 1-1.5**	**08 Feb 2026**	**Soil**																									
RPD																												
EB2605255	**SH14A 1-1.5**	**08 Feb 2026**	**Soil**																									
EB2605255	**SH14B 1-1.5**	**08 Feb 2026**	**Soil**																									
RPD																												
EB2605255	**SH14A 2-2.5**	**08 Feb 2026**	**Soil**																									
EB2605255	**SH14C 2-2.5**	**08 Feb 2026**	**Soil**																									
RPD																												
EB2605255	**SH14A 2-2.5**	**08 Feb 2026**	**Soil**																									
EB2605255	**SH14B 2-2.5**	**08 Feb 2026**	**Soil**																									
RPD																												
EB2605255	**SH11A 0-0.5**	**09 Feb 2026**	**Soil**	<0.1	17.2	12.9	0.43	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00025
1325676	**SH11B 0-0.5**	**09 Feb 2026**	**Soil**	<0.1	15	13	<0.1	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001			<0.001	<0.001	<0.001	<0.001	<0.001		<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
RPD				0	14	1	125	0	0	0	0	0	0			0	0	0	0	0		0	0	0	0	0	0	0
EB2605255	**SH16 0.5-1**	**09 Feb 2026**	**Soil**	<0.1	22.4	17.7	0.57	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00025
EB2605255	**SH16C 0.5-1**	**10 Feb 2026**	**Soil**	<0.1	29.1	24.4	0.74	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00025
RPD				0	26	32	26	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
EB2605255	**SH16 0.5-1**	**09 Feb 2026**	**Soil**	<0.1	22.4	17.7	0.57	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00025
EB2605255	**SH16B 0.5-1**	**10 Feb 2026**	**Soil**	<0.1	19.9	17.7	0.65	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00025
RPD				0	12	0	13	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
EB2605255	**SH16 0-0.5**	**09 Feb 2026**	**Soil**	<0.1	18.1	15.2	0.45	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00025
EB2605255	**SH16C 0-0.5**	**10 Feb 2026**	**Soil**	<0.1	14.7	11.2	0.41	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00025
RPD				0	21	30	9	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
EB2605255	**SH16 0-0.5**	**09 Feb 2026**	**Soil**	<0.1	18.1	15.2	0.45	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00025
EB2605255	**SH16B 0-0.5**	**10 Feb 2026**	**Soil**	<0.1	17.7	15.1	0.50	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00025
RPD				0	2	1	11	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
EB2605255	**SH16 1-1.5**	**09 Feb 2026**	**Soil**																									
EB2605255	**SH16C 1-1.5**	**10 Feb 2026**	**Soil**																									
RPD																												
EB2605255	**SH16 1-1.5**	**09 Feb 2026**	**Soil**																									
EB2605255	**SH16B 1-1.5**	**10 Feb 2026**	**Soil**																									
RPD																												

Environmental Standards

***RPDs have only been considered where a concentration is greater than 1 times the EQL.**
****Elevated RPDs are highlighted as per QAQC Profile settings (Acceptable RPDs for each EQL multiplier range**
*****Interlab Duplicates are matched on a per compound basis as methods vary between laboratories. Any m**

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QAQC Results

									Organotins			Inorganics	
				Heptachlor	Heptachlor epoxide	Methoxychlor	Oxychlordane	Toxaphene	Dibutyltin (as Sn)	Monobutyletin (as Sn)	Tributyltin as SN	Moisture Content	Moisture Content (dried @ 103°C)
				mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	µg/kg	µg/kg	mg/kg	%	%
EQL				0.0005	0.0005	0.0005	0.0005	0.001	1	1	0.0005	1	1
Lab Report Number	**Field ID**	**Date**	**Matrix Type**										
EB2605255	**SH14A 0.5-1**	**08 Feb 2026**	**Soil**	<0.00050	<0.00050	<0.00050	<0.00050		<1	<1	<0.0005	46.3	
EB2605255	**SH14C 0.5-1**	**08 Feb 2026**	**Soil**	<0.00050	<0.00050	<0.00050	<0.00050		<1	<1	<0.0005	45.9	
RPD				0	0	0	0		0	0	0	1	
EB2605255	**SH14A 0.5-1**	**08 Feb 2026**	**Soil**	<0.00050	<0.00050	<0.00050	<0.00050		<1	<1	<0.0005	46.3	
EB2605255	**SH14B 0.5-1**	**08 Feb 2026**	**Soil**	<0.00050	<0.00050	<0.00050	<0.00050		<1	<1	<0.0005	44.8	
RPD				0	0	0	0		0	0	0	3	
EB2605255	**SH14A 0-0.5**	**08 Feb 2026**	**Soil**	<0.00050	<0.00050	<0.00050	<0.00050		<1	<1	<0.0005	37.3	
EB2605255	**SH14C 0-0.5**	**08 Feb 2026**	**Soil**	<0.00050	<0.00050	<0.00050	<0.00050		<1	<1	<0.0005	35.9	
RPD				0	0	0	0		0	0	0	4	
EB2605255	**SH14A 0-0.5**	**08 Feb 2026**	**Soil**	<0.00050	<0.00050	<0.00050	<0.00050		<1	<1	<0.0005	37.3	
EB2605255	**SH14B 0-0.5**	**08 Feb 2026**	**Soil**	<0.00050	<0.00050	<0.00050	<0.00050		<1	<1	<0.0005	34.2	
RPD				0	0	0	0		0	0	0	9	
EB2605255	**SH14A 1.5-2**	**08 Feb 2026**	**Soil**										
EB2605255	**SH14C 1.5-2**	**08 Feb 2026**	**Soil**										
RPD													
EB2605255	**SH14A 1.5-2**	**08 Feb 2026**	**Soil**										
EB2605255	**SH14B 1.5-2**	**08 Feb 2026**	**Soil**										
RPD													
EB2605255	**SH14A 1-1.5**	**08 Feb 2026**	**Soil**										
EB2605255	**SH14C 1-1.5**	**08 Feb 2026**	**Soil**										
RPD													
EB2605255	**SH14A 1-1.5**	**08 Feb 2026**	**Soil**										
EB2605255	**SH14B 1-1.5**	**08 Feb 2026**	**Soil**										
RPD													
EB2605255	**SH14A 2-2.5**	**08 Feb 2026**	**Soil**										
EB2605255	**SH14C 2-2.5**	**08 Feb 2026**	**Soil**										
RPD													
EB2605255	**SH14A 2-2.5**	**08 Feb 2026**	**Soil**										
EB2605255	**SH14B 2-2.5**	**08 Feb 2026**	**Soil**										
RPD													
EB2605255	**SH11A 0-0.5**	**09 Feb 2026**	**Soil**	<0.00050	<0.00050	<0.00050	<0.00050		<1	<1	<0.0005	37.2	
1325676	**SH11B 0-0.5**	**09 Feb 2026**	**Soil**	<0.001	<0.001	<0.001		<0.001	<1	<1	<0.001		34
RPD				0	0	0			0	0	0		
EB2605255	**SH16 0.5-1**	**09 Feb 2026**	**Soil**	<0.00050	<0.00050	<0.00050	<0.00050		<1	<1	<0.0005	40.1	
EB2605255	**SH16C 0.5-1**	**10 Feb 2026**	**Soil**	<0.00050	<0.00050	<0.00050	<0.00050		<1	<1	<0.0005	46.9	
RPD				0	0	0	0		0	0	0	16	
EB2605255	**SH16 0.5-1**	**09 Feb 2026**	**Soil**	<0.00050	<0.00050	<0.00050	<0.00050		<1	<1	<0.0005	40.1	
EB2605255	**SH16B 0.5-1**	**10 Feb 2026**	**Soil**	<0.00050	<0.00050	<0.00050	<0.00050		<1	<1	<0.0005	42.3	
RPD				0	0	0	0		0	0	0	5	
EB2605255	**SH16 0-0.5**	**09 Feb 2026**	**Soil**	<0.00050	<0.00050	<0.00050	<0.00050		<1	<1	<0.0005	39.7	
EB2605255	**SH16C 0-0.5**	**10 Feb 2026**	**Soil**	<0.00050	<0.00050	<0.00050	<0.00050		<1	<1	<0.0005	33.5	
RPD				0	0	0	0		0	0	0	17	
EB2605255	**SH16 0-0.5**	**09 Feb 2026**	**Soil**	<0.00050	<0.00050	<0.00050	<0.00050		<1	<1	<0.0005	39.7	
EB2605255	**SH16B 0-0.5**	**10 Feb 2026**	**Soil**	<0.00050	<0.00050	<0.00050	<0.00050		<1	<1	<0.0005	39.1	
RPD				0	0	0	0		0	0	0	2	
EB2605255	**SH16 1-1.5**	**09 Feb 2026**	**Soil**										
EB2605255	**SH16C 1-1.5**	**10 Feb 2026**	**Soil**										
RPD													
EB2605255	**SH16 1-1.5**	**09 Feb 2026**	**Soil**										
EB2605255	**SH16B 1-1.5**	**10 Feb 2026**	**Soil**										
RPD													

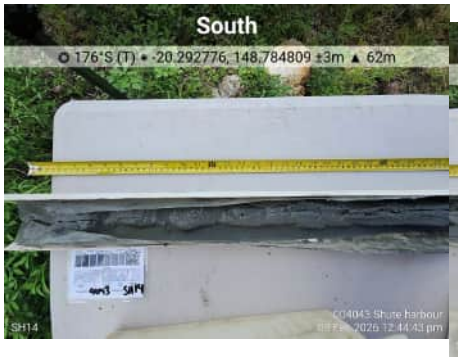
Environmental Standards

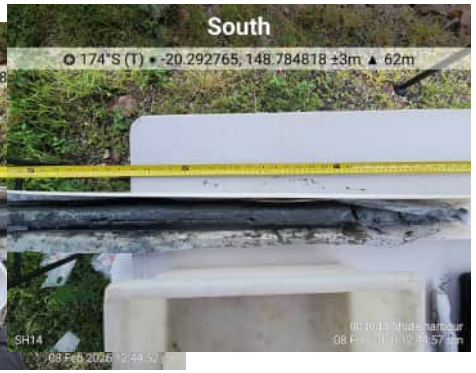
***RPDs have only been considered where a concentration is greater than 1 times the EQL.**
****Elevated RPDs are highlighted as per QAQC Profile settings (Acceptable RPDs for each EQL multiplier range**
*****Interlab Duplicates are matched on a per compound basis as methods vary between laboratories. Any m**

Annex D Sediment Logs

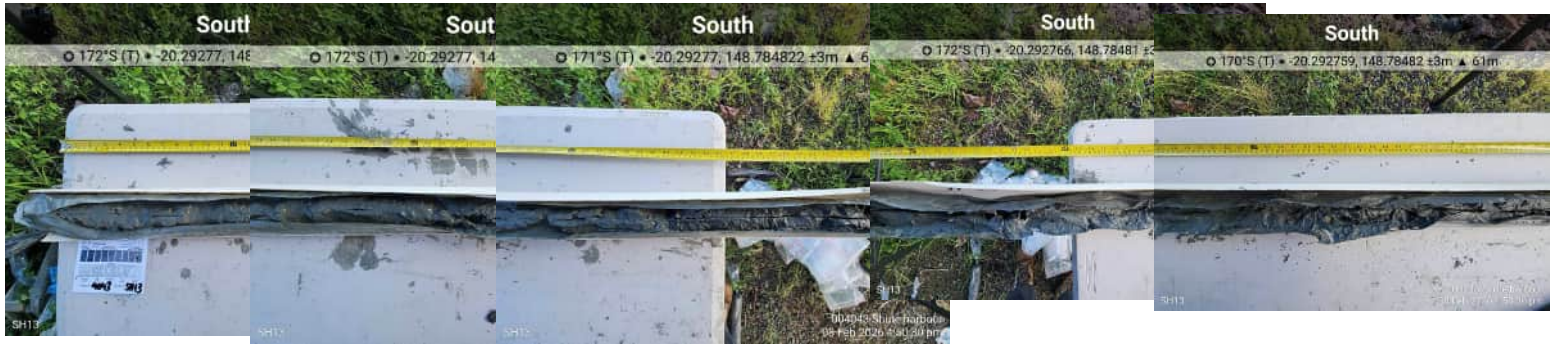
SH14

SH14- Cont





SH13



SH8

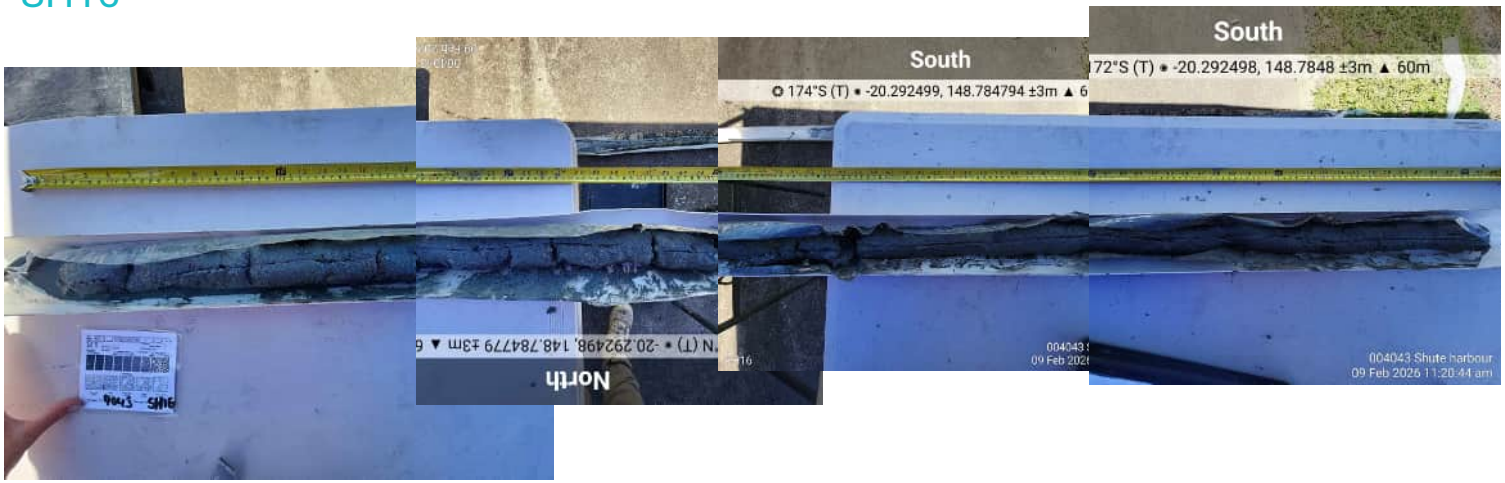
SH5

South
South
South
South
South

SH4

South
179°S (T) • -20.29249, 148.784818 ±3m ▲ 61m
SH4
South
°S (T) • -20.292488, 148.784828 ±3m ▲ 61m
South
-20.292487, 148.784823 ±3m ▲ 61m
004043 Shute harbour
09 Feb 2026 10:32:10 am

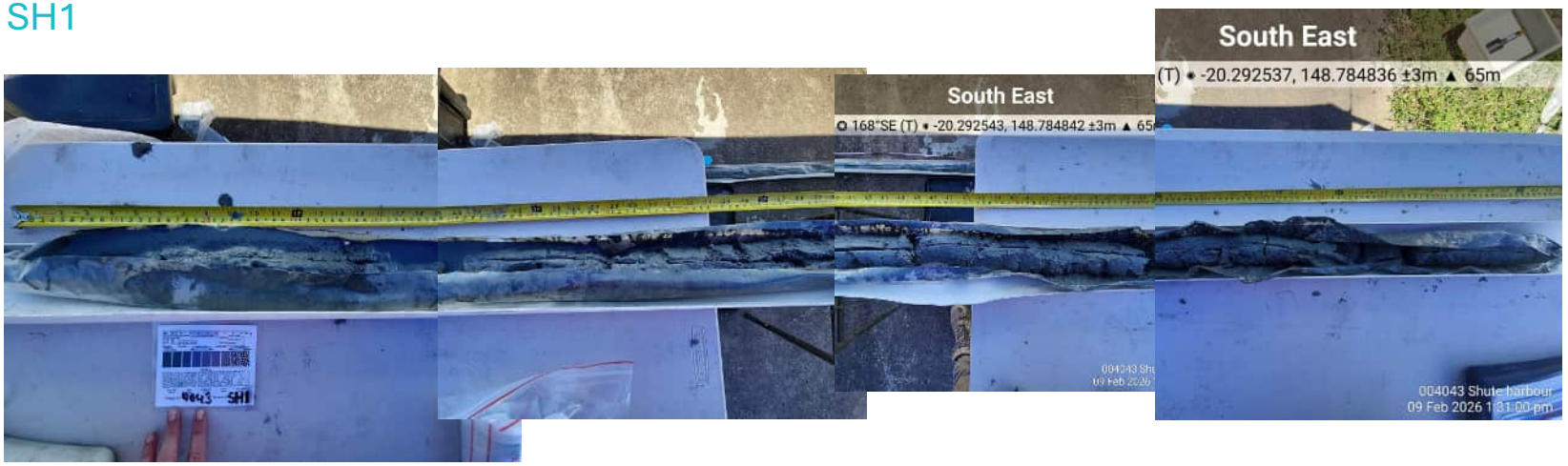
SH16


South
72°S (T) • -20.292498, 148.7848 ±3m ▲ 60m
004043 Shute harbour
09 Feb 2026 11:20:44 am

SH3

South
174°S (T) • -20.292499, 148.784838 ±3m
SH3
004043 Shute harbour
09 Feb 2026 12:20:12 pm
South
175°S (T) • -20.292512, 148.784838 ±3m ▲ 7

SH1


South East
(T) • -20.292537, 148.784836 ±3m ▲ 65m
004043 Shute harbour
09 Feb 2026 1:31:00 pm

SH11

South
177°S (T) • -20.292514, 148.784835 ±3m ▲ 65m
004043 Shute harbour
09 Feb 2026 3:23:18 pm
SH11
South
174°S (T) • -20.292503, 148.784847 ±3m ▲ 64m
South
004043 Shute harbour

SH9

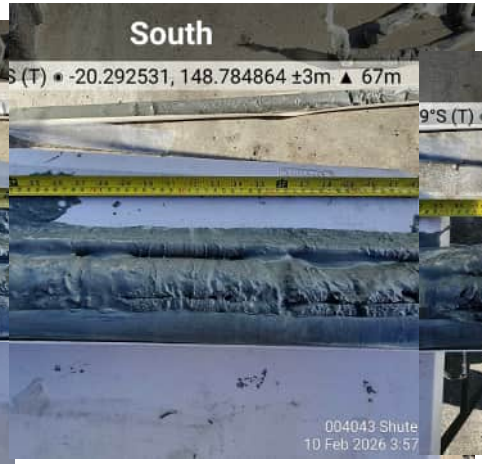
South
(T) • -20.292487, 148.784824 ±3m ▲ 6

South
182°S (T) • -20.292485, 148.784822 ±3m ▲ 62m
SH9

South
(T) • -20.292493, 148.784802 ±3m ▲ 62m
004043 Shute harbour

SH6

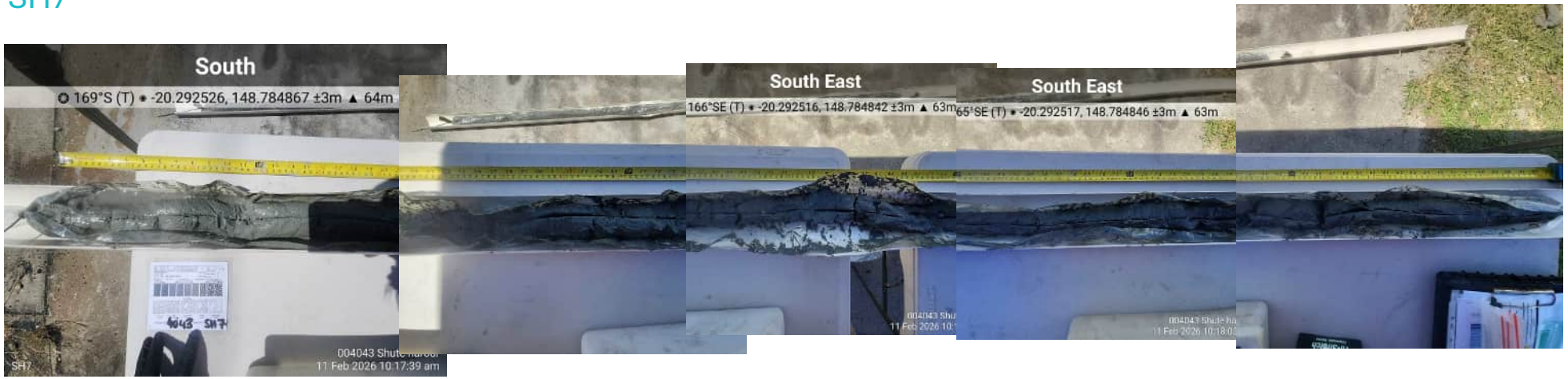
South
176°S (T) • -20.292543, 148.784858 ±3m ▲ 68m
SH6
004043 Shute harbour


South
(T) • -20.292531, 148.784864 ±3m ▲ 67m
004043 Shute

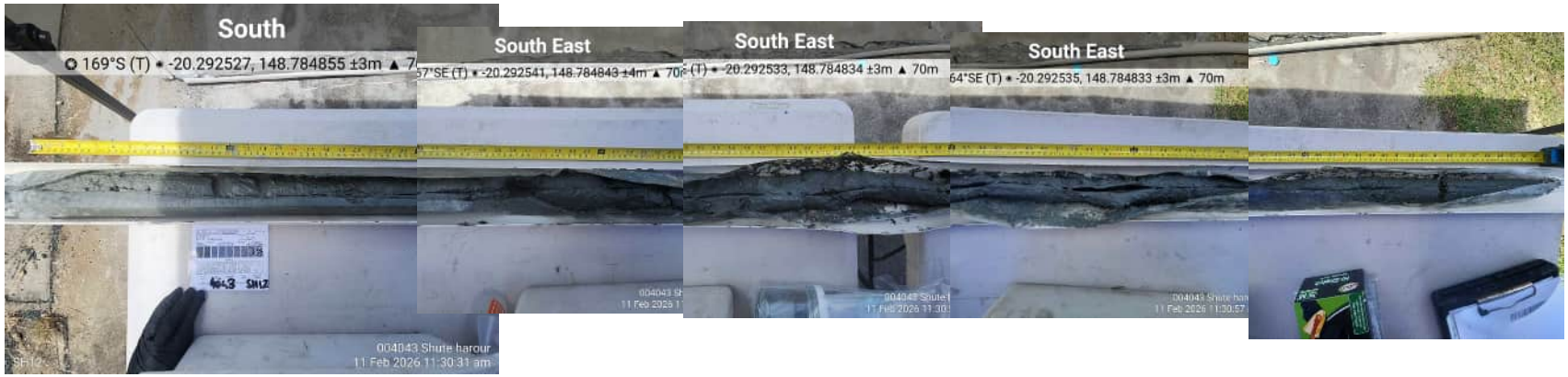
South
9°S (T) • -20.292519, 148.784847 ±3m ▲ 6

South East
68°SE (T) • -20.292524, 148.784844 ±3m ▲ 65m

SH7


South
169°S (T) • -20.292526, 148.784867 ±3m ▲ 64m
004043 Shute harour
11 Feb 2026 10:17:39 am
South East
166°SE (T) • -20.292516, 148.784842 ±3m ▲ 63m
South East
65°SE (T) • -20.292517, 148.784846 ±3m ▲ 63m

SH12

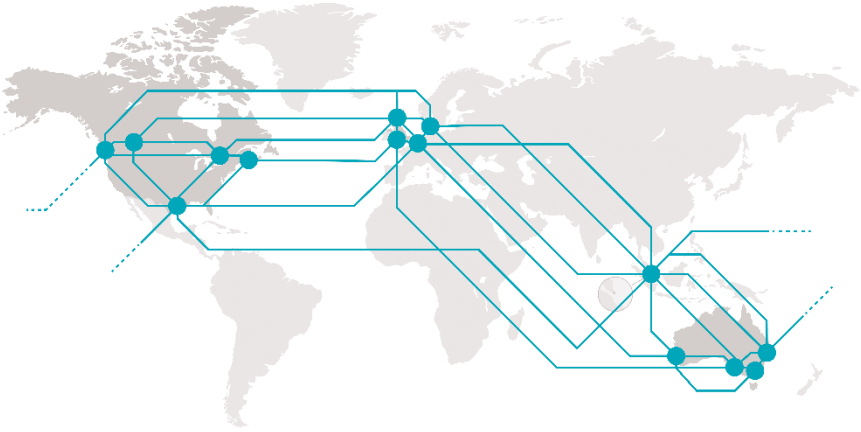

South
169°S (T) • -20.292527, 148.784855 ±3m
004043 Shute harour
11 Feb 2026 11:30:31 am
South East
57°SE (T) • -20.292541, 148.784843 ±4m
South East
(T) • -20.292533, 148.784834 ±3m ▲ 70m
South East
64°SE (T) • -20.292535, 148.784833 ±3m ▲ 70m

SH15

South
175°S (T) • -20.292551, 148.784821 ±3m ▲ 69m
004043 Shute harour
11 Feb 2026 12:41:07 pm
SH15

SH2

South East
168°SE (T) • -20.292551, 148.784843 ±3m ▲ 72m
South East
°SE (T) • -20.292551, 148.784842 ±3m ▲ 73m



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Annex B Terrestrial and Habitat Mapping

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Technical note

Project	Shute Harbour Expansion Approvals		
From:	Suanne Richards, Conor Jones, Elyssa McLeod		
Date:	15 July 2026	To:	John Bergin
Doc Ref:	TN.004043.001.01		
Subject:	Marine and Terrestrial Habitat Assessment		

1.1 Introduction

Queensland's Department of Transport and Main Roads (TMR) and Maritime Safety Queensland (MSQ) are proposing to expand and upgrade recreational boating infrastructure at Shute Harbour (the 'Project') to meet the growing demands of the Whitsunday region. The Project responds directly to the findings of the Queensland Recreational Boating Facilities Demand Forecasting Study (BMT 2022), which identified limitations associated with the existing boating infrastructure, including:

- A growing proportion of visiting recreational boat users; and
- Constrained land availability and exposure to wave action, which limit the capacity of the current infrastructure to meet present and future vessel launching demand.

The Forecasting Study recommended the development of a new boating infrastructure facility to address these constraints in the Whitsunday region. In response, TMR is now progressing design and approvals for the Project.

The proposed works include construction of a four-lane boat ramp, associated floating walkways, a revetment wall, a reclaimed car park, and associated navigational access channel. This will occur adjacent to existing maritime infrastructure at Shute Harbour and will require some reclamation works for the carpark footprint. Dredging is required for the Project to establish the navigational areas as well as to excavate the foundations of the outer wall for the reclamation.

For the purposes of this memorandum, Figure 1.1 defines a Study Area, encompassing the footprint of the Project. The Study Area is bounded to the north by Shute Harbour Road, to the east by the existing car park and boat ramp, to the west by a commercial facility, and to the south (within the marine environment) by Lot 23 SP20807.

1.2 Objectives

This assessment aims to characterise the marine and terrestrial habitats within the Study Area to establish an ecological baseline.

The specific objectives of the assessment are to:

- Identify, describe and map marine benthic habitats, marine plants and terrestrial coastal vegetation within the Study Area, including features relevant to Commonwealth and State legislation.
- Characterise habitat composition, condition and extent to inform an ecological baseline for the Study Area.

- Review and supplement existing desktop information with field surveys data to confirm the presence or absence of environmentally significant habitats and communities.
- Assess the likelihood of occurrence of conservation significant fauna within or adjacent to the Study Area based on habitat suitability, species ecology and available records.

1.3 Methods

1.3.1 Literature Review

Prior to field surveys, desktop analyses were undertaken of publicly available information to gain an understanding of the type and extent of benthic and coastal vegetation and habitats, as well as the species known or potentially occurring in the Study Area and surrounds. This comprised a search of online mapping and spatial data, and analysis of information for known/potentially occurring conservation significant communities and species. Key information sources included:

- Protected Matters Search Tool (PMST) for Matters of National Environmental Significance (MNES), derived from modelled distributions from environmental data and species records (1 km grid resolution). As this data provides general guidance, a 500 m buffer was applied to the Study Area to ensure all potentially occurring matters within the Study Area and surrounds were captured for assessment (refer to Annex A).
- Matters of State Environmental Significance (MSES) report from the Queensland Government (2025), which identifies features of biodiversity state interest defined under the State Planning Policy (SPP) and Environmental Offsets Regulation 2014 (refer to Annex B).
- Queensland government (WildNet) database records of conservation significant flora and fauna. As these data are based on survey records, a 1 km buffer was applied to the Study Area to ensure all potentially occurring matters within the site and surrounds were captured for assessment (refer to Annex C).
- Atlas of Living Australia (ALA) records of flora and fauna within a 1 km buffer.
- Online spatial layers including:
  - WetlandMaps spatial layers including i) Fish Habitat Areas, ii) Dugong Protection Areas, iii) sea turtle nesting areas, iv) marine parks, v) Regional Ecosystems (RE), vi) wildlife sightings (WildNet).
  - Seamap Australia – National Marine Benthic Habitat Map
  - Allen Coral Atlas reef mapping.
- Relevant available reports including Shute Harbour Marina EIS baseline reports for aquatic ecology (FRCE 2008), marine megafauna (NSEC 2008) and terrestrial ecology (PE 2008).

1.3.2 Field Surveys

Benthic Habitats

A subtidal survey of benthic habitat was undertaken on 11 February 2026, while an intertidal survey took place at low tide on 20 March 2026. Mapping the extents of seagrass and reef habitats was performed by combining high-resolution aerial imagery (Nearmap) and field track and point data into QGIS 3.40. The extents of seagrass meadows, macroalgae and reef habitats were manually digitised

by an experienced marine ecologist. This mapping was updated based on the observed distribution of seagrass, and Nearmap aerial imagery collected at low tide on 5 May 2021 and 1 July 2025.

The subtidal survey was completed aboard a vessel equipped with an underwater video camera, streaming live footage to a screen and capturing high-definition imagery. At each predetermined transect location, the vessel master marked the start using a handheld GPS (± 4 m, but typically <1 m). The vessel then travelled the length of the transect (<2 kt) with an ecologist viewing the live footage. The end points of transects were marked by GPS.

The intertidal survey was undertaken on foot by crossing the dry intertidal area. The margins of all seagrass meadows were encircled and digitised using tracks and points collected with a handheld GPS.

The ecologist identified and estimated the percentage cover of each seagrass species, taking additional GPS marks at locations where the densities and/or species composition changed. Densities were estimated using seagrass percentage cover standards (McKenzie 2003). Habitat types were classified based on the percentage cover of benthic cover groups including corals, macro-algae, and other reef taxa. Qualitative observations of coral bleaching and general condition (e.g. broken fragments, other evidence of physical damage, visually apparent evidence of disease etc.) were also made along each transect.

Terrestrial Vegetation

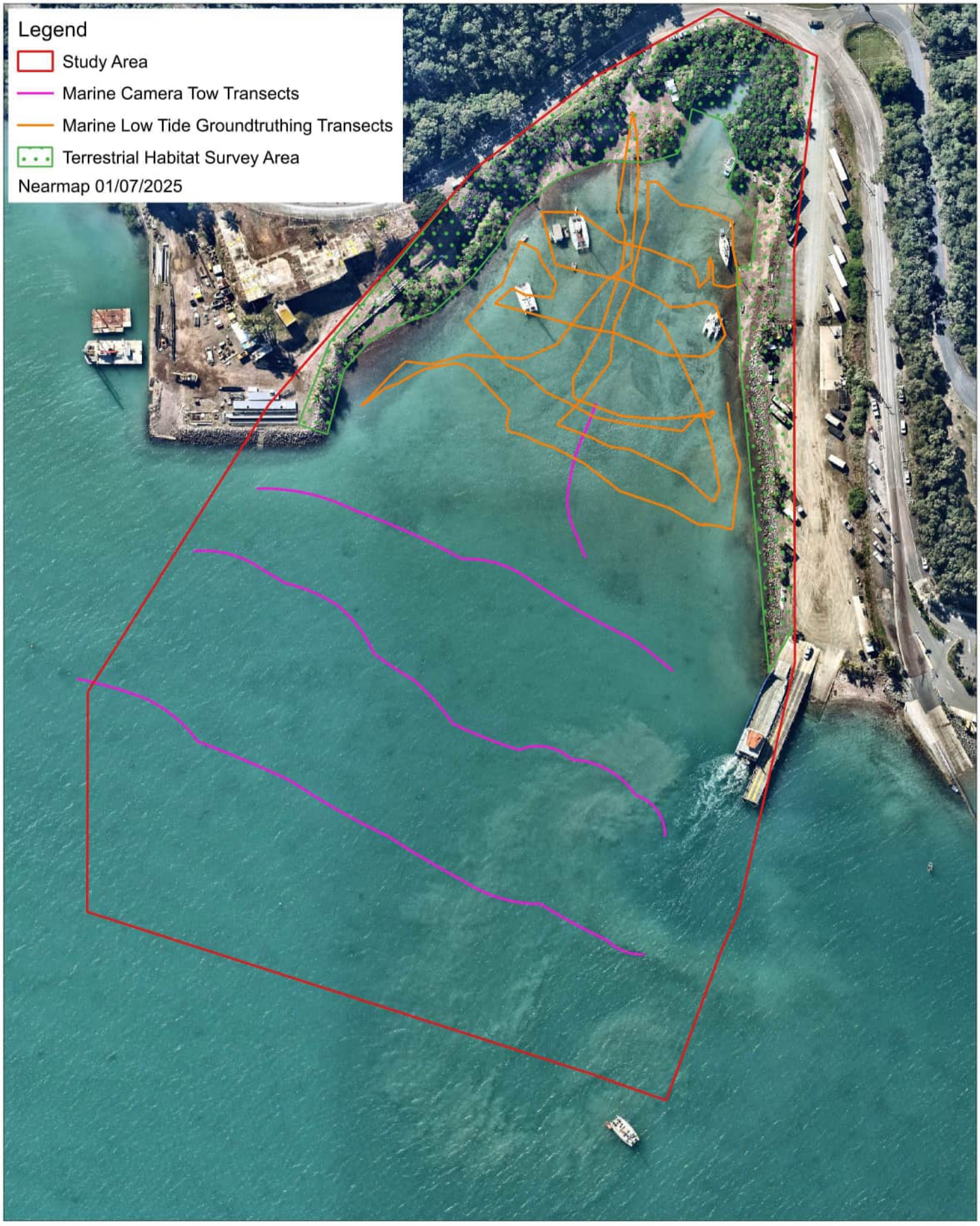
The vegetation assessment was undertaken on 10 February 2026 by a suitably qualified ecologist. Dominant flora species and estimates of vegetation community extent and structure were recorded, photographed and georeferenced, in accordance with quaternary site survey methods (Neldner et. al. 2023). Mapping the extent of terrestrial habitat was completed by combining high-resolution aerial imagery (Nearmap), and field track and point data into QGIS 3.40. Any incidental observations of fauna were also recorded.

Sufficient data was collected to address the following matters:

- Marine plant composition and extent for the purposes of the *Fisheries Act 1994* (Fisheries Act)
- Regulated vegetation type and extent for the purposes of the *Vegetation Management Act 1999* (VM Act)
- Known/potential threatened ecological communities (TECs) for the purposes of the *Environmental Protection and Biodiversity Conservation Act 1999* (EPBC Act) (e.g. Broad leaf tea-tree (*Melaleuca viridiflora*) woodlands in high rainfall coastal north Queensland) and known/potential protected plant/threatened species locations.

Limitations

Survey results reflect conditions at the time of the field surveys and are subject to seasonal variability in benthic cover, fauna presence and detectability. A UAV (Unmanned Aerial Vehicle) survey to capture downward facing imagery of the Study Area to refine mapping was planned. However, UAV surveys could not be undertaken due to unsafe wind conditions during both surveys, which increased reliance on vessel-based observations and aerial imagery. Fauna assessments have been based on habitat suitability, available records and incidental observations. Noo targeted fauna surveying was undertaken.



Title:

Study Area and Transect Lines

Figure: 1.1

Rev: A

BMT endeavours to ensure that the information provided in this map is correct at the time of publication. BMT does not warrant, guarantee or make representations regarding the currency and accuracy of information contained in this map.

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1.3.3 Likelihood of Occurrence Criteria

Assessments were undertaken to classify the 'likelihood of occurrence' of conservation significant species potentially occurring within the Study Area. These assessments were based on a review of species/community distributions and known habitat requirements (DCCEEW 2026; Froese *et al* 1992), historical records for the region (ALA and WildNet records), and the results of habitat assessments and field surveys conducted within the Study Area. The categories and classifications for this assessment are presented in Table 1.1.

Table 1.1 Species likelihood of occurrence categories

Likelihood categories	Species
Known	• Preferred feeding or breeding habitat, or important migratory pathway (i.e. core habitat), present (i.e. non vagrant); and • Modelled species distribution overlaps; and • Contemporary record (i.e., multiple records <10 years old); or • Recorded during field survey.
Likely	• Preferred feeding or breeding habitat, or important migratory pathway (i.e. core habitat), present (i.e. non vagrant); and • Modelled species distribution overlaps; and • Likely to occur in area, as defined by: • Multiple records, most recent record 10-30 years old, or • Single record <10 years old.
Possible	• Species may occur within the Study Area because there is preferred core habitat and overlap with current geographic distribution, but no contemporary records in or adjacent to the Study Area; and • There is evidence that reduce its likelihood of occurrence (range contraction of the species in the region, no recent records within or close to the Study Area, substantial loss or degradation of habitat within and adjacent the Study Area since previous records, species is naturally rare or occurs at a low density etc.).
Unlikely	• Species may occur within the Study Area because it overlaps with current geographic distribution, but habitat is marginally suitable and does not constitute core habitat; or • Species may occur as a vagrant; and • No contemporary records.

1.4 Field Survey Results

1.4.1 Benthic Habitats

Benthic habitats were classed into five habitat polygons (Figure 1.2), comprised of:

- Sand or rubble with very sparse macroalgae <1%; essentially unvegetated seafloor (2.33 ha)
- Seagrass and macroalgae at 1% cover (2.16 ha)
- Seagrass and macroalgae at 1-5% cover and (2.15 ha)
- Macroalgae and sponge at 5-30% cover (0.22 ha)
- Intertidal rocky seawall/hard structure features (0.054 ha)

The upper intertidal section of the Study Area was largely devoid of marine algae and seagrass. Unconsolidated sediments (sand and rubble) dominated this habitat class over the northern (shoreward) extent of the Study Area (Figure 1.2). It also extended down and surrounded the existing boat ramp. It is likely that persistent wash impacts from vessel launch and retrieval restricts benthic cover in this area.

Upper intertidal areas include rock seawalls and hard structures that are tidally inundated to approximately mid-height. These features are most evident along the western margins (protecting the adjacent commercial site) and along the eastern boundary, where they interface with unconsolidated sediments and the terrestrial edge.

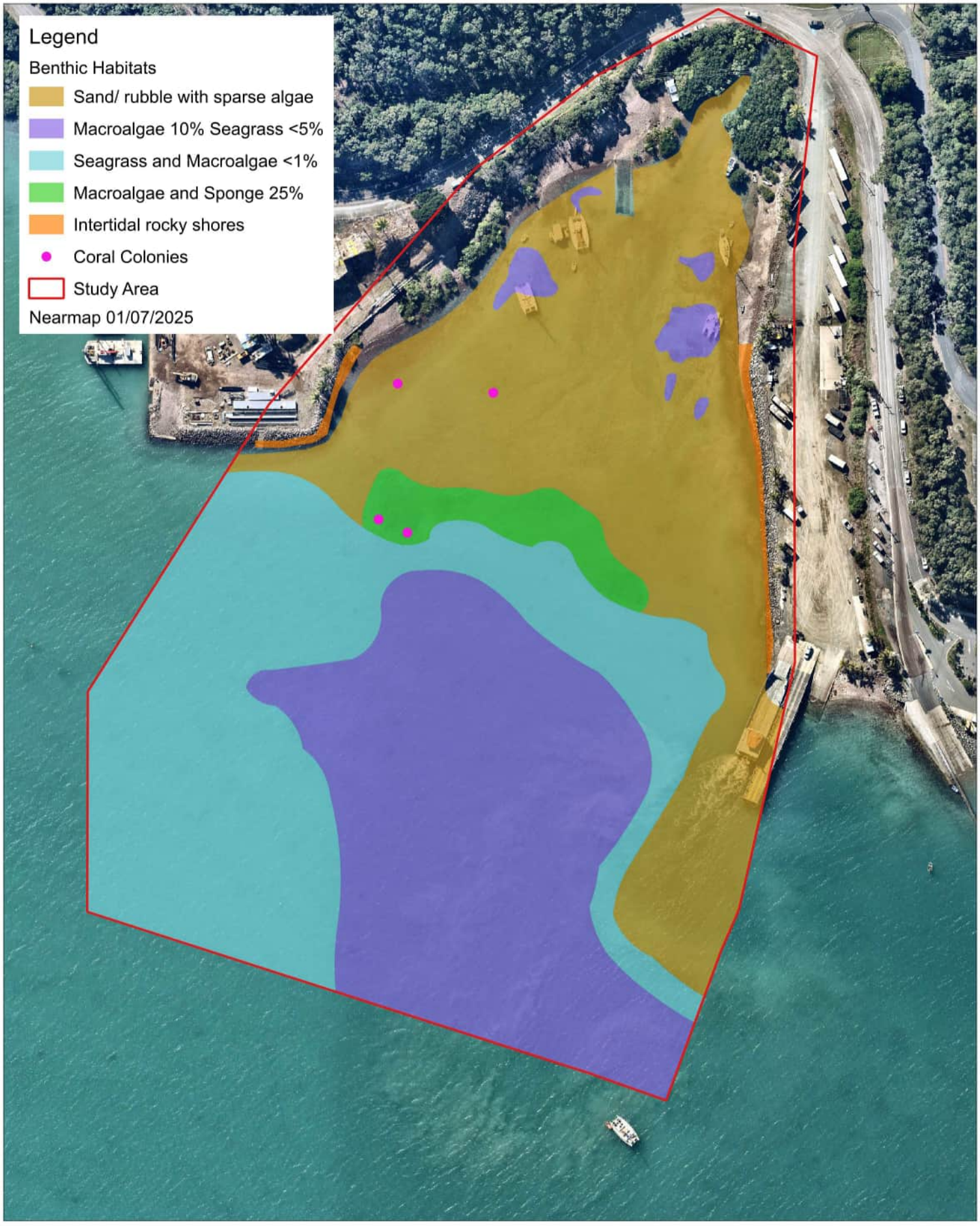
South of this, there was a small area where macroalgae and sponges were more common and comprised up to 30% of benthic cover. The main species of macroalgae found here were *Halimeda opuntia* (Figure 1.3 A)*, Halimeda cylindrica* (Figure 1.3 F)*,* and *Sargassum* spp. (Figure 1.3 E, Figure 1.4 C). Sponges in this area consisted of basket sponges (*Phyllospongia,* Figure 1.3 D, G) and branching sponges (*c.f. Clathria*). *Ceratodictyon spongiosum* (Figure 1.4 A) is a symbiosis between sponge and macroalgae, which was common in this habitat polygon and throughout the Study Area.

Further south, the seafloor was composed of sediment with small occasional tufts of macroalgae and seagrass at approximately 1% cover. The macroalgae in this region was dominated by *Halimeda opuntia* and *Halimeda cylindrica*. The seagrass was a mixed meadow consisting of *Cymodocea serrulata* and *Zostera muelleri.*

The highest cover of seagrass was located in the southern and central parts of the Study Area, where seagrass and macroalgae constituted up to 5% combined cover over the seafloor. This was essentially a slightly denser area of cover, but consisting of the same species observed in the 1% cover polygon (*Halimeda opuntia, H, cylindrica, Cymodocea serrulata* and *Zostera muelleri*). There were also several small areas of intertidal seagrass at up to 5% cover comprising *Z. muelleri* and *H. ovalis* in the intertidal flat near some of the moored vessels (Figure 1.2, Figure 1.4 E, F).

Other notable observations included coral colonies and debris. Two coral colonies were observed during the subtidal transects, including a single *Porites cylindrica* colony (Figure 1.3 F), and a colony of *Goniopora* Figure 1.3 G). Two colonies of the hard coral *Goniastrea* were found in the intertidal area (Figure 1.4B). The locations of these colonies are shown as points in Figure 1.2. Several items of debris were observed including a large chain (Figure 1.3 B) and several tyres.

Rhizophora propagules (unattached mangrove seeds) with significant fouling were also common in the subtidal area (Figure 1.3 H). Given mangroves are intertidal species, these propagules are assumed to be non-viable in subtidal waters.



Title:

Benthic Habitat Map

Figure: 1.2

Rev: A

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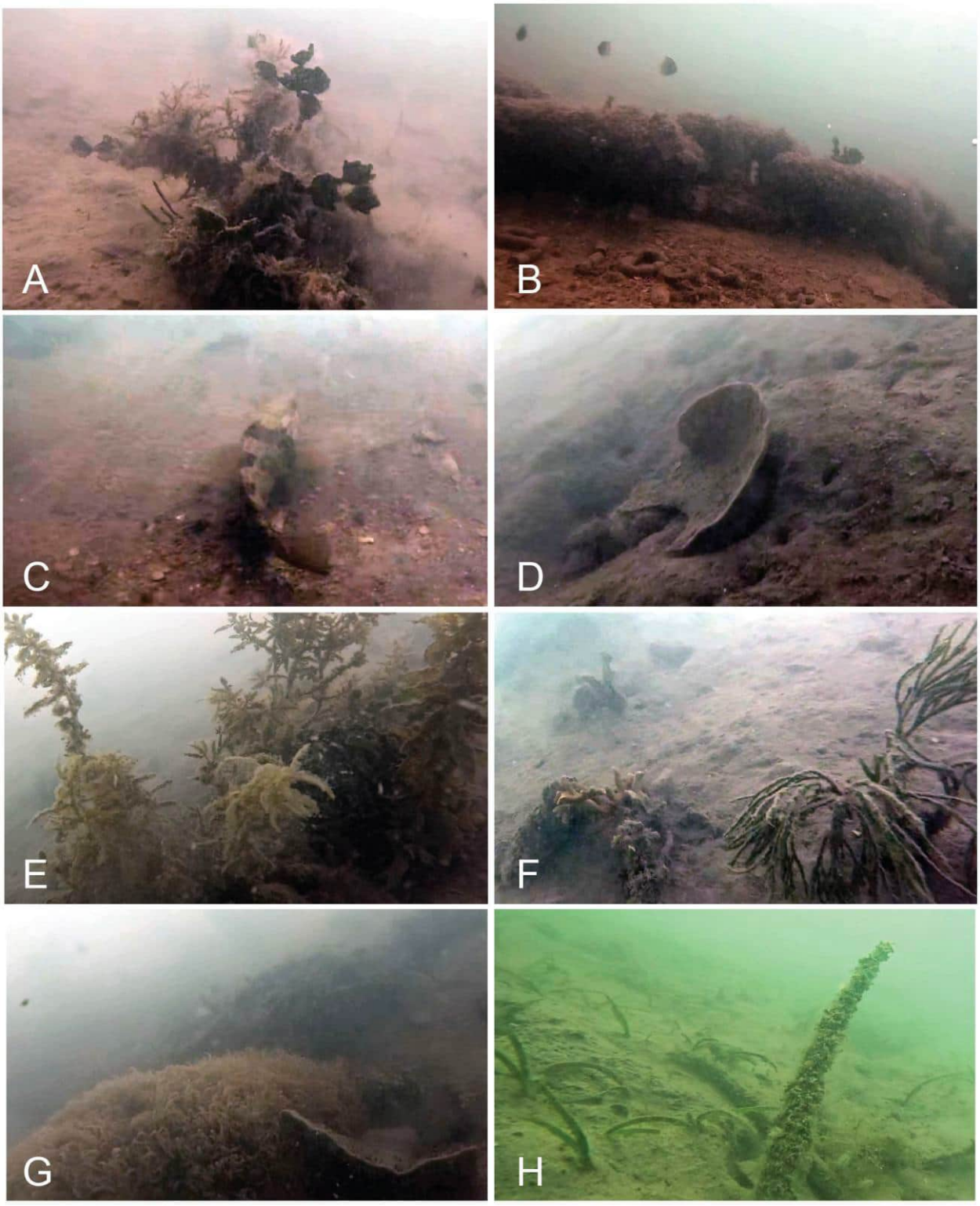


Figure 1.3 Representative screen grabs of subtidal taxa: *Halimeda opuntia* (A); large chain with damselfish (B); small cod, *Epinephelus coioides* (C); basket sponge, *Phyllospongia* sp. (D); *Sargassum* macroalgae (E); *Porites cylindrica* coral -left and *Halimeda cylindrica* - right (F); *Goniopora* coral -left, and *Phyllospongia* – right (G); seagrass, *Cymodocea serrulata* and mangrove propagules (H).

Figure 1.4 Photos of intertidal taxa: *Ceratodictyon spongiosum* the macroalgae symbiotic with sponge (A); hard coral *Goniastrea* sp. (B); *Sargassum* and *Halimeda* macroalgae (C); sponge (D); seagrass *Zostera muelleri* (E); and seagrass *Halophila ovalis* (F).

1.4.2 Terrestrial Habitat

For the purposes of this assessment, terrestrial vegetation refers to all plant communities that grow on land and at the land–sea interface.

Refer to Figure 1.5 for broad vegetation/habitat mapping of the Study Area and surrounds based on survey observations. Table 1.2 presents the approximate areas of each vegetation category, while Figure 1.6 shows example images of the vegetation and habitat types.

The Study Area is located within an embayment south of Proserpine - Shute Harbour Road and Mt Rooper located within Conway National Park. Remnant open forest north of the road will not be impacted by the proposal.

The natural landform of the Study Area has been markedly altered due to past clearing, reclamation, road construction and industrial development. The Study Area is also highly disturbed due to regular boat, pedestrian and vehicle access. The intertidal habitats support fragmented mangrove shrubland to low closed forest, mudflats with gravel and granitic material that are largely devoid of vegetation, and elevated habitats supporting highly disturbed coastal vegetation.

The intertidal mudflats within the Study Area supported a fragmented, narrow (approx. 20 m) fringe of mangroves. The drainage channel in north of the bay supported approx. 1,817.4 m^2 of mangroves averaging 6 – 8 m in height and approximately 90% canopy cover, dominated by *Rhizophora stylosa* with occasional *Avicenna marina, Rhizophora apiculata* and *Excoecaria agallocha*. The sub-canopy averaged 2 – 3m in height and approximately 25% canopy cover.

The western end of the bay supported approx. 717.9 m^2 of mangroves averaging 3-5 m in height and approximately 20% canopy cover dominated by *Avicenna marina* with occasional *Rhizophora stylosa* and *Aegiceras corniculatum*. The sub-canopy averaged 1-2 m in height and approximately 75% canopy cover dominated by *R. stylosa* and *A. corniculatum* with sparse *A. marina* saplings.

Intertidal reaches surrounding the boat ramp and in the east and west of the Study Area also supported mudflats with gravel and granitic material that were largely devoid of vegetation. No saltmarsh species, such as *Sporobolus virginicus* or succulents, were recorded.

The intertidal zone was bordered on the landward side by degraded roadside batters, power-line and access easements, fill and rock revetments. These areas supported highly disturbed and fragmented coastal vegetation comprising plantings, exotic shrubs and groundcovers and sparse native canopy trees and shrubs.

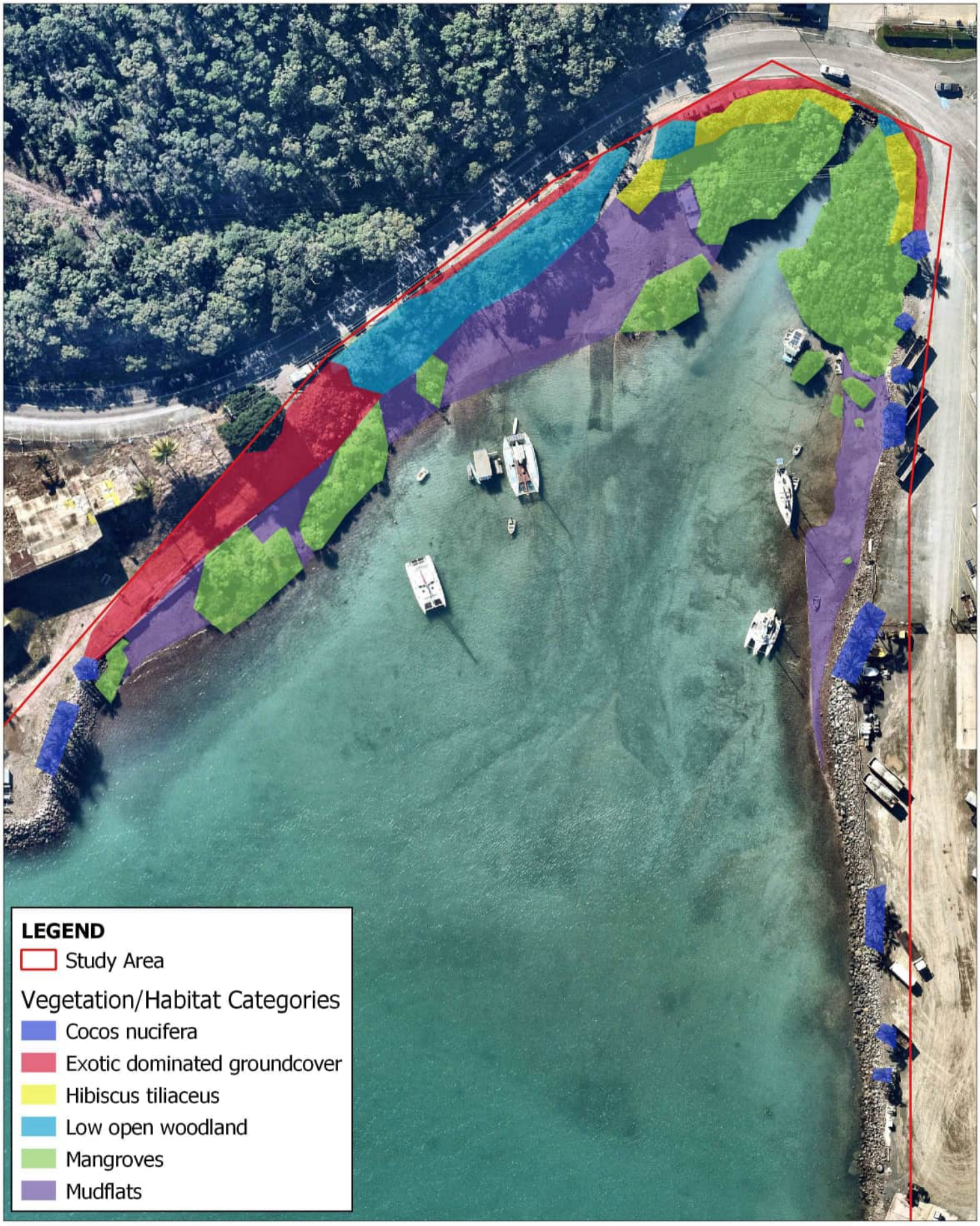
*Cocos nucifera** plantings were widespread along the terrestrial–marine interface, with dense stands of *Cascabela thevetia** and a heavy vine cover of *Argyreia nervosa** dominating the terrestrial fringe. Mangrove reaches were bordered by narrow zones of *Hibiscus tiliaceus* over a dense shrub layer of *Vitex trifolia* (359.4 m^2). Sparse to dense patches of low open forest consisting of *Timonius timon, Thespesia populneoides, Euroschinus falcatus, Corymbia* sp., *Acacia* sp., *Alphitonia excelsa* and *Pandanus spiralis* also occurred throughout the Study Area on higher, sheltered ground.

Exotic grasses were widespread, dominated by *Megathyrsus maximus* var. *maximus** and *Melinis repens**. Other common grasses included *Cenchrus echinatus*, Eleusine indica** and *Dactyloctenium aegyptium**. The vine *Ipomoea triloba** was also common.

Widespread forbs and herbs included *Tridax procumbens*, Commelina benghalensis*, Macroptilium lathyroides*, Amaranthus viridis*, Euphorbia hirta** and *Stachytarpheta jamaicensis**.

Table 1.2 Approximate area of vegetation/habitat within the Study Area

Vegetation/Habitat	Area (m^2)
Mangroves (RE 8.1.1)	2,535.3
Mudflats	2,118.6
Exotic dominated groundcover	1,080.8
Disturbed low open woodland	873
Cocos nucifera	394.1
Hibiscus tiliaceus	359.4



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Terrestrial Vegetation and Habitat Mapping

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Figure 1.5 Terrestrial Vegetation and Habitat Mapping

Figure 1.6 Mangroves at drainage channel (A); Rocky mudflats (B); Exotic dominated groundcover on high ground above mangroves (C); low open woodland with exotic dominated groundcover (D); *Cocos nucifera* plantings above mangroves (E); *Hibiscus tiliaceus* bordering mangroves (F).

1.5 Likelihood of Occurrence

The PMST, MSES and WildNet searches identified the following conservation significant as known or potentially occurring within the region (includes a 1 km buffer) (Annex A, Annex B, Annex C):

- Two threatened ecological communities (TECs)
- One federally threatened flora species
- 40 federally threatened fauna species
- 45 federally migratory species
- Six state-listed fauna
- Two state-listed flora species.

An assessment of the likelihood of these listed species occurring within or adjacent to the Study Area, based on site survey results and species-specific information, is summarised in Table 1.1 and discussed in further detail in the following sections.

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Table 1.3 Likelihood of occurrence assessment for conservation significant flora and fauna potential in the Study Area

Scientific Name	Common Name	EPBC Status	NCA Status	Likelihood of Occurrence	Description
Birds					
Anous stolidus	Common Noddy	MMB		Unlikely	Pelagic species, usually occurring offshore. During the breeding season usually nest on islands in vegetation or rocky islets, precipitous cliffs, or shoals of coral or sand.
Apus pacificus	Fork-tailed Swift	MMB		Possible	Almost exclusively aerial, most frequently occur over the inland plains, however there are also present over coastal cliffs and beaches as well as urban areas. They generally occur over dry open habitat such as riparian woodland and tea-tree swamps, low scrub, heathland or saltmarsh.
Ardenna carneipes	Flesh-footed Shearwater	MMB		Unlikely	Pelagic species, usually occurring offshore in subtropics, over continental shelves and occasionally inshore waters.
Calidris acuminata	Sharp-tailed sandpiper	V, MW		Unlikely	Prefers muddy, shallow fresh or brackish wetlands with inundated low vegetation such as sedge, grass or saltmarsh. They also use intertidal mudflats in sheltered bays and mangrove lined creeks.
Calidris canutus	Red knot	V, MW		Possible	Mainly inhabit intertidal mudflats, sandflats and sandy beaches of sheltered coasts. Forage near the waters edge on intertidal sand or mudflats and roost on sandy beaches, sand spits or mudflats.
Calidris ferruginea	Curlew sandpiper	CR, MW		Possible	Mainly occur on intertidal mudflats in sheltered coastal areas. Forage on mudflats and nearby shallow water and roost on bare dry shingle, shell or sand beaches, sandspits and islets. There is a single record in 2022 of a curlew sandpiper within the 500 m buffer of the Study Area, but not within the Study Area itself. Due to the lack of observations, high level of human disturbance and limited size and of the mudflat habitat in the Study Area it is not expected to constitute a significant feeding area for the species.

Scientific Name	Common Name	EPBC Status	NCA Status	Likelihood of Occurrence	Description
Charadrius leschenaultii	Greater sand plover	V, MW		Possible	Almost entirely coastal, inhabiting littoral and estuarine habitats. Usually occur where there are sheltered sandy, shelly or muddy beaches with large intertidal sandflats or mudflats. They forage in the wet sand or mud of intertidal flats and roost on the banks of beaches or tidal lagoons.
Erythrotriorchis radiatus	Red Goshawk	E		Unlikely	Occurs in tropical to warm-temperate coastal and sub-costal wooded and forested lands, including eucalypt woodland, open forest, tall open forest, gallery rainforest, swamp sclerophyll forest, and rainforest margins, near permanent water.
Esacus magnirostris	Beach stone-curlew	M	V	Likely	Found along the coast in a wide range of habitats including beaches, reefs, estuaries, on islands and often along the edges of mangroves. They forage in intertidal zones such as beaches, sand or mudflats, gravel or rock and among mangroves.
Falco hypoleucos	Grey Falcon	V		Unlikely	Occurs in semi-arid to arid areas, especially timbered lowland plains, Acacia shrublands that are crossed by tree-lines water course.
Fregata ariel	Lesser Frigatebird	MMB		Unlikely	The species is mostly pelagic, breeding on remote tropical to sub-tropical islands. Unlikely to be found within the Study Area but may over fly the area.
Fregata minor	Great Frigatebird	MMB		Unlikely	The species is mostly pelagic, breeding on remote tropical to sub-tropical islands. Unlikely to be found within the Study Area but may over fly the area.
Fregetta grallaria grallaria	White-bellied storm-petrel (Tasman Sea), white-bellied storm-petrel (Australasian)	V		Possible	Occurs across tropical and sub-tropical waters. Breeding occurs on offshore islets and rocks. In the non-breeding season, it forages over near-shore waters of mainland Australia.

Scientific Name	Common Name	EPBC Status	NCA Status	Likelihood of Occurrence	Description
Gallinago hardwickii	Latham's snipe	V, MW		Possible	Inhabit open, freshwater wetlands with low, dense vegetation. Can also occur in habitats saline or brackish water (such as saltmarsh, mangroves, tidal rivers), in modified or artificial habitats.
Geophaps scripta scripta	Squatter Pigeon (southern)	V		Unlikely	Generally inhabit open forest to sparce open woodland and scrub within 3 km of water, where the dominant overstorey vegetation is Eucalyptus, Corymbia, Acacia or Callitris species.
Hirundapus caudacutus	White-throated needletail	V, MT		Possible	Mainly aerial from 1m to >1000m above the ground. Although they occur over most habitat, they are recorded most often over wooded areas including open forest and rainforest.
Limosa lapponica baueri	Nunivak bar-tailed godwit	E		Possible	Forage near waters edge or in shallow water of harbours and estuaries. Generally, roost on intertidal sandflats, spits and banks, and less frequently in mudflats, estuaries, coastal lagoons and bays, often near seagrass or saltmarsh.
Macronectes giganteus	Southern Giant-Petrel	E		Unlikely	Pelagic species, usually occurring offshore, nests in small colonies amongst open vegetation on Antarctic and subantarctic islands. Unlikely to be found within the Study Area but may over fly the area.
Neochmia ruficauda ruficauda	Star Finch (eastern), Star Finch (southern)	E		Possible	Mainly found in grasslands and grassy woodlands close to freshwater. Also occur in cleared and suburban areas.
Numenius madagascariensis	Eastern curlew	CR, MW		Possible	A migratory species that does not breed in Australia. Forages in sheltered intertidal sandflats and mudflats. Roosts on sandy spits and islets, especially on dry beach sand near the high-water mark, and among coastal vegetation including low saltmarsh or mangroves.
Numenius phaeopus	Whimbrel		SL	Possible	Require intertidal mudflats for feeding such as along estuaries and lagoons, and sometimes sandy beaches or among rocks. They roost in mangroves or other structures during high tide, though they have been observed to roost on muddy, sandy or rocky ground as well.

Scientific Name	Common Name	EPBC Status	NCA Status	Likelihood of Occurrence	Description
Pandion cristatus	Eastern osprey		SL	Likely	Occupies coastal areas, in particular mouths of large rivers, lagoons and lakes. Feed over open water.
Phaethon lepturus	White- tailed Tropicbird	MMB		Unlikely	Pelagic species, usually occurring offshore, breeding on oceanic islands. Unlikely to be found within the Study Area but may over fly the area.
Phaethon rubricauda	Red-tailed Tropicbird	MMB		Unlikely	Pelagic species, usually occurring offshore, breeding on oceanic islands. Unlikely to be found within the Study Area but may over fly the area.
Poephila cincta cincta	Southern Black-throated Finch	E		Unlikely	Occurs mainly in grassy open woodlands and forests with Eucalyptus, Corymbia and Melaleuca dominated communities, often along water courses or in proximity to water.
Pterodroma neglecta neglecta	Kermadec Petrel (western)	V		Unlikely	Pelagic species, usually occurring offshore. Unlikely to be found within the Study Area but may over fly the area.
Rostratula australis	Australian painted snipe	E		Unlikely	Inhabits shallow terrestrial freshwater to brackish wetlands, including temporary and permanent lakes, swamps and claypans. They also utilise inundated or waterlogged grassland or saltmarsh, dams, rice crops, sewage farms and bore drains. They prefer areas of bare wet mud with canopy cover.
Sternula albifrons	Little tern	V, MMB		Possible	Inhabit coastal areas including lakes, lagoons, estuaries, river mouths and deltas, bays, harbours and inlets, particularly if there are exposed sandbanks or on exposed ocean beaches. They nest in the sand and forage in the shallow waters. They are less often seen at sea and usually are within 50 m of the shore.
Tyto novaehollandiae kimberli	Masked owl (northern)	V		Unlikely	Usually recorded in riparian forests, rainforest, open forest, Melaleuca swamps and the edges of mangroves. Requires large trees with hollows for nesting, which are absent from the Study Area.

Scientific Name	Common Name	EPBC Status	NCA Status	Likelihood of Occurrence	Description
Mammals					
Balaenoptera edeni	Bryde's Whale	MM		Possible	Occur in tropical to temperate oceanic and inshore waters where there is prey availability. No specific feeding or breeding areas have been identified.
Balaenoptera musculus	Blue Whale	E		Unlikely	Primarily open ocean dwellers, but there are significant aggregations in certain shallow water areas usually for feeding, none of which occur in the Study Area.
Balaenoptera omurai	Omura's Whale	MM		Unlikely	Occurs in tropical to warm temperate waters. Their habitat requirements and preferences are not well known; however they have primarily been observed in shallow continental shelf waters, at a mean depth of 31 m.
Dasyurus hallucatus	Northern quoll	E		Unlikely	Can occupy a diverse range of habitats including rocky areas, eucalypt forest and woodlands, rainforests, sandy lowlands and beaches, shrubland and grasslands. They require some form of rocky area for denning and utilise tree hollows and rocky cervices for shelter.
Dugong dugon	Dugong	MM	V	Unlikely	Require seagrass meadows for feeding. Occur in shallow waters with seagrass available. There is a single record in 2018 of a dugong within the 500 m buffer of the Study Area but not within the Study Area itself. However, it was likely feeding in seagrass meadows available further offshore to the Study Area and is unlikely to utilise the Study Area other than in transit due to the low seagrass cover.
Macroderma gigas	Ghost bat	V		Unlikely	Can be found in a range of habitats including rainforest and vine scrub to open woodlands and arid areas. They roost in caves, rock crevices and old mines. Unlikely to occur due to lack of suitable habitat though may over fly the area.

Scientific Name	Common Name	EPBC Status	NCA Status	Likelihood of Occurrence	Description
Megaptera novaeangliae	Humpback Whale	MM		Possible	The Great Barrier Reef to the east of the Study Area is considered a Biologically Important Area for breeding for humpback whales, however not the Study Area itself and they migrate in close proximity to the east coast of Australia.
Orcaella heinsohni	Australian snubfin dolphin	V, MM		Unlikely	Habitats include shallow coastal and estuarine waters close to the coast or creek mouths and in proximity to seagrass beds.
Orcinus orca	Killer Whale, Orca	MM		Unlikely	Occur in both warm and cold, deep and shallow marine waters. In Australia they are often seen on the continental shelf near seal colonies.
Petauroides volans	Greater Glider (southern and central)	E		Unlikely	They occur in eucalypt forests and taller woodlands habitats. These species are arboreal and rarely are spotted in fragmented ecosystems.
Petrogale persephone	Proserpine Rock-wallaby	E		Unlikely	Lives in the rainforest at sites with large boulders, crevices, tunnels and overhang. There is no suitable habitat within the Study Area, however habitat adjacent to the Study Area is suitable and could occur as a vagrant.
Phascolarctos cinereus (combined populations of Qld, NSW and the ACT)	Koala (combined populations of Queensland, New South Wales and the Australian Capital Territory)	E		Unlikely	Inhabit eucalypt woodlands and forests. Arboreal species, spending the majority of their time in trees. There were a small patch of eucalypts within the Study Area that koalas could utilise in transit however they were too limited to be utilised as core habitat and there are much larger patches of habitat adjacent.
Sousa sahulensis	Australian humpback dolphin	MM		Possible	Usually occurs in shallow coastal and estuarine waters, in Queensland typically within 10 km of the coast.
Taphozous australis	Coastal sheath tail bat		NT	Unlikely	Occurs along a narrow coastal zone, preferring to roost in sea caves and rocky clefts, but also known to roost in disused mines, boulder piles, rock fissures, bunkers and occasionally within buildings. They

Scientific Name	Common Name	EPBC Status	NCA Status	Likelihood of Occurrence	Description
					forage above the canopy in habitats such as melaleuca swamps, open eucalypt forest, coastal dunes and heathlands, monsoon forests and mangroves.
Xeromys myoides	Water mouse	V		Possible	Intertidal and supratidal areas, brackish to freshwater wetlands and floodplains. Intertidal mangroves areas could potentially provide marginal nesting and foraging habitat,
Reptiles					
Caretta caretta	Loggerhead turtle	E, M		Possible	Occur in waters with hard or soft substrates, including rocky or coral reefs, muddy bays, sandflats, estuaries and seagrass meadows. Adults feed primarily on benthic invertebrates foraging in habitat from nearshore up to 55 m from shore.
Chelonia mydas	Green turtle	V, MM	V	Possible	Subtropical and tropical waters, usually occupy shallow waters. Bays, rocky or coral reefs and seagrass meadows. The Study Area lacks substantial reef or seagrass habitat. There is a single record in 2020 of a green turtle within the 500 m buffer of the Study Area but not within the Study Area itself. Green turtles could transit through the Study Area but it would not constitute core habitat due to the low cover of seagrass.
Crocodylus porosus	Salt-water Crocodile, Estuarine Crocodile	MM	V	Possible	Inhabit estuaries, and coastal marine waters.
Dermochelys coriacea	Leatherback turtle	E, MM		Possible	Tropical and temperate oceans. Inshore and offshore marine waters, feeds on jellyfish. Could utilise area in transit but would not constitute core habitat.
Egernia rugosa	Yakka Skink	V		Unlikely	Requires areas of stable soils, termite mounds, hollow logs, and ground-layer cover for shelter and colony formation.

Scientific Name	Common Name	EPBC Status	NCA Status	Likelihood of Occurrence	Description
Eretmochelys imbricata	Hawksbill turtle	V, MM		Unlikely	Typically occurs in tidal and sub-tidal rocky and coral reefs in tropical to temperate waters.
Lepidochelys olivacea	Olive Ridley turtle	E, MM		Possible	Juveniles occur on surface waters of open ocean, while adults occur in shallow soft-bottomed habitats of continental shelf waters.
Natator depressus	Flatback turtle	V, MM		Possible	Unlike other sea turtles they do not have a wide dispersal phase as juveniles. Inhabit soft bottomed habitat over the continental shelf. Likely feed in inshore shallow turbid waters.
Sharks and Rays					
Anoxypristis cuspidata	Narrow Sawfish, Knifetooth Sawfish	MM		Possible	Habitats are dominated by shallow open water and estuarine wetlands, with sandy or muddy substrates. Can utilise saline, brackish and freshwater.
Carcharhinus longimanus	Oceanic Whitetip Shark	MM		Unlikely	This species occurs in deep oceanic water, only occasionally coming close to shore.
Carcharias taurus	Grey Nurse Shark	MM		Unlikely	Primarily occurs in subtropical to cool temperate waters from shallow bays to the edge of the continental shelf. They have not been recorded in far north Queensland waters.
Carcharodon carcharias	Great White Shark	V, MM		Possible	Inhabit temperate and subtropical waters. Commonly inhabit continental and insular shelf waters, often close inshore, but also occur in the open ocean.
Lamna nasus	Porbeagle, Mackerel Shark	MM		Unlikely	Inhabit cold to temperate inshore to offshore waters and occasionally open ocean.
Mobula alfredi as Manta alfredi	Reef Manta Ray, Coastal Manta Ray	MM		Possible	Commonly utilise rock and coral reefs. They frequent shallow water including coastal areas, bays and lagoons close to land masses and islands.

Scientific Name	Common Name	EPBC Status	NCA Status	Likelihood of Occurrence	Description
Mobula birostris as Manta birostris	Giant Manta Ray	MM		Unlikely	Commonly utilise rock and coral reefs. They frequent shallow water including coastal areas, muddy bays and near river mouths, though they are sometimes found in deep waters.
Pristis zijsron	Green Sawfish, Dindagubba, Narrowsnout Sawfish	V, MM		Unlikely	Habitat includes inshore marine waters, estuaries, and sandy or muddy beaches.
Sphyrna lewini	Scalloped Hammerhead	CD		Possible	Utilise coastal, estuarine and offshore pelagic waters of Queensland, with juveniles occupying shallow nursery habitats in bays and estuaries.
Rhincodon typus	Whale Shark	V, MM		Unlikely	Pelagic species which inhabits offshore deep waters from tropical to warm temperate oceans, but can also be found in inshore waters.
Plants					
Brachychiton compactus	-		NT	Unlikely	Occur on steep lower slopes near sea level. The species is a component of semi-evergreen notophyll-microphyll vine thickets or low vine forests
Lastreopsis tenera	Broad shield fern		SL	Unlikely	Occurs in terrestrial rainforest, wet sclerophyll forest and open forests over a wide altitudinal range.
	Square Tassel Fern	V		Unlikely	Typically occurs in upland notophyll vine forest, where it grows as an epiphyte on rainforest trees.

Status Key: CR = Critically Endangered, E = Endangered, V = Vulnerable, NT = Near Threatened, CD = Conservation Dependant, SL = Special Least Concern, MM = Migratory Marine, MMB = Migratory Marine Bird, Migratory Terrestrial = MT, Migratory Wetlands = MW.

1.6 Terrestrial Vegetation

1.6.1 Commonwealth Matters

Threatened Ecological Communities
The following TEC's listed under the EPBC have been modelled as potentially occurring within the Study Area and/or surrounds:

- Littoral Rainforest and Coastal Vine Thickets of Eastern Australia (Critically Endangered)
- Broad leaf tea-tree (*Melaleuca viridiflora*) woodlands in high rainfall coastal north Queensland (Endangered).

Neither TEC was identified in the Study Area or surrounds, and the Study Area does not provide suitable habitat features to support either TEC.

Threatened Flora
Phlegmariurus tetrastichoides (Square Tassel-fern), listed as Vulnerable under the EPBC Act, has been modelled as potentially occurring within the Study Area and its surrounds. The Square Tassel-fern typically occurs in upland notophyll vine forest, where it grows as an epiphyte on rainforest trees (Queensland Herbarium 2009).

No individuals of the species were recorded in the Study Area, and none are considered likely to occur due to the absence of suitable habitat.

Due to the disturbed and highly modified landscape, no threatened flora species of high-conservation significance are likely to occur within the Study Area as confirmed by site survey, nor have they previously been recorded there.

1.6.2 State Matters

Regulated Vegetation
There is no regulated vegetation of any category (B, C or R) mapped within the Study Area. The entire Study Area is mapped as non-remnant vegetation.

Threatened Flora and Protected Plants
No threatened flora or protected plants were observed within the Study Area during the survey. There are only two contemporary records of threatened species in the area surrounding the Study Area (refer to Annex B).

There is a single record of *Brachychiton compactus* (near threatened) and in 2022 approximately 870 m north of the Study Area and a single record of *Lastreopsis tenera* (special least concern) in 2020 approximately 726 m west of the Study Area. Both species were recorded in areas mapped to be RE 8.12.5c/8.12.14a, which does not align with the vegetation present within the Study Area.

Essential Habitat
No essential habitat for threatened flora has been mapped within the Study Area.

1.7 Marine Fauna

For the purposes of this assessment marine fauna are species that solely exist in water throughout their lifecycle, with no key life cycle stages on land.

Refer to Figure 1.2 for broad marina fauna habitat mapping of the Study Area and surrounds based on survey observations.

Fauna habitats within the Study Area include:

- Low cover (1-5%) of seagrass and macroalgae (4.31 ha)
- Macroalgae beds (5-30% cover) (0.22 ha)
- Unvegetated seafloor (2.33 ha) and intertidal rocky seawall/hard structure features (0.054 ha)
- Overlying water column

Incidental marine fauna observed are described in Section 1.5 and included some common, sponges, coral and common fish species.

The benthic habitat within the Study Area supports relatively low complexity likely due to high human use, vessel traffic and historical land reclamation. As a result, the Study Area provides limited habitat suitability for most threatened/protected fauna and is expected to predominantly support only common, disturbance-tolerant species or other marine species in transit. No critical or unique habitat features were present.

1.7.1 Commonwealth Matters

Whales
In general, the Study Area is too shallow and small to be usable habitat for whales. The following whales listed under the EPBC Act were identified in the PMST search to potentially occur:

- Byrde's whale - occur in tropical to temperate oceanic and inshore waters where there is prey availability, such as shoaling fish, which are unlikely to occur in sufficient sizes within the Study Area.
- Blue whale - primarily open ocean dwellers, which are unlikely to be present in inshore waters. There are significant aggregations in certain shallow water areas usually for feeding, none of which occur in the Study Area.
- Omura's whale - habitat requirements and preferences for this species are not well known. However, they have primarily been observed in shallow continental shelf waters, at a mean depth of 31 m, the majority of the Study Area being too shallow.
- Humpback whale – the Great Barrier Reef to the east of the Study Area is considered a BIA (Biologically Important Area) for humpback whale breeding. However, the Study Area is not within this.

Dolphins
The following dolphins were identified in the PMST search to potentially occur within the Study Area:

- Australian snubfin dolphin – inhabit shallow water close to the coast, which is consistent with the Habitat in the Study Area. However, they typically occur within 20 km of river mouths and have not been recorded within the vicinity of the Study Area.
- Orca – this species can occur in all oceans but have a preference for coastal areas. In Australia they are most commonly seen on the continental shelf in proximity to seal colonies. Due to the lack

of any records of the species in the vicinity of the Study Area and the limited availability of prey it is unlikely for orca to use the Study Area.

- Australian humpback dolphin - inhabit shallow water close to the coast, which is consistent with the Habitat in the Study Area. However, they typically occur within 20 km of river mouths and have not been recorded within the vicinity of the Study Area.

Dugong

There is a single record of a dugong within the 500 m buffer of the Study Area from 2018 (WildNet). This record aligns with previously mapped seagrass meadows in the wider area (NSEC 2008). Dugongs require seagrass meadows for feeding and occur in shallow waters with seagrass available. Due to the limited and sparce occurrence of seagrass within the Study Area it would not constitute a viable feeding area for dugongs, which may only transit through the Study Area to feeding grounds.

Sharks and Rays

The following sharks and rays were identified in the PMST search to potentially occur within the Study Area:

- Oceanic whitetip shark – typically a deep-water oceanic species, occasionally coming close to shore. Given its typical habitat of occurring in deep open ocean and the lack of records in the vicinity of the Study Area it is unlikely to utilise the area.

- Grey nurse shark – generally found in subtropical to temperate waters in shallow bays to the outer continental shelf. In Queensland they have not been recorded further north than Hervey Bay and therefore are unlikely to occur within or near the Study Area.

- Great white shark – this species commonly inhabits continental and insular shelf waters, often close inshore, but also occur in the open ocean. This shark could utilise the Study Area in transit, though there are no records in the vicinity.

- Porbeagle – occur in inshore to offshore waters and occasionally the open ocean. However, this shark is one of the cold tolerant sharks, typically occurring from -1 – 23°C waters, and there are no current records in the northern oceans of Australia.

- Scalloped hammerhead – occur in coastal, estuarine and offshore pelagic waters. Juveniles inhabit shallow nursey habitat such as bays and estuaries. This species could utilise the Study Area and surrounds, though there are no records of them in the vicinity.

- Whale shark – typically occur in offshore waters but can occasionally be found in inshore waters. There are no records in the vicinity of the Study Area and would be unlikely to utilise this habitat which would lack significant prey resources.

- Narrow sawfish and green sawfish – both usually inhabit shallow waters in sheltered bays, estuaries and lagoons. There are no records of either species in the Study Area or nearby surrounds, however the Study Area could provide marginal habitat for these species.

- Reef manta ray and giant manta ray – these rays frequent shallow near shore waters. Whilst this aligns with the Study Area habitat, they prefer rock and coral reefs which are absent from the Study Area, so it would be unlikely to favour this habitat.

Other Species

Other matters protected under the EPBC Act include marine species within the family Syngnathidae, such as pipehorses, seahorses and pipefish. These species are not listed conservation significant

under the EPBC Act and are therefore not highlighted in Section 1.5. Although the Study Area contains seagrass, macroalgal habitat and some soft sediment-associated structures (e.g. sponges), these habitats are sparse and fragmented. As such, the Study Area is considered to provide only marginal habitat for these species.

1.7.2 State Matters

Fish Habitat Areas
No fish habitat areas (A or B) were mapped to occur within the Study Area.

State Marine Parks
No state marine parks (highly protected zones) were mapped to occur within the Study Area.

Wetlands
No high ecological significance or high ecological value wetlands or waterways were mapped to occur within the Study Area.

Dugong Protection Areas
No dugong protected areas were mapped to occur within the Study Area.

1.8 Terrestrial Fauna

For the purposes of this assessment terrestrial fauna are species that depend on land-based habitats for key life-cycle stages. This includes marine turtles which require terrestrial nesting sites.

Refer to Figure 1.5 for broad fauna habitat mapping of the Study Area and surrounds based on survey observations.

Fauna habitats within the Study Area include:

- Mangrove shrubland to low closed forest (2,535.3 m^2)
- Mudflats with gravel and granitic material devoid of vegetation (2,118.6 m^2)
- Disturbed/exotic coastal vegetation (359.4 m^2)
- Disturbed low open woodland regrowth (873 m^2).

No terrestrial vertebrate fauna was observed within the Study Area during the survey.

As described above, the habitats within the Study Area have been substantially modified due to historical clearing, land reclamation, road construction and ongoing industrial activities. The area is also subject to frequent disturbance from vessel traffic, pedestrians and vehicle access. As a result, the Study Area provides limited habitat suitability for most fauna and is expected to support only common, disturbance-tolerant species. No critical, unique or notable habitat features were present.

1.8.1 Matters of National Environmental Significance

Terrestrial Fauna (excluding shorebirds, marine and wetland species)
The Study Area is dominated by disturbed estuarine and coastal habitats, with only sparse and fragmented patches of woodland. These patches lack the structural diversity, canopy continuity, and floristic characteristics required by the following woodland and forest-dependent MNES species:

- Arboreal species such as Greater Glider and Koala are unlikely to use the Study Area due to the lack of continuous canopy linkages.

- Hollow-dependent species including the Masked Owl are unlikely to rely on the Study Area due to the limited availability of large trees and intact roosting structures.
- Ghost bats roost in natural caves and disused mines which are lacking from the Study Area.
- There is a lack of high-quality habitat for Northern Quoll in the Study Area and the combination of traffic exposure, artificial lighting, and industrial disturbance, reduce the likelihood that quolls will utilise the Study Area or traverse it as part of a broader movement corridor.
- The Proserpine rock-wallaby, which requires structurally complex rocky refuges and contiguous woodland, would similarly find minimal suitable habitat in the Study Area due to the simplified ground structure and anthropogenic barriers.
- The Yakka skink, which requires areas of stable soils, termite mounds, hollow logs, and ground-layer cover for shelter and colony formation, is unlikely to find suitable habitat within the Study Area due to its simplified ground structure, limited coarse woody debris, and disturbance from adjacent industrial land uses.
- The Study Area lacks the structural diversity, canopy continuity, and floristic composition required by large raptors such as the Red Goshawk and Grey Falcon which depend on extensive tracts of intact woodland or forest for foraging and nesting.
- Granivorous finches, such as the Star Finch and Southern Black-throated Finch, require native grasslands with reliable seeding species and access to permanent water. These conditions are absent within the heavily modified environment of the Study Area.
- The Squatter Pigeon (southern) relies on open woodland with a diverse grass understorey, neither of which are present in the Study Area.

Highly mobile aerial species such as the White-throated Needletail may occasionally fly over the Study Area, but the site offers no roosting, nesting, or foraging habitat of value and therefore does not constitute important habitat under the EPBC Act.

The Australian Painted Snipe typically inhabits freshwater, or occasionally brackish, wetlands with dense emergent vegetation. The Study Area does not contain habitat suitable for this species.

The Little Tern prefers sheltered coastal environments with exposed sandbanks or sand-spits, typically roosting on protected sandy spits, banks, and shores, particularly where they are surrounded by shallow channels. The Study Area provides only marginal habitat for this species, but the high level of site disturbance reduces its suitability.

Although the Study Area lies adjacent to extensive tracts of intact remnant woodland, its ecological connectivity to these higher-value habitats is significantly constrained by Proserpine - Shute Harbour Road and industrial development. Consequently, the Study Area offers only limited supplementary habitat for forest- and woodland-dependent MNES species that may occur in the region. Habitat fragmentation and the absence of continuous, undisturbed vegetation markedly reduce the Study Area's capacity to support MNES individuals or facilitate effective movement. As a result, overall habitat suitability and functional connectivity are low, limiting the Study Area's ability to contribute to species dispersal, foraging, or sheltering needs.

In summary, the Study Area's degraded condition, reduced structural complexity, and disrupted connectivity constrain its ecological function for MNES-listed terrestrial and arboreal vertebrate fauna and avifauna that may occur in the locality.

Water Mouse

Water mouse has been recorded locally at Cannonvale approximately 10 km west of the Study Area. No individuals, midden, tracks/scats, or potential nesting structures of water mouse were observed during the surveys. Based on the known habitat characteristics and behaviours of the water mouse (DAWE 2021), the mangrove communities within the Study Area may provide marginal foraging and occasional nesting habitat for the species. Intertidal mudflats associated with these mangroves could supply prey resources, including crustaceans, polyclad worms, pulmonate snails, and bivalves. The upper supralittoral zone, such as elevated embankments, consolidated sediment banks, and fallen timber, may offer locations suitable for the construction of burrows above the high-tide mark. Areas subject to regular tidal inundation are unsuitable for nesting due to insufficient opportunity for the establishment of stable, elevated burrow structures.

Despite this, the fragmented, narrow, and highly disturbed condition of the mangrove habitat within the Study Area substantially reduces its capacity to support this species. The limited structural complexity, reduced prey abundance, and high levels of anthropogenic disturbance provide very low habitat quality for water mouse and the mangroves and intertidal zones of the Study Area are unlikely to represent functionally important habitat for this species.

Marine Turtles

Marine turtles are widespread throughout the Whitsunday region and are known to occur in marine waters within and directly adjacent to the Study Area. The following marine turtles listed under the EPBC Act may occur:

- Leatherback turtle
- Loggerhead turtle
- Olive Ridley turtle
- Flatback turtle
- Green turtle
- Hawksbill turtle.

Whilst marine turtles are known to occur locally, the Study Area is not known to support important or critical habitat for any of these species. Green turtles are the most likely of the turtle species to occur in the Study Area, but only as transient visitors.

The Recovery Plan for Marine Turtles in Australia (Commonwealth of Australia 2017) and associated spatial data were reviewed to identify nesting and inter-nesting habitat critical to the survival of marine turtles in the vicinity of the Study Area. It is noted that each stock typically uses a broad range of feeding grounds, and feeding grounds can often comprise turtles from multiple stocks and species. Further, it is recognised that marine turtles require migratory corridors between foraging and breeding areas, habitat for mating or courtship, and hatchling dispersal. The following data was reviewed to assess potential key foraging areas, migratory corridors, courtship areas and habitat required for hatchling dispersal:

- Australian Marine Spatial Information System (AMSIS) (Geoscience Australia 2023)
- Species profile and threat database (SPRAT 2026)
- Queensland Government Sea turtle nesting areas (DETSI 2022)

- Marine Megafauna Impact Assessment and Management Plan (NSEC 2008).

Habitat Critical to the Survival of Marine Turtles

Under section 270(2)(d) of the EPBC Act, 'Habitat critical to the survival of the listed threatened species' must be identified in the Recovery Plan for Marine Turtles. The criteria for describing habitat critical to the survival of a species for marine turtles was determined in accordance with the EPBC Act Significant Impact Guidelines 1.1 - Matters of National Environmental Significance. The guidelines define 'habitat critical to the survival of a species' as areas necessary:

- For activities such as foraging, breeding or dispersal
- For the long-term maintenance of the species (including the maintenance of species essential to the survival of the species)
- To maintain genetic diversity and long-term evolutionary development
- For the reintroduction of populations or recovery of the species.

Habitat critical to the survival (HCTS) of a species for marine turtle stocks has been identified by consensus of a panel of experts in marine turtle biology. Nesting and interesting habitat has been identified for each stock based on the following criteria:

- Nesting habitat critical to the survival of green, loggerhead, flatback and hawksbill turtles includes at least 70 per cent of nesting for the stock
- As olive ridley turtle stocks in Australia are small and likely to have been significantly impacted by egg loss for several decades, nesting habitat critical to the survival of olive ridley turtles includes all documented nesting areas in Queensland.
- Nesting habitat critical to the survival of leatherback turtles includes all areas where nesting has occurred in Australia since 1996.
- Nesting habitat critical to survival of marine turtles is of a geographically relevant scale. For example, green turtles are known to move between islands of the Capricorn Bunker Group within a nesting season, while leatherback turtles may move up to 400 km within a season.
- Where relevant, nesting habitat determined to be critical to the survival of marine turtles includes areas that are: geographically dispersed; major and minor rookeries; mainland and island beaches; and winter or summer nesting.
- To ensure the validity of long-term monitoring programs for assessing trends in nesting turtle abundance, all index beaches are considered habitat critical to survival of marine turtles.
- Inter-nesting habitat critical to the survival of marine turtles is located immediately seaward of designated nesting habitat critical to the survival of marine turtles. The inter-nesting habitat critical buffer for green, loggerhead, hawksbill, olive ridley and leatherback turtles is 20 km.

Figure 1.7 shows marine turtle HCTS mapping in the Study Area and surrounds developed by DCCEEW (Australian Department of Climate Change, Energy, the Environment and Water). No HCTS for marine turtles has been mapped in the Study Area or near surrounds. Confirmed habitats that meet DCCEEW criteria for critical habitat for all target marine turtle species are well removed from the Study Area. The closest critical habitat to the Study Area has been mapped at Bushy Redbill Reef more than 120 km southeast of the Study Area.

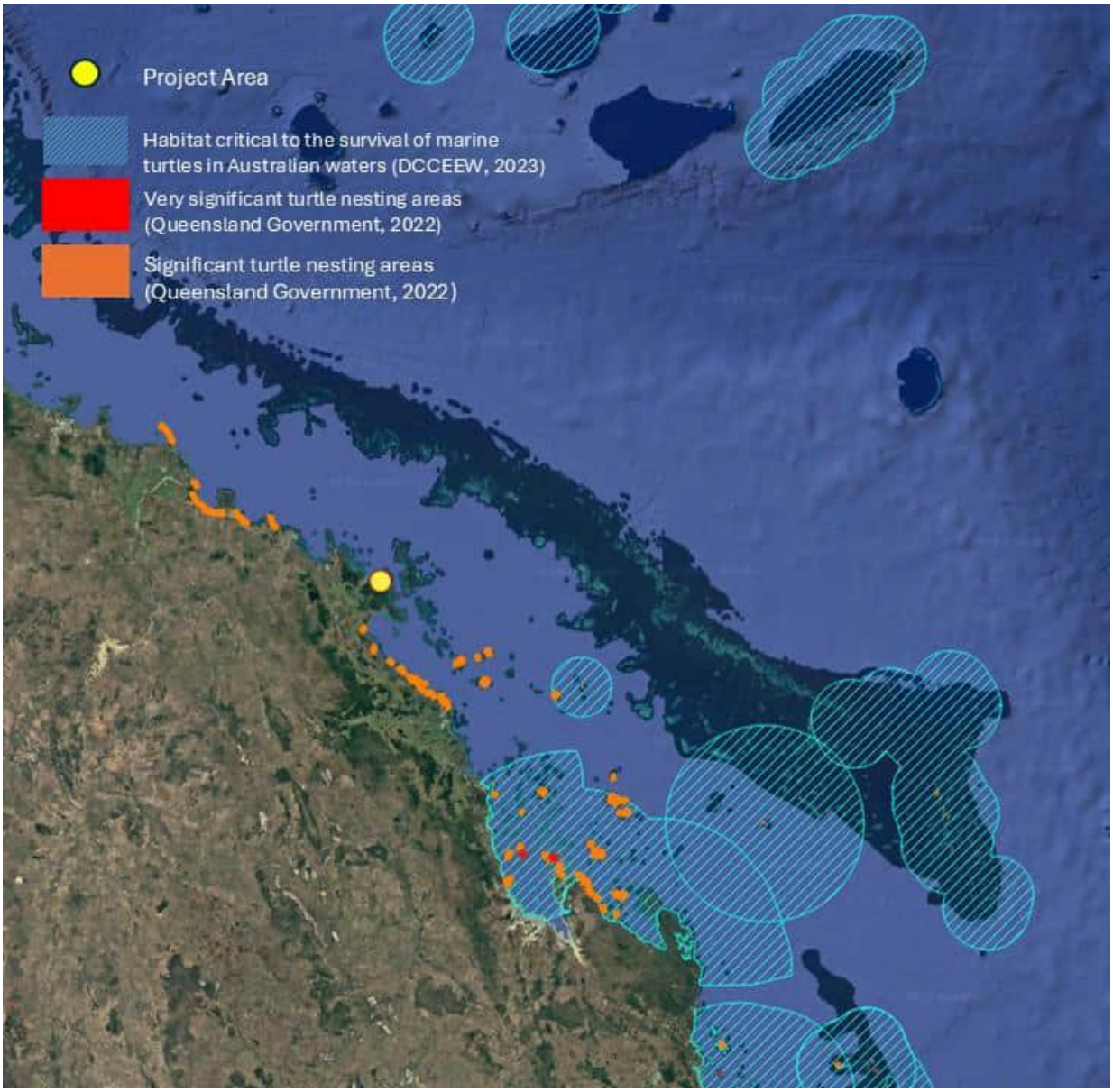

Figure 1.7 Critical Habitat and Significant Nesting Beaches for Marine Turtles (Source: DCCEEW 2023; Qld Government 2022)

Biologically Important Areas

Biologically important areas (BIAs) are areas where protected species display biologically important behaviour, such as breeding, foraging, resting and migration. BIAs are based on the following:

- Behaviour (feeding, nesting, inter-nesting, migration) occurs in the area
- Certainty of occurrence (only areas of 'known' or 'likely' occurrence are considered)
- The level to which species use the BIA
- The season(s) during which species use the BIA
- Source(s) of the information upon which the BIA is based.

The nesting BIA for Flatback Turtle extends along the eastern Queensland coast from Townsville to Yeppoon which includes the Whitsunday region. No other BIA for a marine turtle has been mapped in the Study Area or surrounds. There are no records for marine turtle within the Study Area, the site is not a major turtle nesting site and does not provide optimal nesting habitats due to the lack of beach, highly disturbed habitats and regular disturbance.

Significant Nesting Beaches

To assist local planning schemes in avoiding adverse impacts from artificial lighting on sea turtle nesting and activity, the Qld Government has identified and mapped significant nesting beaches for the six threatened marine turtles. These include:

- Significant nesting beaches (over 1% of the species or genetic stock rely on the nesting area); and
- Very significant nesting beaches (over 40% of the species or genetic stock rely on the nesting area) for the six threatened marine turtles.

Table 1.4 and Figure 1.7 summarise the preferred habitat and mapped locations of significant and very significant turtle nesting areas in Qld. No significant or very significant nesting beaches for threatened turtles have been mapped within or in the near vicinity of the Study Area. The closest significant nesting beach to the Study Area has been mapped at Covering Beach approximately 30 km south- west of the Study Area and the closest very significant turtle nesting area is more than 200 km south-east of the Study Area.

Table 1.4 Preferred Habitat, Behaviour and Significant Marine Turtle Nesting Areas in Qld

Species	Habitat and Ecology[1]	Very significant turtle nesting areas (over 40% of the species or genetic stock rely on the nesting area)[2]	Significant (over 1% of the species or genetic stock rely on the nesting area) 2	Hot spots for light pollution impacts on turtle nesting areas[3]	Nesting seasons 2
Flatback turtle *(Natator depressus)*	Feed in the northern coastal regions of Australia, extending as far south as the Tropic of Capricorn. Feeding grounds also extend to the Indonesian archipelago and the Papua New Guinea coast. Have a preference for shallow, soft-bottomed seabed habitats away from reefs. There are four major nesting areas in Australia, representing four genetic breeding stocks. On the east coast of Queensland, flatback turtles nest from Mon Repos in the south to Herald Island near Townsville in the north. Major rookeries include four islands on the inner shelf of the southern Great Barrier Reef, Peak, Wild Duck, Avoid and Curtis Islands. Nesting activity reaches a peak between late November and early December and ceases by late January. Hatchlings emerge from nests from late December until about late March, with most hatching during February.	Avoid Island, Wild Duck Island Peak Island	Cape Bowling Green, Wunjunga, Abbot Point, Mackay northern beaches (north to Newry Island), The Percy Group, Duke Islands, Curtis Island, Facing Island	Abbot Point, Peak Island (southern Capricorn Coast), Curtis Island and Facing Island (Gladstone), Mackay northern beaches	**Nesting**: October–January (peak: late November – early December) **Hatching**: December–March (peak: February)

[1] Source: Marine turtle species profile and threat database (SPRAT: http://www.environment.gov.au/cgi-bin/sprat/public/sprat.pl)
[2] Source: Marine Turtle Breeding and Migration Atlas Project, State of Queensland, 2021.
[3] Source: Queensland Marine Turtle Conservation Strategy (2021–2031) (PDF, 2MB), Department of Environment and Science, Queensland Government, 2021.

Species	Habitat and Ecology[1]	Very significant turtle nesting areas (over 40% of the species or genetic stock rely on the nesting area)[2]	Significant (over 1% of the species or genetic stock rely on the nesting area) 2	Hot spots for light pollution impacts on turtle nesting areas[3]	Nesting seasons 2
Loggerhead turtle *(Caretta caretta)*	The eastern Australian population nests on the southern Great Barrier Reef and adjacent mainland coastal areas, including Mon Repos, Wreck Rock, Wreck Island, Erskine Island, and Tryon Island. Loggerhead turtles' nest from late October, reaching a peak in late December and finish nesting in late February or early March. Hatchlings emerge from nests from late December until about April with most hatching from February to early March. Loggerhead turtles are carnivorous, feeding mostly on shellfish, crabs, sea urchins and jellyfish.	Woongarra Coast	Lady Musgrave Island, Agnes Water to Rules Beach, Moore Park Beach, Capricorn and Bunker group of islands, North Stradbroke Island, Sunshine Coast, Bribie Island	Woongarra Coast, Heron Island, Sunshine Coast, Bribie Island	**Nesting**: October–March (peak: December–January) **Hatching**: December–May (peak: February–March)
Green turtle *(Chelonia mydas)*	Green turtles occur in seaweed-rich coral reefs and inshore seagrass pastures in tropical and subtropical areas of the Indo-Pacific region. In the northern Great Barrier Reef major breeding aggregations occur on Islands of the outer edge of the reef, including Raine Island and nearby cays. Minor rookeries for this population also occur on the mainland and inner and outer shelf islands and cays from Cape Grenville north and in Torres Strait. Nesting can occur year-round, but	Bramble Cay, Murray Islands, Raine Island	Northern Great Barrier Reef cays	NA	Nesting: October–March (peak: late December – early January) Hatching: December–May

Species	Habitat and Ecology[1]	Very significant turtle nesting areas (over 40% of the species or genetic stock rely on the nesting area)[2]	Significant (over 1% of the species or genetic stock rely on the nesting area) 2	Hot spots for light pollution impacts on turtle nesting areas[3]	Nesting seasons 2
	most nesting occurs from October to March with a peak in late December-early January. Adult green turtles feed mostly on seagrasses and algae although immature animals are carnivorous. The entire Great Barrier Reef area is an important feeding area for green turtles which nest locally as well as for those which nest in other areas.				
Hawksbill turtle *(Eretmochelys imbricata)*	Hawksbill turtles typically occur in tidal and sub-tidal coral and rocky reef habitats throughout tropical waters, extending into warm temperate areas as far south as northern New South Wales. In Australia the main feeding area extends along the east coast, including the Great Barrier Reef. Along the Great Barrier Reef, hawksbill turtles' nest in low numbers from just north of Princess Charlotte Bay to Torres Strait. A major breeding area occurs in Australia: Northern Great Barrier Reef has several significant nesting areas including: Milman, and Bouydong Islands. Although hawksbill turtles breed throughout the year, the peak nesting period in the Great	Milman Island, Possession Island, Great Woody Island, Sassie Island, Bourke Group of Islands	Torres Strait Islands	NA	**Nesting**: Year round (peak: December–February) **Hatching**: Year round (peak: February–May)

Species	Habitat and Ecology[1]	Very significant turtle nesting areas (over 40% of the species or genetic stock rely on the nesting area)[2]	Significant (over 1% of the species or genetic stock rely on the nesting area) 2	Hot spots for light pollution impacts on turtle nesting areas[3]	Nesting seasons 2
	Barrier Reef region occurs between January and February. Sponges make up a major part of the diet of hawksbill turtles, although they also feed on seagrasses, algae, soft corals and shellfish.				
Leatherback turtle *(Dermochelys coriacea)*	Are most reported feeding in coastal waters in central eastern Australia from the Sunshine Coast to central New South Wales. Most leatherback turtles living in Australian waters migrate to breed in neighbouring countries, particularly in Indonesia, Papua New Guinea and the Solomon Islands. Scattered nesting has been reported along the south Queensland coast from Bundaberg to Round Hill Head. The most frequently used nesting beaches by leatherback turtles are Wreck Rock and Rules Beach. Breeding in south-eastern Queensland occurs mostly during December and January. The leatherback turtle is carnivorous and feeds mainly in the open ocean on jellyfish and other soft-bodied invertebrates.	NA	NA	NA	**Nesting**: December–January **Hatching**: February–March

Species	Habitat and Ecology[1]	Very significant turtle nesting areas (over 40% of the species or genetic stock rely on the nesting area)[2]	Significant (over 1% of the species or genetic stock rely on the nesting area) 2	Hot spots for light pollution impacts on turtle nesting areas[3]	Nesting seasons 2
Olive Ridley Turtle *(Lepidochelys olivacea)*	Females lay clutches of eggs on sandy beaches; hatchlings disperse into offshore currents and have a pelagic phase of unknown length. Small juveniles through to adults reside in coastal zones along the northern coast of Australia. No studies of nest site selection for Olive Ridley Turtles have been undertaken in Australia. A substantial part of the immature and adult population forage over shallow benthic habitats from northern Western Australia to south-east Queensland. Apart from one exception, Olive Ridley Turtles have not been recorded in coral reef habitat or shallow inshore seagrass flats.	Flinders Beach, Mapoon, Aurukun Main Beach	Western Cape (Jardine Beach to Pormpuraaw), Kowanyama	Western cape ports	**Nesting**: March–October (peak: July) **Hatching**: May–December

Migratory Shorebirds

Migratory shorebirds occur along the shorelines of coasts and inland water bodies during most of their life cycles inhabiting wetlands, estuaries, mudflats, mangroves, rocky inlets, reefs and sandy beaches. Habitats in Australia contribute to adult birds building up the energy reserves necessary to support northward migration and subsequent breeding.

Current (2026) fauna databases, including, Qld WildNet, EPBC Spatial Portal, Atlas of Living Australia Spatial Portal and eBird were reviewed for migratory wader species records within the Whitsunday region. With the exception of Bar-tailed Godwit, there are no records for migratory shorebirds within the Study Area or near surrounds, with the exception of one observation of the curlew sandpiper to the east of the Study Area within 1 km in 2022. Based on the species records for the region and habitat assessments of the Study Area, all intertidal and estuarine wetland habitat within the Study Area provide potential marginal habitat for the species listed in Table 1.5.

Table 1.5 Migratory Shorebirds Potentially Occurring in the Study Area

Species	EPBC Status	Preferred Habitat	Records within the Region	0.1% Flyway Population[4]
Sharp-tailed Sandpiper (*Calidris acuminata*)	V, MWB	Utilises fresh and hypersaline environments, feeding along the edge of water on mudflats, coastal and inland wetlands, and sewage ponds. Diet comprises mostly of seeds, worms, molluscs, crustaceans, and insects. On migration, the species forages and roosts on rocky and sandy beaches, freshwater habitats, and inland saltwater habitats.	No records within the Project Area.	130
Red Knot, Knot (*Calidris canutus*)	V, MWB	Mainly inhabits intertidal mudflats, sandflats, and sandy beaches of sheltered coasts, estuaries, bays, inlets, lagoons, and harbours. They are occasionally seen on terrestrial saline wetlands near the coast and have been recorded on sewage ponds and saltworks.	No records within the Project Area.	130
Curlew Sandpiper (*Calidris ferruginea*)	CE, MWB	Mainly occur on intertidal mudflats in sheltered coastal areas, such as estuaries, bays, inlets and lagoons, and also around non-tidal swamps, lakes and lagoons near the coast, and ponds in saltworks and sewage farms.	Recorded in the vicinity of the Study Area.	120
Greater Sand Plover, Large Sand Plover (*Charadrius leschenaultia*)	V, MWB	Almost entirely restricted to coastal areas occurring mainly on sheltered sandy, shelly or muddy beaches or estuaries with large intertidal mudflats or sandbanks. Roosts during high tide on sandy beaches and	No records within the Project Area.	140

[4] Source: van Swinderen, L., Hansen, B. D., Fuller, R. A., Watkins, D., Rogers, D. I., Clemens, R. S., Newman, M., Woehler, E. J., Weller, D. R., & LeClair, S. (2025). Revision of the East Asian–Australasian Flyway Population Estimates for 37 listed Migratory Shorebird Species. BirdLife Australia / Department of Climate Change, Energy, the Environment and Water.

Species	EPBC Status	Preferred Habitat	Records within the Region	0.1% Flyway Population[4]
		rocky shores; begin foraging activity on wet ground at low tide, usually away from the edge of the water; individuals may forage and roost with other waders. Diet includes insects, crustaceans, polychaete worms and molluscs.		
Latham's Snipe, Japanese Snipe (*Gallinago hardwicki)*	V, MWB	Feed in soft mudflats or shallow water typically at night, early morning, or evening. Feeds on seeds and other plant material, and on invertebrates. Can roost singly and in aggregations in small wetlands including urban water bodies, saltmarshes, as well as creek edges.	No records within the Project Area.	35
Bar-tailed Godwit (*Limosa lapponica baueri)*	E	Primarily uses coastal habitats such as intertidal sandflats, mudflats, estuaries and bays, and less often salt lakes, brackish wetlands, beaches and rock platforms Forages at low to mid tide on sandy or muddy substrates near seagrass beds, saltmarsh and mangroves.	Recorded in the vicinity of the Study Area.	375
Eastern Curlew, Far Eastern Curlew (*Numenius madagascariensis)*	CE, MWB	Generally occupies coastal lakes, inlets, bays and estuarine habitats, and is mainly found in intertidal mudflats and sometimes saltmarsh of sheltered coasts. Occasionally, the species occurs on ocean beaches (often near estuaries), and coral reefs, rock platforms, or rocky islets. Forages in or at the edge of shallow water. Roosts on sandy spits and islets, especially on dry beach sand near the high-water mark, and among coastal vegetation including low saltmarsh or mangroves.	No records within the Project Area.	35

Critical or Important Wader Habitat

No Critical habitat for shorebirds has been mapped in the Study Area or near surrounds.

Under the EPBC Act, 'important habitat' is a key concept for migratory species to ensure that sites necessary for the ongoing survival of the listed species listed are appropriately managed. Figure 1.8 illustrates the process for identifying important habitat for migratory shorebirds under the EPBC Act, with the exception of Latham's snipe (*Gallinago hardwickii)*. Important habitat for Latham's snipe is described as areas that have previously been identified as internationally important for the species, or areas that support at least 18 individuals of the species.

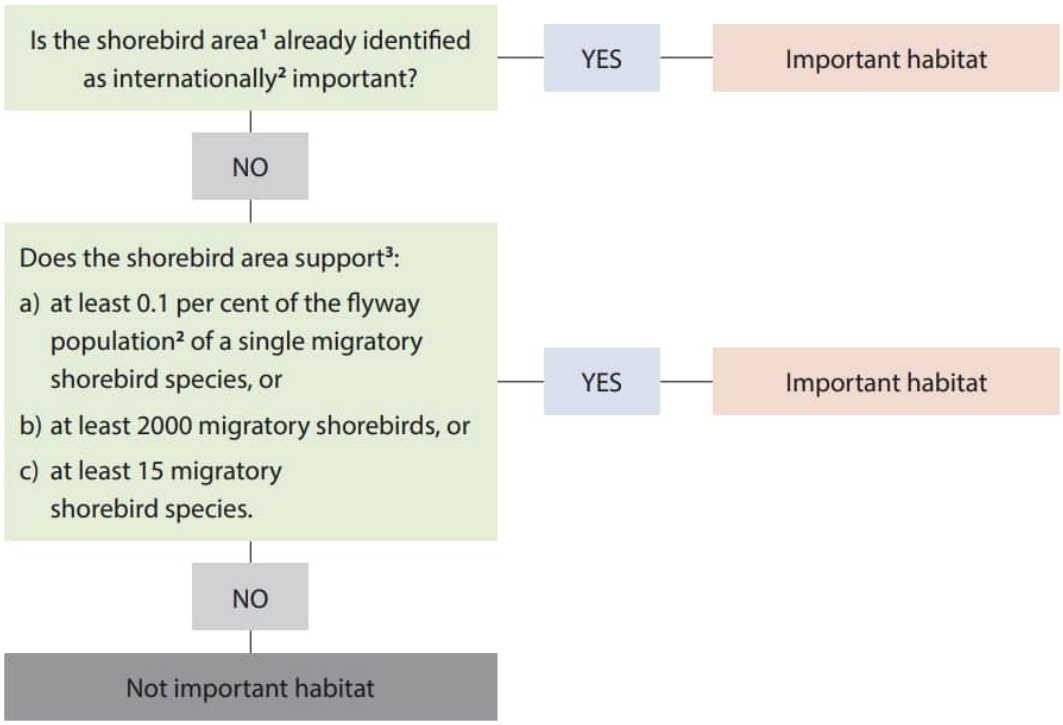

Figure 1.8 Process for identifying important habitat for migratory shorebirds (excluding Latham's snipe)[5]

Following the process for identifying important habitat for migratory shorebirds under the EPBC Act, it is considered that the Study Area does not support important habitat for migratory shorebirds or Latham's snipe on the following basis:

- The Study Area does not support shorebird area that is identified as internationally important, such as Ramsar Wetland.
- The small extent of potential shorebird area within the Study Area (refer Figure 1.5) is unlikely to support: at least 0.1% of the flyway population of any listed species referred to in Table 1.5; at least 2000 migratory shorebirds; or, at least 15 migratory shorebird species. Despite wader records throughout the Whitsunday region there are no records for these species within the Study Area.
- There are no records for Latham's snipe within the Study Area or immediate surrounds. The closest records for the species are within Conway National Park. The small extent of potential shorebird area within the Study Area is unlikely to support at least 18 individuals of this species.

1.8.2 Significant Impact Assessment

Under the Significant Impact Guidelines 1.1 - Matters of National Environmental Significance:

- An action is likely to have a significant impact on an *endangered* species if there is a real chance or possibility that it will:
  - Lead to a long-term decrease in the size of a population

[5] EPBC Act Policy Statement 3.21 Industry guidelines for avoiding, assessing and mitigating impacts on EPBC Act listed migratory shorebird species. Australian Government, 2017

- Reduce the area of occupancy of the species
- Fragment an existing population into two or more populations
- Adversely affect Habitat Critical to the Survival (HCTS) of a species
- Disrupt the breeding cycle of a population
- Modify, destroy, remove, isolate or decrease the availability or quality of habitat to the extent that the species is likely to decline
- Result in invasive species that are harmful to a critically endangered or endangered species becoming established in the endangered or critically endangered species' habitat
- Introduce disease that may cause the species to decline, or
- Interfere with the recovery of the species.

- An action is likely to have a significant impact on a *vulnerable* species if there is a real chance or possibility that it will:
  - Lead to a long-term decrease in the size of an important population of a species
  - Reduce the area of occupancy of an important population
  - Fragment an existing important population into two or more populations
  - Adversely affect HCTS of a species
  - Disrupt the breeding cycle of an important population
  - Modify, destroy, remove or isolate or decrease the availability or quality of habitat to the extent that the species is likely to decline
  - Result in invasive species that are harmful to a vulnerable species becoming established in the vulnerable species' habitat
  - Introduce disease that may cause the species to decline, or
  - Interfere substantially with the recovery of the species.
- An action is likely to have a significant impact on a migratory species if there is a real chance or possibility that it will:
  - Substantially modify (including by fragmenting, altering fire regimes, altering nutrient cycles or altering hydrological cycles), destroy or isolate an area of important habitat for a migratory species
  - Result in an invasive species that is harmful to the migratory species becoming established in an area of important habitat for the migratory species, or
  - Seriously disrupt the lifecycle (breeding, feeding, migration or resting behaviour) of an ecologically significant proportion of the population of a migratory species.

- An area of 'important habitat' for a migratory species is:
  - Habitat utilised by a migratory species occasionally or periodically within a region that supports an ecologically significant proportion of the population of the species, and/or
  - Habitat that is of critical importance to the species at particular life-cycle stages, and/or
  - Habitat utilised by a migratory species which is at the limit of the species range, and/or
  - Habitat within an area where the species is declining.

Habitats within the Study Area are not considered capable of supporting an important population of any MNES species, nor does the Study Area constitute habitat critical to the survival of any MNES. Any MNES species occurring within or adjacent to the Study Area are expected to do so only temporarily, and such species would be more widespread and well-represented throughout the broader region. The movements of listed species are likely to occur at spatial and temporal scales well beyond the footprint of construction activities or areas potentially influenced by light, noise, or vessel traffic associated with the operation of the proposed facilities.

Given that the Study Area has already been subject to substantial disturbance from existing road and industrial infrastructure, the Proposed Action is unlikely to contribute meaningfully to further physical habitat modification.

Potential direct impacts on locally occurring MNES during construction may arise from temporary increases in noise and vessel activity. However, the Proposed Action will not directly or indirectly affect important habitat such as nesting, nursery, foraging, or breeding areas. A range of mitigation measures will be implemented during the short-term construction period to avoid or reduce potential risks to MNES. These measures will include, where practicable: avoiding works during sensitive ecological windows (e.g., marine turtle nesting season), undertaking construction during daylight hours and at low tide, enforcing vessel speed restrictions, and utilising trained marine fauna observers supported by shutdown protocols.

Artificial light is known to adversely affect marine turtle behaviour, including nesting adults and hatchlings. Under the National Light Pollution Guidelines for Wildlife (DCCEEW 2023), an EIA is required where important turtle habitat occurs within 20 km of a project footprint. No critical nesting or inter-nesting habitat occurs within 20 km of the Study Area, and potential impacts to local marine fauna from artificial lighting can be minimised through the adoption of best-practice lighting design principles.

Similarly, short-term construction may increase noise and disturbance that could affect locally occurring shorebirds. Mitigation strategies include, where practicable: avoiding construction between October and March when most migratory shorebirds are present in Australia, implementing vessel speed restrictions, and employing trained observers and shutdown protocols.

Operational impacts on waders may occur as a result of increased noise or disturbance; however, the Proposed Action will not directly or indirectly affect critical or important MNES habitat. Additional vessel movements associated with operations are expected to be minimal relative to the high level of existing vessel activity in the wider region.

Based on the available information, the Proposed Action footprint does not overlap with critical or important habitat for MNES. The assessment of potential impacts indicates that:

- There will be no direct or indirect impacts to critical or important MNES habitat.

- Any MNES individuals potentially affected by the Project are expected to be very few in number and not significant at local population scales.
- No reduction in MNES populations of local or regional importance is anticipated.
- There will be negligible loss or degradation of environmental attributes that support MNES populations.
- Suitable habitat for MNES will continue to be available within both the local and regional landscape.

1.8.3 Matters of State Environmental Significance

Threatened Wildlife and Special Least Concern Animals
There were six state-listed species identified as having contemporary (<30 years) records within the 1 km buffer of the Study Area (refer to Table 1.3). In the likelihood of occurrence assessment only two of these were determined to be likely to occur within the Study Area, these are discussed below.

Beach stone-curlew are found along the coast in a wide range of habitats including beaches, reefs, estuaries, on islands and often along the edges of mangroves. They forage in intertidal zones such as beaches, sand or mudflats, gravel or rock and among mangroves (NSW OEH 2025). Habitat within the Study Area does correspond with their habitat requirements and there are multiple records less than 10 years old of this species in close proximity (approximately 400 m – 800 m) to the Study Area. However, due to the limited size of the Study Area, it's high level of human disturbance and the abundance of similar less disturbed high value habitat, it is not anticipated that it would constitute a significant area for the species but could potentially be utilised as a stopover or resting area while moving between other habitats.

Eastern ospreys occupy coastal areas, in particular mouths of large rivers, lagoons and lakes, and they feed over open water. There are multiple recent records of this species in close proximity to the Study Area (OEH 2020). This species may utilise waters within or near the Study Area for feeding. They nest in dead trees close to the sea, however there were no suitable nesting sites within the Study Area so it would not be suitable breeding habitat.

Koala Habitat Area
No Koala habitat (core or locally refined) was mapped to occur within the Study Area. The area was largely devoid of large eucalypts, with few trees occurring within the low open woodland encompassing only 873m^2 of the Study Area.

Sea Turtle Nesting Areas
No sea turtle nesting areas were mapped to occur within the Study Area, nor were any nests or suitable nesting areas observed during field surveys.

1.9 Summary of Key Findings

This technical memorandum describes the benthic and terrestrial habitat values within the Study Area. Key findings of this assessment include:

- Marine habitats comprised:
  - Sand or rubble with very sparse macroalgae <1%; essentially unvegetated seafloor (2.33 ha)
  - Seagrass and macroalgae at 1% cover (2.16 ha)
  - Seagrass and macroalgae at 1-5% cover and (2.15 ha)
  - Macroalgae and sponge at 5-30% cover (0.22 ha)
  - Intertidal rocky seawall/hard structure features (0.054 ha)
  - Overlying water column.
- Terrestrial habitat comprised:
  - Mangroves (2,535.3 m^2)
  - Mudflats (2,118.6 m^2)
  - Exotic dominated groundcover (1,080.8 m^2)
  - Disturbed low open woodland (873 m^2)
  - *Cocos nucifera* (394.1 m^2)
  - *Hibiscus tiliaceus* (359.4 m^2).
- A total of 4.43 ha of area within the benthic habitat included marine plants, however this was primarily at a low cover of <5%, only 0.22 ha comprised of 5-30% cover of macroalgae.
- A total of 2,894.7 m^2 marine plants were recorded in the terrestrial habitat.
- No conservation listed flora or fauna were observed during surveys or have previously been recorded directly within the Study Area. Based on the likelihood of occurrence assessment the beach stone curlew is considered the only species to likely occur in the Study Area. All other species are considered possible or unlikely to occur in the Study Area.
- No significant fauna habitat was recorded during surveys or is mapped online within the Study Area.
- Generally, the Study Area is subject to high levels of human disturbance and vessel traffic. Vegetation and habitat availability were limited.

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Annex A PMST Results

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: 25-Feb-2026

Summary
Details
- Matters of NES
- Other Matters Protected by the EPBC Act
- Extra Information

Caveat
Acknowledgements

Summary

Matters of National Environment Significance

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

World Heritage Properties:	1
National Heritage Places:	1
Wetlands of International Importance (Ramsar	None
Great Barrier Reef Marine Park:	2
Commonwealth Marine Area:	None
Listed Threatened Ecological Communities:	2
Listed Threatened Species:	40
Listed Migratory Species:	45

Other Matters Protected by the EPBC Act

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

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

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

Commonwealth Lands:	None
Commonwealth Heritage Places:	None
Listed Marine Species:	85
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:	4
Regional Forest Agreements:	None
Nationally Important Wetlands:	None
EPBC Act Referrals:	4
Key Ecological Features (Marine):	None
Biologically Important Areas:	5
Bioregional Assessments:	None
Geological and Bioregional Assessments:	None

Details

Matters of National Environmental Significance

World Heritage Properties [Resource Information]

Name	State	Legal Status	Buffer Status
Great Barrier Reef	QLD	Declared property	In feature area

National Heritage Places [Resource Information]

Name	State	Legal Status	Buffer Status
Natural			
Great Barrier Reef	QLD	Listed place	In feature area

Great Barrier Reef Marine Park [Resource Information]

Zone Type	Zone ID	IUCN	Buffer Status
Conservation Park	CP-20-4083	IV	In feature area
Habitat Protection	HP-19-5165	VI	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
Broad leaf tea-tree (Melaleuca viridiflora) woodlands in high rainfall coastal north Queensland	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 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			
Calidris acuminata			
Sharp-tailed Sandpiper [874]	Vulnerable	Species or species habitat may occur within area	In feature area
Calidris canutus			
Red Knot, Knot [855]	Vulnerable	Species or species habitat may occur within area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
[Calidris ferruginea](#) Curlew Sandpiper [856]	Critically Endangered	Species or species habitat may occur within area	In feature area
[Charadrius leschenaultii](#) Greater Sand Plover, Large Sand Plover [877]	Vulnerable	Species or species habitat may occur within area	In feature area
[Erythrotriorchis radiatus](#) Red Goshawk [942]	Endangered	Species or species habitat likely to occur within area	In feature area
[Falco hypoleucos](#) Grey Falcon [929]	Vulnerable	Species or species habitat likely to 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 may occur within area	In feature area
[Geophaps scripta scripta](#) Squatter Pigeon (southern) [64440]	Vulnerable	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
[Limosa lapponica baueri](#) Nunivak Bar-tailed Godwit, Western Alaskan Bar-tailed Godwit [86380]	Endangered	Species or species habitat likely 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
[Neochmia ruficauda ruficauda](#) Star Finch (eastern), Star Finch (southern) [26027]	Endangered	Species or species habitat may occur within area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
[Numenius madagascariensis](#) Eastern Curlew, Far Eastern Curlew [847]	Critically Endangered	Species or species habitat likely to occur within area	In feature area
[Poephila cincta cincta](#) Southern Black-throated Finch [64447]	Endangered	Species or species habitat may occur within area	In feature area
[Pterodroma neglecta neglecta](#) Kermadec Petrel (western) [64450]	Vulnerable	Foraging, feeding or related behaviour 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
[Sternula albifrons](#) Little Tern [82849]	Vulnerable	Species or species habitat may occur within area	In feature area
[Tyto novaehollandiae kimberli](#) Masked Owl (northern) [26048]	Vulnerable	Species or species habitat may occur within area	In feature area
MAMMAL			
[Balaenoptera musculus](#) Blue Whale [36]	Endangered	Species or species habitat may occur within area	In feature area
[Dasyurus hallucatus](#) Northern Quoll, Digul [Gogo-Yimidir], Wijingadda [Dambimangari], Wiminji [Martu] [331]	Endangered	Species or species habitat likely to occur within area	In feature area
[Macroderma gigas](#) Ghost Bat [174]	Vulnerable	Species or species habitat likely to occur within area	In feature area
[Orcaella heinsohni](#) Australian Snubfin Dolphin [81322]	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

Scientific Name	Threatened Category	Presence Text	Buffer Status
Petrogale persephone			
Proserpine Rock-wallaby [226]	Endangered	Species or species habitat known to 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 likely to occur within area	In feature area
Sousa sahulensis			
Australian Humpback Dolphin [87942]	Vulnerable	Breeding known to occur within area	In feature area
Xeromys myoides			
Water Mouse, False Water Rat, Yirrkoo [66]	Vulnerable	Species or species habitat likely to occur within area	In buffer area only
PLANT			
Phlegmariurus tetrastichoides			
Square Tassel Fern [86555]	Vulnerable	Species or species habitat may occur within area	In buffer area only
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	Breeding known to occur within area	In feature area
Dermochelys coriacea			
Leatherback Turtle, Leathery Turtle, Luth [1768]	Endangered	Breeding likely to occur within area	In feature area
Egernia rugosa			
Yakka Skink [1420]	Vulnerable	Species or species habitat may occur within area	In feature area
Eretmochelys imbricata			
Hawksbill Turtle [1766]	Vulnerable	Foraging, feeding or related behaviour known to occur within area	In feature area
Lepidochelys olivacea			
Olive Ridley Turtle, Pacific Ridley Turtle [1767]	Endangered	Breeding likely to occur within area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
Natator depressus Flatback Turtle [59257]	Vulnerable	Breeding known to occur within area	In feature area
SHARK			
Carcharodon carcharias White Shark, Great White Shark [64470]	Vulnerable	Species or species habitat likely to occur within area	In feature area
Pristis zijsron Green Sawfish, Dindagubba, Narrowsnout Sawfish [68442]	Vulnerable	Breeding may occur within area	In feature area
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

Listed Migratory Species		[Resource Information]	
Scientific Name	Threatened Category	Presence Text	Buffer Status
null			
Balaenoptera omurai Omura's Whale [87136]		Species or species habitat likely to occur within area	In feature area
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]		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

Scientific Name	Threatened Category	Presence Text	Buffer Status
[Fregata minor](#) Great Frigatebird, Greater Frigatebird [1013]		Species or species habitat likely 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
[Phaethon lepturus](#) White-tailed Tropicbird [1014]		Species or species habitat may occur within area	In feature area
[Phaethon rubricauda](#) Red-tailed Tropicbird [994]		Species or species habitat likely to occur within area	In feature area
[Sternula albifrons](#) Little Tern [82849]	Vulnerable	Species or species habitat may occur within area	In feature area
Migratory Marine Species			
[Anoxypristis cuspidata](#) Narrow Sawfish, Knifetooth Sawfish [68448]		Species or species habitat likely to occur within area	In feature area
[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
[Carcharhinus longimanus](#) Oceanic Whitetip Shark [84108]		Species or species habitat may occur within area	In feature area
[Carcharias taurus](#) Grey Nurse Shark [64469]		Species or species habitat may occur within area	In feature area
[Carcharodon carcharias](#) White Shark, Great White Shark [64470]	Vulnerable	Species or species habitat likely to occur within area	In feature area

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	Breeding known to occur within area	In feature area
Crocodylus porosus Salt-water Crocodile, Estuarine Crocodile [1774]		Species or species habitat likely to occur within area	In feature area
Dermochelys coriacea Leatherback Turtle, Leathery Turtle, Luth [1768]	Endangered	Breeding likely to occur within area	In feature area
Dugong dugon Dugong [28]		Species or species habitat known to occur within area	In feature area
Eretmochelys imbricata Hawksbill Turtle [1766]	Vulnerable	Foraging, feeding or related behaviour known to occur within area	In feature area
Lamna nasus Porbeagle, Mackerel Shark [83288]		Species or species habitat may occur within area	In feature area
Lepidochelys olivacea Olive Ridley Turtle, Pacific Ridley Turtle [1767]	Endangered	Breeding likely to occur within area	In feature area
Megaptera novaeangliae Humpback Whale [38]		Species or species habitat known to occur within area	In feature area
Mobula alfredi as Manta alfredi Reef Manta Ray, Coastal Manta Ray [90033]		Species or species habitat likely to occur within area	In feature area
Mobula birostris as Manta birostris Giant Manta Ray [90034]		Species or species habitat likely to occur within area	In feature area
Natator depressus Flatback Turtle [59257]	Vulnerable	Breeding known to occur within area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
Orcaella heinsohni Australian Snubfin Dolphin [81322]	Vulnerable	Species or species habitat likely to occur within area	In feature area
Orcinus orca Killer Whale, Orca [46]		Species or species habitat may occur within area	In feature area
Pristis zijsron Green Sawfish, Dindagubba, Narrowsnout Sawfish [68442]	Vulnerable	Breeding may occur within area	In feature area
Rhincodon typus Whale Shark [66680]	Vulnerable	Species or species habitat may occur within area	In feature area
Sousa sahulensis as Sousa chinensis Australian Humpback Dolphin [87942]	Vulnerable	Breeding 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
Migratory Wetlands Species			
Actitis hypoleucos Common Sandpiper [59309]		Species or species habitat likely to occur within area	In feature area
Calidris acuminata Sharp-tailed Sandpiper [874]	Vulnerable	Species or species habitat may occur within area	In feature area
Calidris canutus Red Knot, Knot [855]	Vulnerable	Species or species habitat may occur within area	In feature area
Calidris ferruginea Curlew Sandpiper [856]	Critically Endangered	Species or species habitat may occur within area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
[Calidris melanotos](#)			
Pectoral Sandpiper [858]		Species or species habitat may occur within area	In feature area
[Charadrius leschenaultii](#)			
Greater Sand Plover, Large Sand Plover [877]	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 may occur within area	In feature area
[Limosa lapponica](#)			
Bar-tailed Godwit [844]		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 likely to occur within area	In feature area
[Pandion haliaetus](#)			
Osprey [952]		Species or species habitat known to occur within area	In feature area

Other Matters Protected by the EPBC Act

Listed Marine Species			[Resource Information]
Scientific Name	Threatened Category	Presence Text	Buffer Status
Bird			
[Actitis hypoleucos](#)			
Common Sandpiper [59309]		Species or species habitat likely to occur within area	In feature area
[Anous stolidus](#)			
Common Noddy [825]		Species or species habitat likely to occur within area	In feature area
[Anseranas semipalmata](#)			
Magpie Goose [978]		Species or species habitat may occur within area overfly marine 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 carneipes as Puffinus carneipes](#) Flesh-footed Shearwater, Fleshy-footed Shearwater [82404]		Species or species habitat may 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 may occur within area	In feature area
[Calidris canutus](#) Red Knot, Knot [855]	Vulnerable	Species or species habitat may occur within area overfly marine area	In feature area
[Calidris ferruginea](#) Curlew Sandpiper [856]	Critically Endangered	Species or species habitat may occur within area overfly marine area	In feature area
[Calidris melanotos](#) Pectoral Sandpiper [858]		Species or species habitat may occur within area overfly marine area	In feature area
[Chalcites osculans as Chrysococcyx osculans](#) Black-eared Cuckoo [83425]		Species or species habitat likely to occur within area overfly marine area	In feature area
[Charadrius leschenaultii](#) Greater Sand Plover, Large Sand Plover [877]	Vulnerable	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

Scientific Name	Threatened Category	Presence Text	Buffer Status
Fregata minor Great Frigatebird, Greater Frigatebird [1013]		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 may 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
Limosa lapponica Bar-tailed Godwit [844]		Species or species habitat likely 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
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 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 likely to occur within area	In feature area
Pandion haliaetus Osprey [952]		Species or species habitat known to occur within area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
Phaethon lepturus White-tailed Tropicbird [1014]		Species or species habitat may occur within area	In feature area
Phaethon rubricauda Red-tailed Tropicbird [994]		Species or species habitat likely to 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
Sternula albifrons as Sterna albifrons Little Tern [82849]	Vulnerable	Species or species habitat may occur within area	In feature area
Symposiachrus trivirgatus as Monarcha trivirgatus Spectacled Monarch [83946]		Species or species habitat known 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
Campichthys tryoni Tryon's Pipefish [66193]		Species or species habitat may occur within area	In feature area
Choeroichthys brachysoma Pacific Short-bodied Pipefish, Short-bodied Pipefish [66194]		Species or species habitat may occur within area	In feature area
Choeroichthys suillus Pig-snouted Pipefish [66198]		Species or species habitat may occur within area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
Corythoichthys amplexus Fijian Banded Pipefish, Brown-banded Pipefish [66199]		Species or species habitat may occur within area	In feature area
Corythoichthys flavofasciatus Reticulate Pipefish, Yellow-banded Pipefish, Network Pipefish [66200]		Species or species habitat may occur within area	In feature area
Corythoichthys intestinalis Australian Messmate Pipefish, Banded Pipefish [66202]		Species or species habitat may occur within area	In feature area
Corythoichthys ocellatus Orange-spotted Pipefish, Ocellated Pipefish [66203]		Species or species habitat may occur within area	In feature area
Corythoichthys paxtoni Paxton's Pipefish [66204]		Species or species habitat may occur within area	In feature area
Corythoichthys schultzi Schultz's Pipefish [66205]		Species or species habitat may occur within area	In feature area
Cosmocampus darrosanus D'Arros Pipefish [66207]		Species or species habitat may occur within area	In feature area
Doryrhamphus excisus Bluestripe Pipefish, Indian Blue-stripe Pipefish, Pacific Blue-stripe Pipefish [66211]		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
Halicampus dunckeri Red-hair Pipefish, Duncker's Pipefish [66220]		Species or species habitat may occur within area	In feature area
Halicampus grayi Mud Pipefish, Gray's Pipefish [66221]		Species or species habitat may occur within area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
Halicampus nitidus Glittering Pipefish [66224]		Species or species habitat may occur within area	In feature area
Halicampus spinirostris Spiny-snout Pipefish [66225]		Species or species habitat may occur within area	In feature area
Hippichthys cyanospilos Blue-speckled Pipefish, Blue-spotted Pipefish [66228]		Species or species habitat may occur within area	In feature area
Hippichthys heptagonus Madura Pipefish, Reticulated Freshwater Pipefish [66229]		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 bargibanti Pygmy Seahorse [66721]		Species or species habitat may occur within area	In feature area
Hippocampus kuda Spotted Seahorse, Yellow Seahorse [66237]		Species or species habitat may occur within area	In feature area
Hippocampus planifrons Flat-face Seahorse [66238]		Species or species habitat may occur within area	In feature area
Hippocampus zebra Zebra Seahorse [66241]		Species or species habitat may occur within area	In feature area
Micrognathus andersonii Anderson's Pipefish, Shortnose Pipefish [66253]		Species or species habitat may occur within area	In feature area
Micrognathus brevirostris thorntail Pipefish, Thorn-tailed Pipefish [66254]		Species or species habitat may occur within area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
Nannocampus pictus Painted Pipefish, Reef Pipefish [66263]		Species or species habitat may occur within area	In feature area
Solegnathus hardwickii Pallid Pipehorse, Hardwick's Pipehorse [66272]		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
Solenostomus paradoxus Ornate Ghostpipefish, Harlequin Ghost Pipefish, Ornate Ghost Pipefish [66184]		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
Trachyrhamphus longirostris Straightstick Pipefish, Long-nosed Pipefish, Straight Stick Pipefish [66281]		Species or species habitat may occur within area	In feature area
Mammal			
Dugong dugon Dugong [28]		Species or species habitat known to occur within area	In feature area
Reptile			
Aipysurus duboisii Dubois' Sea Snake, Dubois' Seasnake, Reef Shallows Sea Snake [1116]		Species or species habitat may occur within area	In feature area
Aipysurus laevis Olive Sea Snake, Olive-brown Sea Snake [1120]		Species or species habitat may occur within area	In feature area
Aipysurus mosaicus as Aipysurus eydouxii Mosaic Sea Snake [87261]		Species or species habitat may occur within area	In feature area

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	Breeding known to occur within area	In feature area
Crocodylus porosus Salt-water Crocodile, Estuarine Crocodile [1774]		Species or species habitat likely to occur within area	In feature area
Dermochelys coriacea Leatherback Turtle, Leathery Turtle, Luth [1768]	Endangered	Breeding likely to occur within area	In feature area
Eretmochelys imbricata Hawksbill Turtle [1766]	Vulnerable	Foraging, feeding or related behaviour known to occur within area	In feature area
Hydrophis elegans Elegant Sea Snake, Bar-bellied Sea Snake [1104]		Species or species habitat may occur within area	In feature area
Hydrophis hardwickii as Lapemis hardwickii Spine-bellied Sea Snake [93516]		Species or species habitat may occur within area	In feature area
Hydrophis kingii as Disteira kingii Spectacled Sea Snake [93511]		Species or species habitat may occur within area	In feature area
Hydrophis macdowelli as Hydrophis mcdowelli MacDowell's Sea Snake, Small-headed Sea Snake, [75601]		Species or species habitat may occur within area	In feature area
Hydrophis major as Disteira major Olive-headed Sea Snake [93512]		Species or species habitat may occur within area	In feature area
Hydrophis ornatus Spotted Sea Snake, Ornate Reef Sea Snake [1111]		Species or species habitat may occur within area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
Hydrophis peronii as Acalyptophis peronii Horned Sea Snake [93509]		Species or species habitat may 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
Hydrophis stokesii as Astrotia stokesii Stokes' Sea Snake [93510]		Species or species habitat may occur within area	In feature area
Hydrophis zweifeli as Enhydrina schistosa Australian Beaked Sea Snake [93514]		Species or species habitat may occur within area	In feature area
Laticauda colubrina Yellow-lipped Sea Krait [1092]		Species or species habitat may occur within area	In feature area
Laticauda laticaudata a sea krait [1093]		Species or species habitat may occur within area	In feature area
Lepidochelys olivacea Olive Ridley Turtle, Pacific Ridley Turtle [1767]	Endangered	Breeding likely to occur within area	In feature area
Natator depressus Flatback Turtle [59257]	Vulnerable	Breeding 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 feature area
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

Current Scientific Name	Status	Type of Presence	Buffer Status
Balaenoptera omurai Omura's Whale [87136]		Species or species habitat likely to 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
Grampus griseus Risso's Dolphin, Grampus [64]		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 feature area
Orcaella heinsohni Australian Snubfin Dolphin [81322]	Vulnerable	Species or species habitat likely to occur within area	In feature area
Orcinus orca Killer Whale, Orca [46]		Species or species habitat may occur within area	In feature area
Sousa sahulensis Australian Humpback Dolphin [87942]	Vulnerable	Breeding known to occur within area	In feature area
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
Conway	Conservation Park	QLD	In feature area
Conway	National Park	QLD	In feature area
Great Barrier Reef Coast	Marine Park	QLD	In feature area
Molle Islands	National Park	QLD	In buffer area only

EPBC Act Referrals [Resource Information]

Title of referral	Reference	Referral Outcome	Assessment Status	Buffer Status
Controlled action				
Construction of marina facility	2003/1308	Controlled Action	Completed	In feature area
Construction of Marina Facility	2006/2939	Controlled Action	Post-Approval	In feature area
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
Refuelling Facility Upgrade	2001/330	Not Controlled Action	Completed	In feature area

Biologically Important Areas [Resource Information]

Scientific Name	Behaviour	Presence	Buffer Status
Dolphins			
Sousa chinensis			
Indo-Pacific Humpback Dolphin [50]	Breeding	Known to occur	In feature area
Tursiops aduncus			
Indo-Pacific/Spotted Bottlenose Dolphin [68418]	Breeding	Likely to occur	In feature area
Marine Turtles			
Natator depressus			
Flatback Turtle [59257]	Nesting	Known to occur	In feature area
Seabirds			
Sterna sumatrana			
Black-naped Tern [800]	Breeding	Known to occur	In feature area
Whales			

Scientific Name	Behaviour	Presence	Buffer Status
Megaptera novaeangliae			
Humpback Whale [38]	Breeding and calving	Known to occur	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 is 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 on the contents of this report.

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 point locations and environmental data layers.

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 when time permits.

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 breeding sites; and
- 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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Annex B MSES Results

Queensland Government

Department of the Environment, Tourism, Science and Innovation

Environmental Reports

Matters of State Environmental Significance

For the selected area of interest

Custom input

Environmental Reports - General Information

The Environmental Reports portal provides for the assessment of selected matters of interest relevant to a user specified location, or area of interest (AOI). All area and derivative figures are relevant to the extent of matters of interest contained within the AOI unless otherwise stated. Please note, if a user selects an AOI via the "central coordinates" option, the resulting assessment area encompasses an area extending for a 2km radius from the point of interest.

All area and area derived figures included in this report have been calculated via reprojecting relevant spatial features to Albers equal-area conic projection (central meridian = 146, datum Geocentric Datum of Australia 2020). As a result, area figures may differ slightly if calculated for the same features using a different co-ordinate system.

Figures in tables may be affected by rounding.

The matters of interest reported on in this document are based upon available state mapped datasets. Where the report indicates that a matter of interest is not present within the AOI (e.g. where area related calculations are equal to zero, or no values are listed), this may be due either to the fact that state mapping has not been undertaken for the AOI, that state mapping is incomplete for the AOI, or that no values have been identified within the site.

The information presented in this report should be considered as a guide only and a field survey may be required to validate values on the ground.

Please direct queries about these reports to: Planning.Support@detsi.qld.gov.au

Disclaimer

Whilst every care is taken to ensure the accuracy of the information provided in this report, the Queensland Government makes no representations or warranties about its accuracy, reliability, completeness, or suitability, for any particular purpose and disclaims all responsibility and all liability (including without limitation, liability in negligence) for all expenses, losses, damages (including indirect or consequential damage) and costs which the user may incur as a consequence of the information being inaccurate or incomplete in any way and for any reason.

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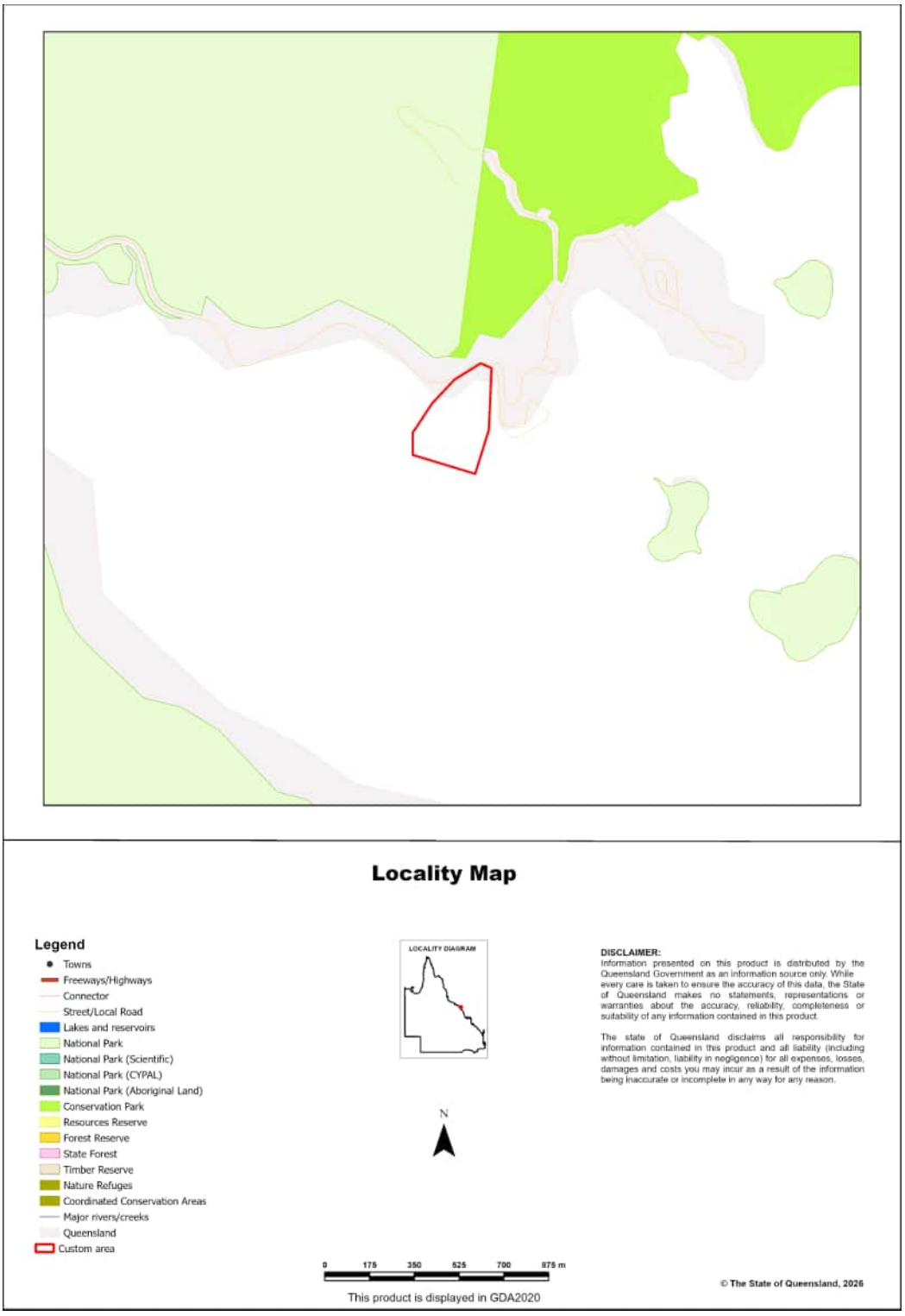
Assessment Area Details

The following table provides an overview of the area of interest (AOI) with respect to selected topographic and environmental values.

Table 1: Summary table, details for AOI: Custom input, with area 8.12 ha

Local Government(s)	Catchment(s)	Bioregion(s)	Subregion(s)
Whitsunday Regional	Proserpine	Central Queensland Coast	Whitsunday



Matters of State Environmental Significance (MSES)

MSES Categories

Queensland's State Planning Policy (SPP) includes a biodiversity State interest that states:

'The sustainable, long-term conservation of biodiversity is supported. Significant impacts on matters of national or state environmental significance are avoided, or where this cannot be reasonably achieved; impacts are minimised and residual impacts offset.'

The MSES mapping product is a guide to assist implementation of the SPP biodiversity policy. While it supports the SPP, the mapping does not replace the regulatory mapping or environmental values specifically called up under other laws or regulations.

The SPP defines matters of state environmental significance as:

- Protected areas (including all classes of protected area except coordinated conservation areas) under the *Nature Conservation Act 1992;*

- Marine parks and land within a 'marine national park', 'conservation park', 'scientific research', 'preservation' or 'buffer' zone under the Marine Parks Act 2004 ;

- Areas within declared fish habitat areas that are management A areas or management B areas under the Fisheries Regulation 2008;

- *Threatened wildlife under the Nature Conservation Act 1992* and special least concern animals under the Nature Conservation (Wildlife) Regulation 2006;

- Regulated vegetation under the *Vegetation Management Act 1999* that is:

  - Category B areas on the regulated vegetation management map, that are 'endangered' or 'of concern' regional ecosystems;
  - Category C areas on the regulated vegetation management map that are 'endangered' or 'of concern' regional ecosystems;
  - Category R areas on the regulated vegetation management map;
  - Regional ecosystems that intersect with watercourses identified on the vegetation management watercourse and drainage feature map;
  - Regional ecosystems that intersect with wetlands identified on the vegetation management wetlands map;

- Strategic Environmental Areas under the *Regional Planning Interests Act 2014* ;

- Wetlands in a wetland protection area of wetlands of high ecological significance shown on the Map of Queensland Wetland Environmental Values under the Environment Protection Regulation 2019;

- Wetlands and watercourses in high ecological value waters defined in the Environmental Protection (Water) Policy 2009, schedule 2;
- Legally secured offset areas.

MSES Values Present

The MSES values that are present in the area of interest are summarised in the table below:

Table 2: Summary of MSES present within the AOI

1a Protected Areas- estates	0 ha	0.0%
1b Protected Areas- nature refuges	0 ha	0.0%
1c Protected Areas- special wildlife reserves	0 ha	0.0%
2 State Marine Parks- highly protected zones	0 ha	0.0%
3 Fish habitat areas (A and B areas)	0 ha	0.0%
4 Strategic Environmental Areas (SEA)	0 ha	0.0%
5 High Ecological Significance wetlands on the Map of Queensland Wetland Environmental Values	0 ha	0.0%
6a High Ecological Value (HEV) wetlands	0 ha	
6b High Ecological Value (HEV) waterways	0 km	Not applicable
7a Threatened (endangered or vulnerable) wildlife	0.03 ha	0.4%
7b Special least concern animals	0.03 ha	0.4%
7c i Koala habitat area - core (SEQ)	0 ha	0.0%
7c ii Koala habitat area - locally refined (SEQ)	0 ha	0.0%
7d Sea turtle nesting areas	0 km	Not applicable
8a Regulated Vegetation - Endangered/Of concern in Category B (remnant)	0 ha	0.0%
8b Regulated Vegetation - Endangered/Of concern in Category C (regrowth)	0 ha	0.0%
8c Regulated Vegetation - Category R (GBR riverine regrowth)	0 ha	0.0%
8d Regulated Vegetation - Essential habitat	0 ha	0.0%
8e Regulated Vegetation - intersecting a watercourse	0 km	Not applicable
8f Regulated Vegetation - within 100m of a Vegetation Management Wetland	0 ha	0.0%
9a Legally secured offset areas- offset register areas	0 ha	0.0%
9b Legally secured offset areas- vegetation offsets through a Property Map of Assessable Vegetation	0 ha	0.0%

Additional Information with Respect to MSES Values Present

MSES - State Conservation Areas

1a. Protected Areas - estates

(No results)

1b. Protected Areas - nature refuges

(No results)

1c. Protected Areas - special wildlife reserves

(No results)

2. State Marine Parks - highly protected zones

(No results)

3. Fish habitat areas (A and B areas)

(No results)

Refer to **Map 1 - MSES - State Conservation Areas** for an overview of the relevant MSES.

MSES - Wetlands and Waterways

4. Strategic Environmental Areas (SEA)

(No results)

5. High Ecological Significance wetlands on the Map of Queensland Wetland Environmental Values

(no results)

6a. Wetlands in High Ecological Value (HEV) waters

(no results)

6b. Waterways in High Ecological Value (HEV) waters

(no results)

Refer to **Map 2 - MSES - Wetlands and Waterways** for an overview of the relevant MSES.

MSES - Species

7a. Threatened (endangered or vulnerable) wildlife

Values are present

7b. Special least concern animals

Values are present

7c i. Koala habitat area - core (SEQ)

Not applicable

7c ii. Koala habitat area - locally refined (SEQ)

Not applicable

7d. Wildlife habitat (sea turtle nesting areas)

Not applicable

Threatened (endangered or vulnerable) wildlife habitat suitability models

Species	Common name	NCA status	Presence
Boronia keysii	Keys boronia	V	None
Calyptorhynchus lathami	Glossy black cockatoo	V	None
Casuarius casuarius johnsonii	Sthn population cassowary	E	None
Crinia tinnula	Wallum froglet	V	None
Denisonia maculata	Ornamental snake	V	None
Euastacus bindal	Mount Elliot crayfish	CR	None
Euastacus binzayedi		CR	None
Euastacus eungella		E	None
Euastacus hystricosus		E	None
Euastacus jagara	Jagara hairy crayfish	CR	None
Euastacus maidae		CR	None
Euastacus monteithorum		E	None
Euastacus robertsi		E	None
Taudactylus pleione	Kroombit tinkerfrog	E	None
Litoria freycineti	Wallum rocketfrog	V	None
Litoria olongburensis	Wallum sedgefrog	V	None
Macadamia integrifolia		V	None
Melaleuca irbyana	swamp tea-tree	E	None
Macadamia ternifolia		V	None
Macadamia tetraphylla	bopple nut	V	None
Petrogale penicillata	brush-tailed rock-wallaby	V	None
Petrogale coenensis	Cape York rock-wallaby	E	None
Petrogale purpureicollis	purple-necked rock-wallaby	V	None
Petrogale sharmani	Sharmans rock-wallaby	V	None
Petrogale xanthopus celeris	yellow-footed rock-wallaby (Qld subspecies)	V	None
Petaurus gracilis	Mahogany Glider	E	None
Petrogale persephone	Proserpine rock-wallaby	E	None
Phascolarctos cinereus	Koala - outside SEQ*	E	None
Pezoporus wallicus wallicus	Eastern ground parrot	V	None
Xeromys myoides	Water Mouse	V	None

*For koala model, this includes areas outside SEQ. Check 7c SEQ koala habitat for presence/absence.

Threatened (endangered or vulnerable) wildlife species records

Scientific name	Common name	NCA status	EPBC status	Migratory status
Crocodylus porosus	estuarine crocodile	V	None	M-B/E

Special least concern animal species records

Scientific name	Common name	Migratory status
Pandion haliaetus cristatus	eastern osprey	M-B/E
Numenius phaeopus	whimbrel	M-C/J/R/B/E
Tachyglossus aculeatus	short-beaked echidna	None

Shorebird habitat (critically endangered/endangered/vulnerable)

Not applicable

Shorebird habitat (special least concern)

Not applicable

**Nature Conservation Act 1992 (NCA) Status- Endangered (E), Vulnerable (V) or Special Least Concern Animal (SL). Environment Protection and Biodiversity Conservation Act 1999 (EPBC) status: Critically Endangered (CE) Endangered (E), Vulnerable (V)*

Migratory status (M) - China and Australia Migratory Bird Agreement (C), Japan and Australia Migratory Bird Agreement (J), Republic of Korea and Australia Migratory Bird Agreement (R), Bonn Migratory Convention (B), Eastern Flyway (E)

To request a species list for an area, or search for a species profile, access Wildlife Online at:

https://www.qld.gov.au/environment/plants-animals/species-list/

Refer to **Map 3a - MSES - Species - Threatened (endangered or vulnerable) wildlife and special least concern animals** and **Map 3b - MSES - Species - Koala habitat area (SEQ)** and **Map 3c - MSES - Wildlife habitat (sea turtle nesting areas)** for an overview of the relevant MSES.

MSES - Regulated Vegetation

For further information relating to regional ecosystems in general, go to:

https://www.qld.gov.au/environment/plants-animals/plants/ecosystems/

For a more detailed description of a particular regional ecosystem, access the regional ecosystem search page at:

https://environment.ehp.qld.gov.au/regional-ecosystems/

8a. Regulated Vegetation - Endangered/Of concern in Category B (remnant)

Not applicable

8b. Regulated Vegetation - Endangered/Of concern in Category C (regrowth)

Not applicable

8c. Regulated Vegetation - Category R (GBR riverine regrowth)

Not applicable

8d. Regulated Vegetation - Essential habitat

Not applicable

8e. Regulated Vegetation - intersecting a watercourse**

Not applicable

8f. Regulated Vegetation - within 100m of a Vegetation Management wetland
Not applicable

Refer to **Map 4 - MSES - Regulated Vegetation** for an overview of the relevant MSES.

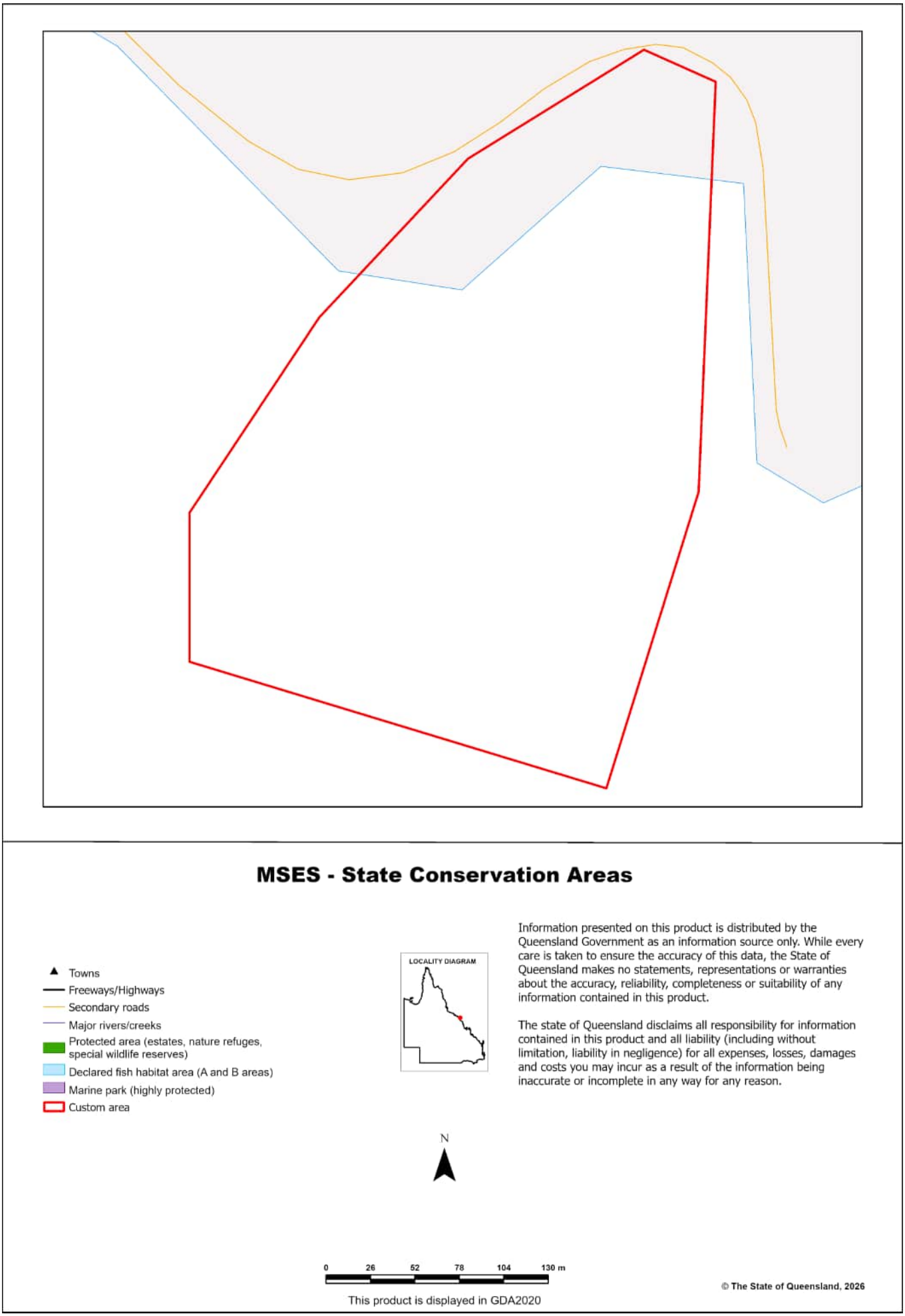
MSES - Offsets

9a. Legally secured offset areas - offset register areas
(No results)

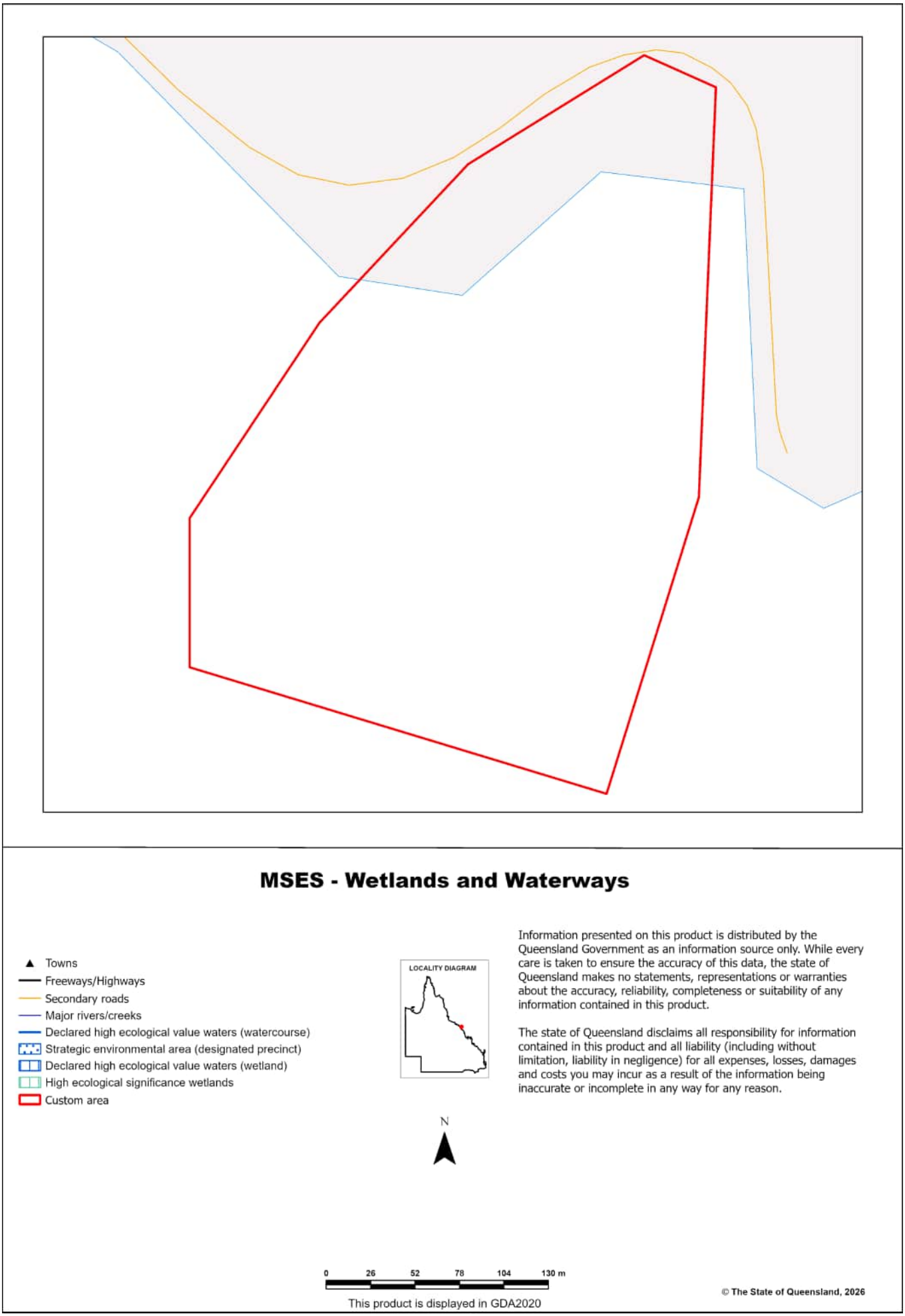
9b. Legally secured offset areas - vegetation offsets through a Property Map of Assessable Vegetation
(No results)

Refer to **Map 5 - MSES - Offset Areas** for an overview of the relevant MSES.

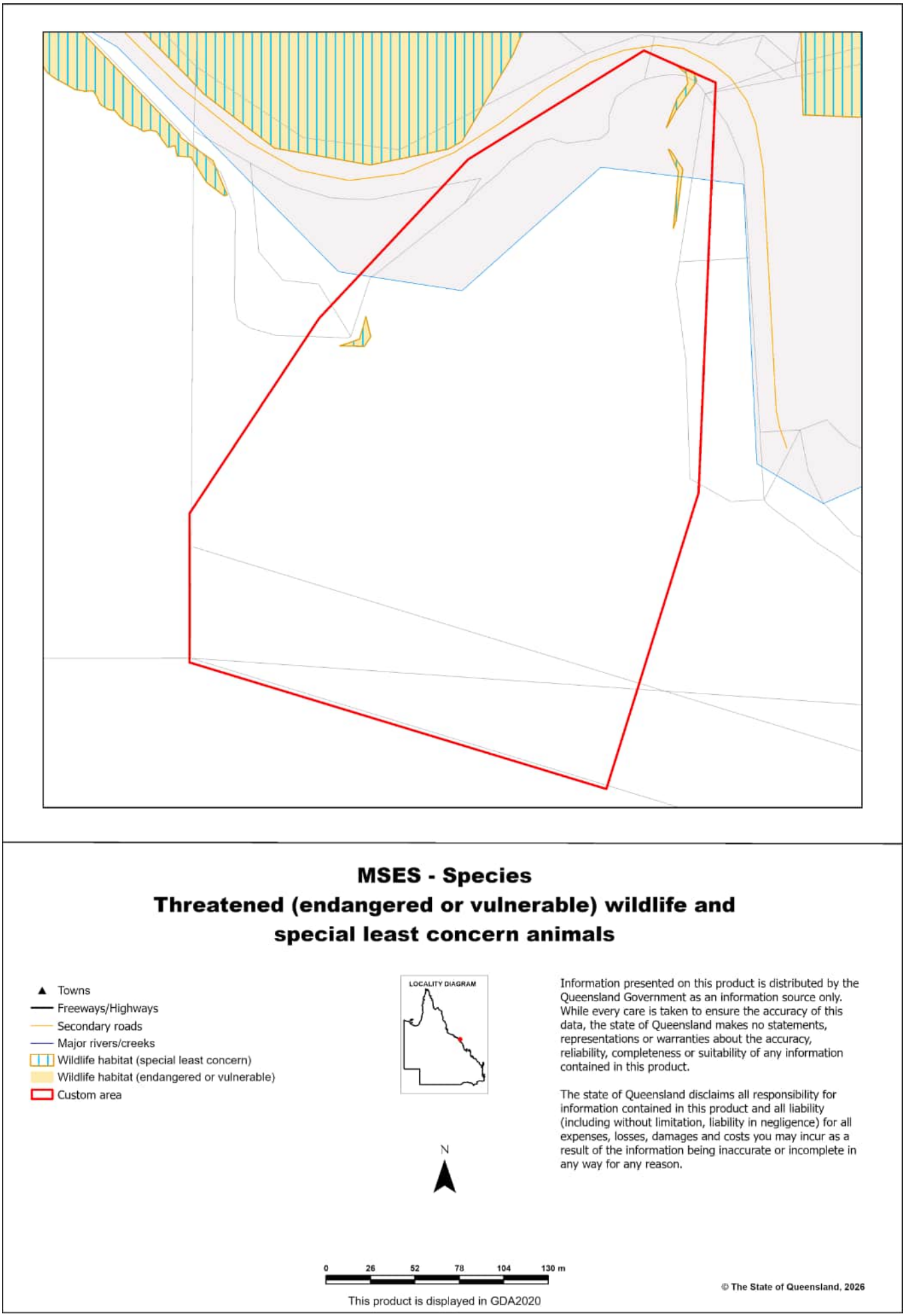
Map 1 - MSES - State Conservation Areas



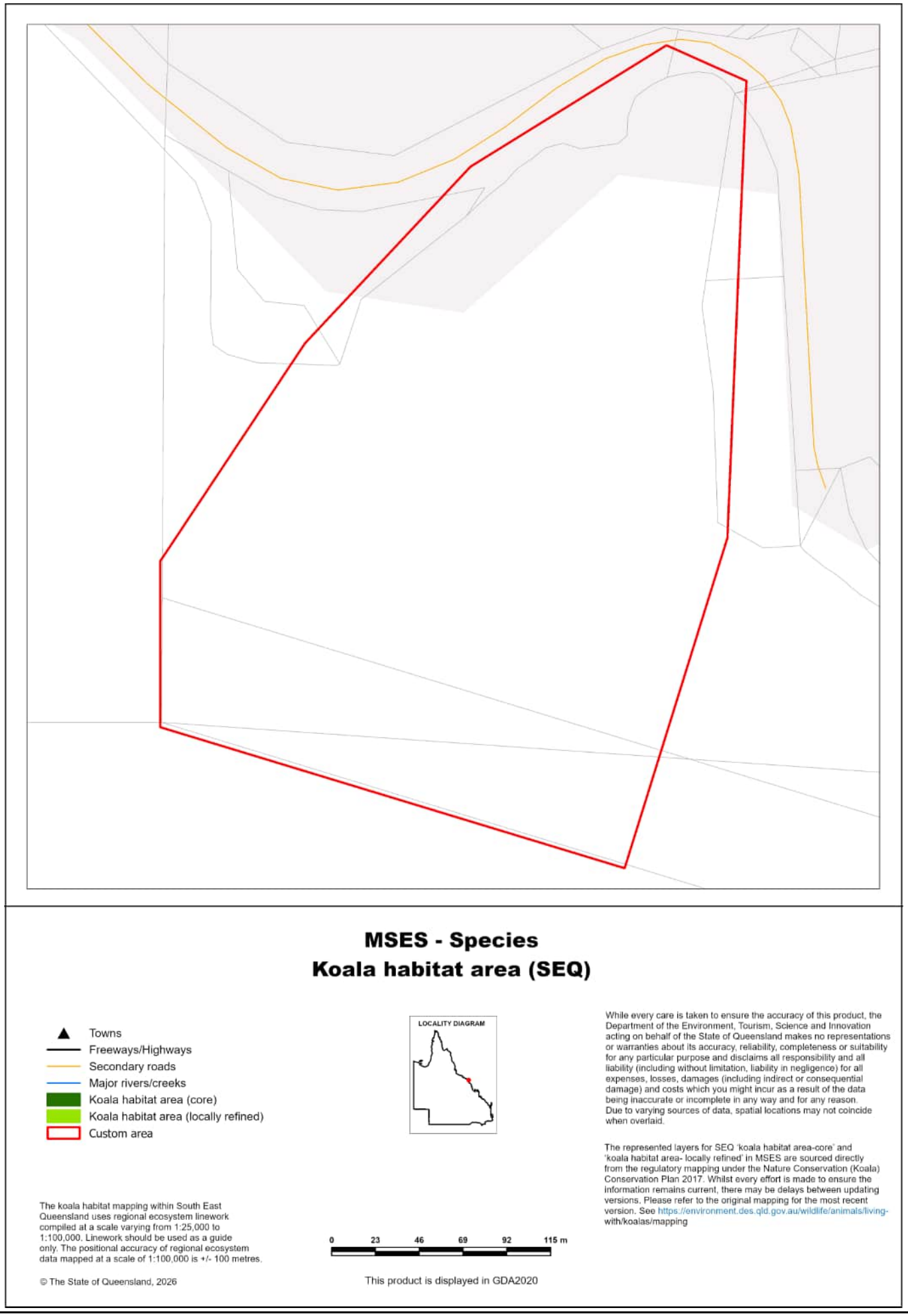
Map 2 - MSES - Wetlands and Waterways



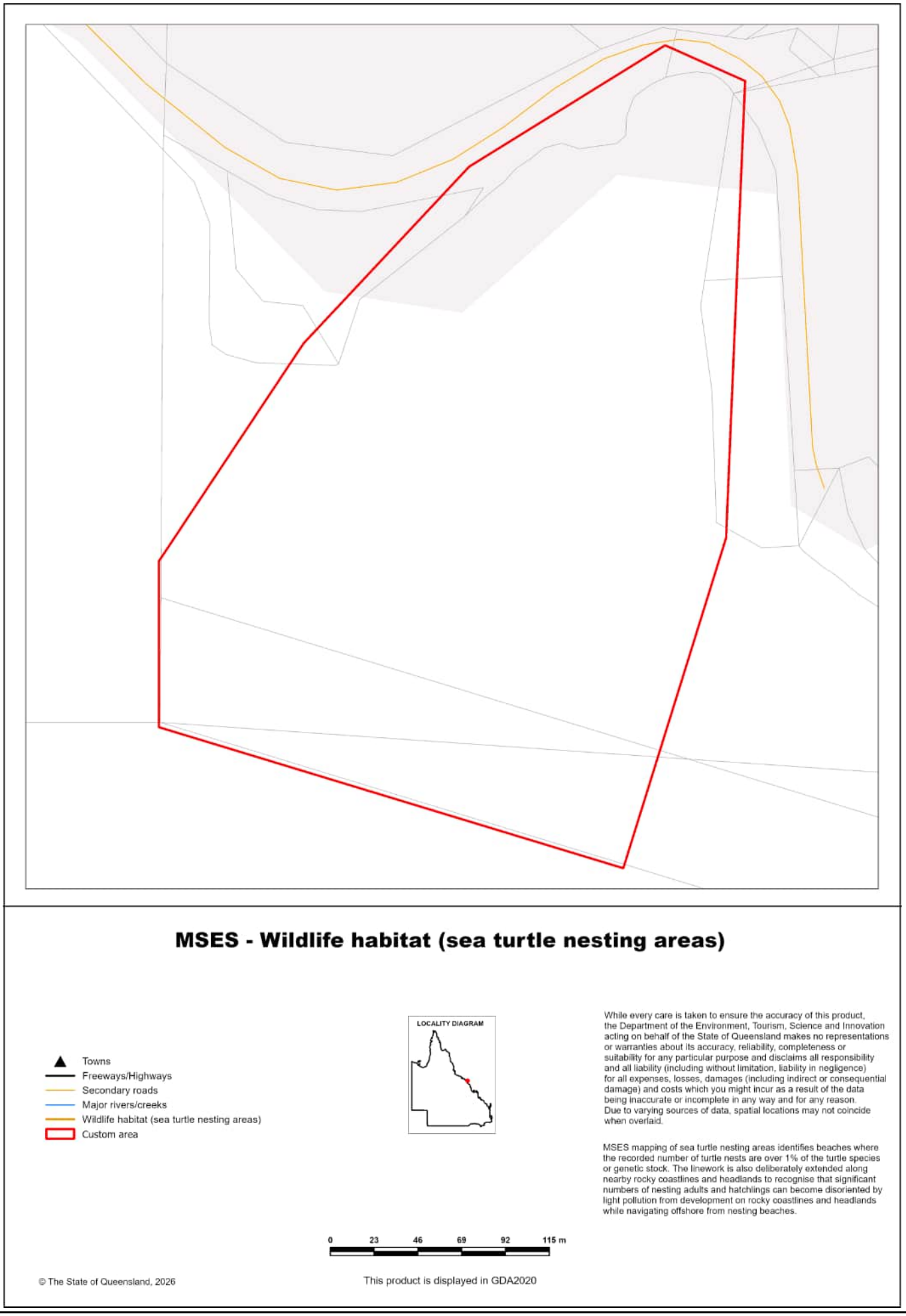
Map 3a - MSES - Species - Threatened (endangered or vulnerable) wildlife and special least concern animals



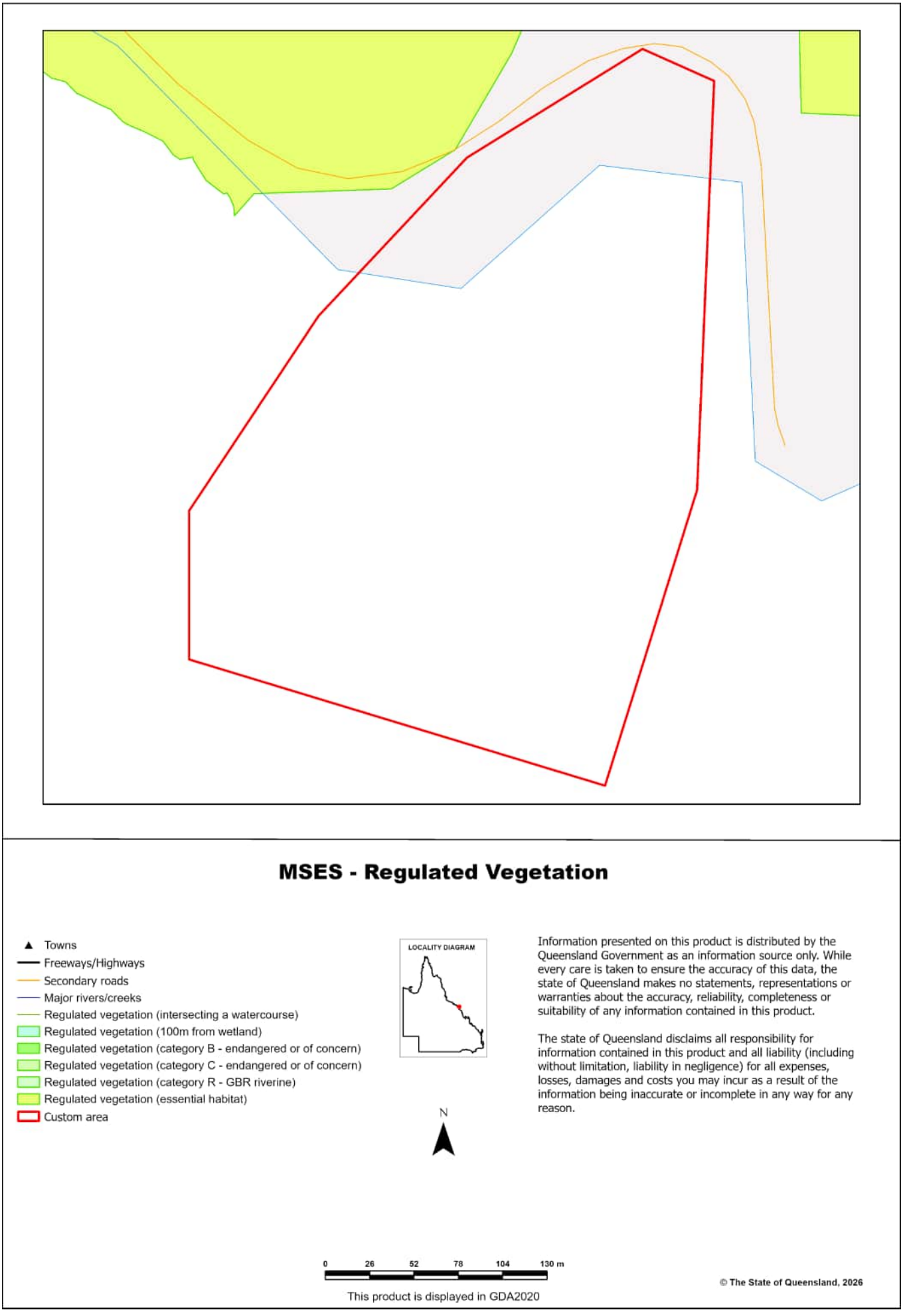
Map 3b - MSES - Species - Koala habitat area (SEQ)



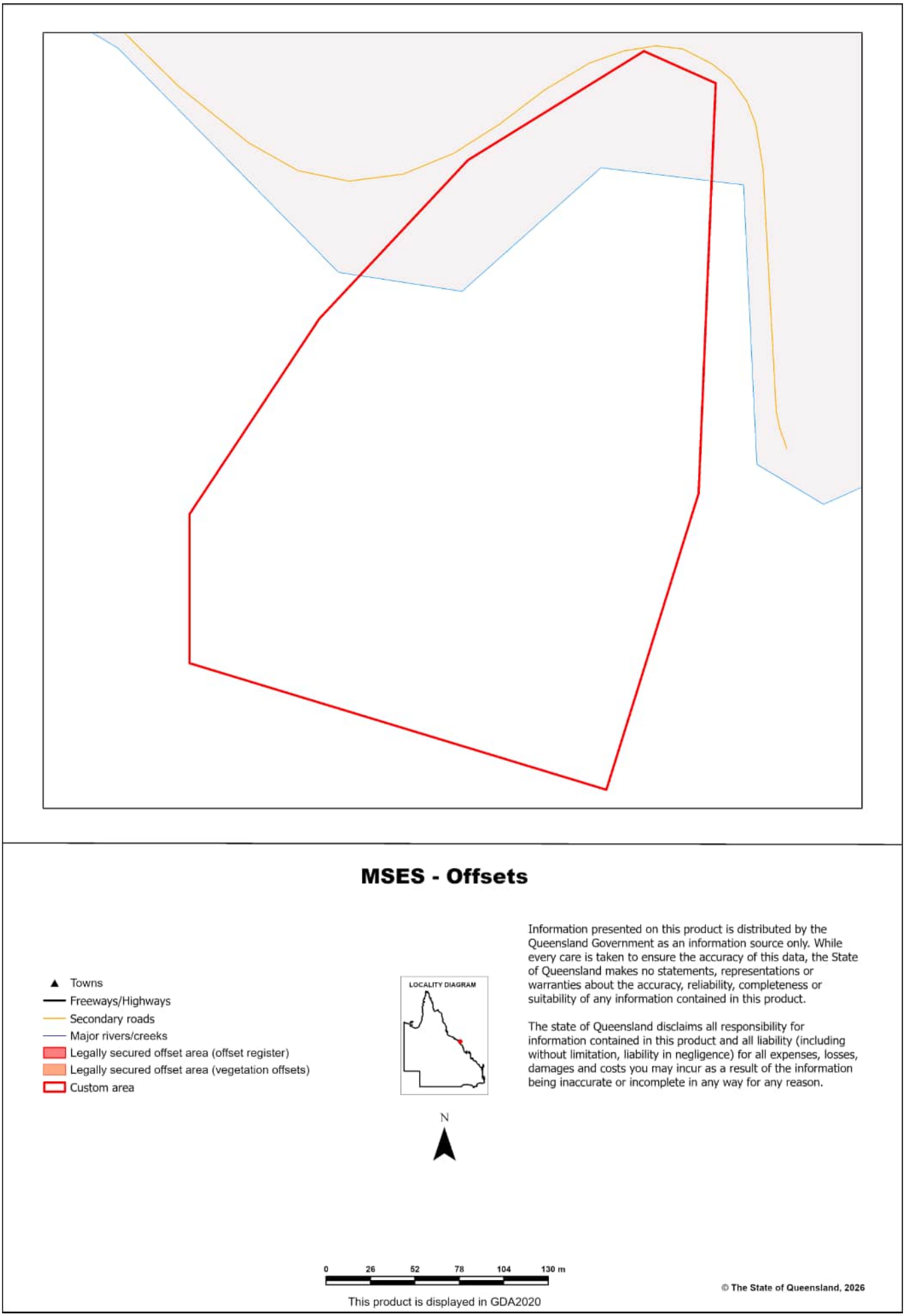
Map 3c - MSES - Species - Wildlife habitat (sea turtle nesting areas)



Map 4 - MSES - Regulated Vegetation



Map 5 - MSES - Offset Areas



Appendices

Appendix 1 - Matters of State Environmental Significance (MSES) methodology

MSES mapping is a regional-scale representation of the definition for MSES under the State Planning Policy (SPP). Its primary purpose is to support implementation of the SPP biodiversity policy.

MSES mapping does not replace the regulatory mapping or environmental values specifically called up under other laws or regulations.

MSES mapping does not determine whether state or local development assessment is required. For state assessment triggers refer to the Development Assessment Mapping System (DAMS). For local assessment triggers, refer to the relevant local planning scheme.

The Queensland Government's "Method for mapping - matters of state environmental significance can be downloaded from:

http://www.ehp.qld.gov.au/land/natural-resource/method-mapping-mses.html .

Appendix 2 - Source Data

The datasets listed below are available on request from:

http://qldspatial.information.qld.gov.au/catalogue/custom/index.page

- Matters of State environmental significance

Note: MSES mapping is not based on new or unique data. The primary mapping product draws data from a number of underlying environment databases and geo-referenced information sources. MSES mapping is a versioned product that is updated generally on a twice-yearly basis to incorporate the changes to underlying data sources. Several components of MSES mapping made for the current version may differ from the current underlying data sources. To ensure accuracy, or proper representation of MSES values, it is strongly recommended that users refer to the underlying data sources and review the current definition of MSES in the State Planning Policy, before applying the MSES mapping.

Individual MSES layers can be attributed to the following source data available at QSpatial:

MSES layers	**current QSpatial data (http://qspatial.information.qld.gov.au)**
Protected Areas-Estates, Nature Refuges, Special Wildlife Reserves	- Protected areas of Queensland - Nature Refuges - Queensland - Special Wildlife Reserves- Queensland
Marine Park-Highly Protected Zones	Moreton Bay marine park zoning 2008
Fish Habitat Areas	Queensland fish habitat areas
Strategic Environmental Areas-designated	Regional Planning Interests Act - Strategic Environmental Areas
HES wetlands	Map of Queensland Wetland Environmental Values
Wetlands in HEV waters	HEV waters: - EPP Water intent for waters Source Wetlands: - Queensland Wetland Mapping (Current version 5) Source Watercourses: - Vegetation management watercourse and drainage feature map (1:100000 and 1:250000)
Wildlife habitat (threatened and special least concern)	-WildNet database species records - habitat suitability models (various) - SEQ koala habitat areas under the Koala Conservation Plan 2019
VMA regulated regional ecosystems	Vegetation management regional ecosystem and remnant map
VMA Essential Habitat	Vegetation management - essential habitat map
VMA Wetlands	Vegetation management wetlands map
Legally secured offsets	Vegetation Management Act property maps of assessable vegetation. For offset register data-contact DETSI
Regulated Vegetation Map	Vegetation management - regulated vegetation management map

Appendix 3 - Acronyms and Abbreviations

AOI	- Area of Interest
DETSI	- Department of the Environment, Tourism, Science and Innovation
EP Act	- Environmental Protection Act 1994
EPP	- Environmental Protection Policy
GDA2020	- Geocentric Datum of Australia 2020
GEM	- General Environmental Matters
GIS	- Geographic Information System
MSES	- Matters of State Environmental Significance
NCA	- Nature Conservation Act 1992
RE	- Regional Ecosystem
SPP	- State Planning Policy
VMA	- Vegetation Management Act 1999

Annex C WildNet Results

WildNet Records
Conservation Significant Species List

For the selected area of interest Custom input
Current as at 07/04/2026 Wildnetconsig

Summary Information

The following table provides an overview of the area of interest: Custom input

Table 1. Area of interest details

Size (ha)	
8.12	
Local Government(s)	
Whitsunday Regional	
Catchment(s)	
Proserpine	
Bioregion(s)	**Subregion(s)**
Central Queensland Coast	Whitsunday

Protected Area(s)

No estates or reserves are located within the area of interest.

World Heritage Area(s) The following World Heritage Areas are located in the area of interest:

Great Barrier Reef

Ramsar Area(s)

No Ramsar Areas are located within the area of interest.

Introduction

This WildNet report is derived from a spatial layer that is generated from the WildNet database, managed by the Department of the Environment, Tourism, Science and Innovation. The layer, which is generated weekly, contains a subset of WildNet wildlife records that are not classed as erroneous or duplicate, that have a location precision equal to or less than 10000 metres and do not have a count of zero. It does not include aspatial data such as some baseline species lists created for some protected areas.

The WildNet dataset is constantly being enhanced and the taxonomic and status information revised. If a conservation significant species is not listed in this report, it does not mean it doesn't occur there and listed species may also no longer inhabit the area. It is recommended that you also access other internal and external data sources for species information in your area of interest.

The WildNet Application may provide additional information on species occurence within your area of interest.

Conservation significant species are species listed:

- as threatened or near threatened under the *Nature Conservation Act 1992*;
- as threatened under the *Environment Protection and Biodiversity Conservation Act 1999* or
- migratory species protected under the following international agreements:
    - Convention on the Conservation of Migratory Species of Wild Animals (Bonn Convention)
    - China-Australia Migratory Bird Agreement
    - Japan-Australia Migratory Bird Agreement
    - Republic of Korea-Australia Migratory Bird Agreement

Table 2 lists the species recorded within the area of interest and its one kilometre buffer.

Map 1. Locality Map

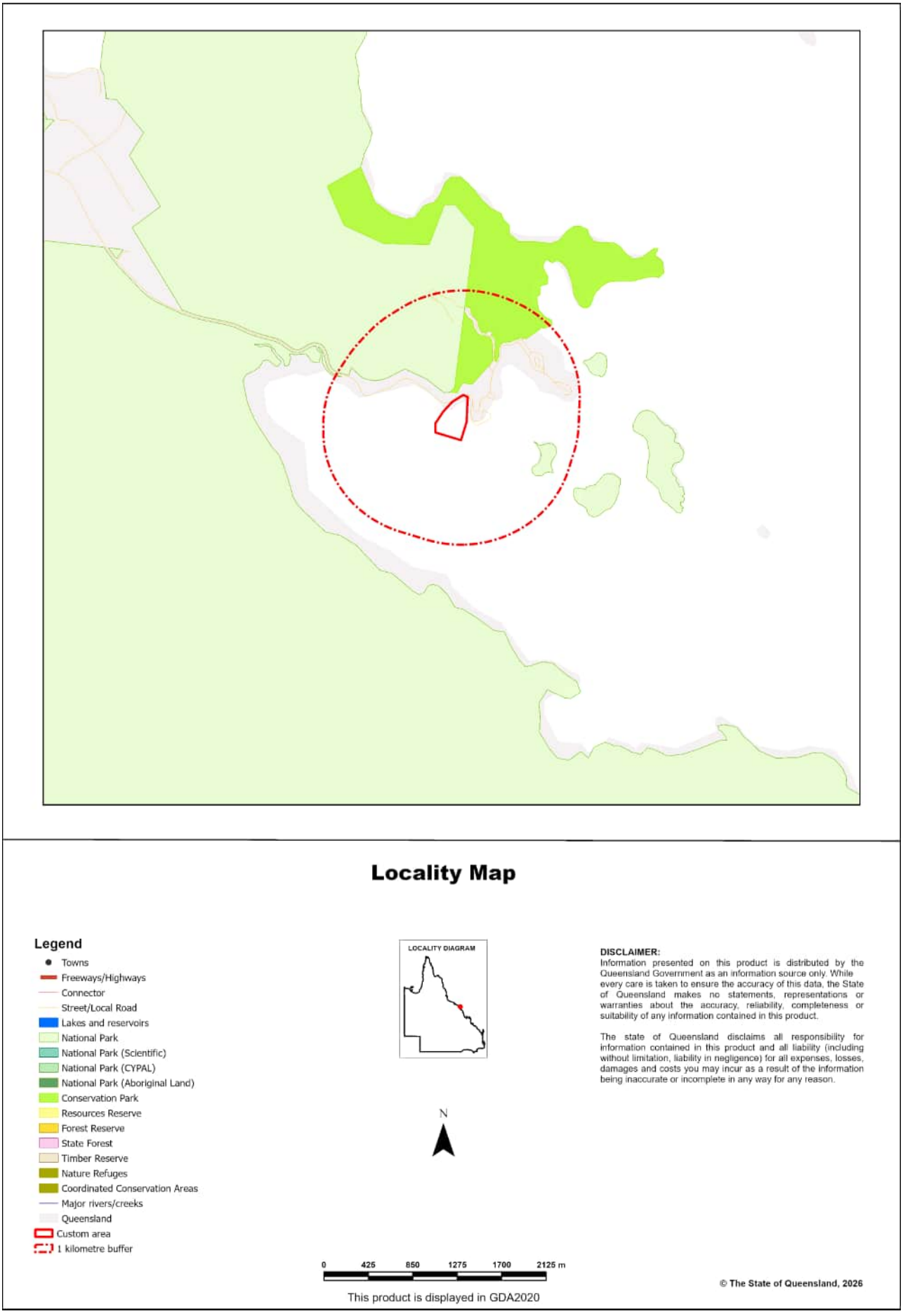


Table 2. Conservation significant species recorded within the area of interest and its one kilometre buffer

Taxon Id	Kingdom	Class	Family	Scientific Name	Common Name	NCA	EPBC	Specimens	Records	Last record
1958	Animalia	Aves	Burhinidae	*Esacus magnirostris*	beach stone-curlew	V		1	11	10/06/2001
1906	Animalia	Aves	Laridae	*Onychoprion anaethetus*	bridled tern	SL		0	1	16/04/1991
1890	Animalia	Aves	Laridae	*Sterna sumatrana*	black-naped tern	SL		0	4	28/01/1984
1895	Animalia	Aves	Laridae	*Thalasseus bergii*	crested tern	SL		0	2	1/02/1985
1702	Animalia	Aves	Pandionidae	*Pandion haliaetus cristatus*	eastern osprey	SL		0	19	16/07/1999
1845	Animalia	Aves	Scolopacidae	*Numenius phaeopus*	whimbrel	SL		0	2	17/10/1996
800	Animalia	Mammalia	Dasyuridae	*Dasyurus hallucatus*	northern quoll	C	E	0	1	3/08/1984
714	Animalia	Mammalia	Dugongidae	*Dugong dugon*	dugong	V		0	1	24/10/2009
1010	Animalia	Mammalia	Emballonuridae	*Taphozous australis*	coastal sheathtail bat	NT		0	2	20/02/2009
838	Animalia	Mammalia	Tachyglossidae	*Tachyglossus aculeatus*	short-beaked echidna	SL		0	1	2/06/1986
37	Animalia	Reptilia	Cheloniidae	*Chelonia mydas*	green turtle	V	V	1	1	14/01/1997
14435	Plantae	Equisetopsida	Dryopteridaceae	*Lastreopsis tenera*		SL		1	1	24/01/2020
12648	Plantae	Equisetopsida	Sterculiaceae	*Brachychiton compactus*		NT		1	1	20/01/2022

Taxon Id: Unique identifier of the taxon from the WildNet database.
NCA: Queensland conservation status of the taxon under the *Nature Conservation Act 1992* (Least Concern (C), Critically Endangered (CR), Endangered (E), Extinct (EX), Near Threatened (NT), Extinct in the Wild (PE), Special Least Concern (SL), and Vulnerable (V)).
EPBC: Australian conservation status of the taxon under the *Environment Protection and Biodiversity Conservation Act 1999* (Conservation Dependent (CD), Critically Endangered (CE), Endangered (E), Extinct (EX), Vulnerable (V), and Extinct in the Wild (XW)).
Specimens: The number of specimen-backed records of the taxon.
Records: The total number of records of the taxon.
Last record: Date of most recent record of the taxon.

Links and Support

Other sites that deliver species information from the WildNet database include:

- WildNet Application - public interface to find species information and species lists generated from the WildNet database.
- Biomaps - view biodiversity information, including WildNet records approved for publication, and generate reports
- Queensland Globe - view spatial information, including WildNet records approved for publication
- Qld WildNet Data API - access WildNet species information approved for publication such as notes, images and records etc.
- Wetland*Maps* - view species records, survey locations etc. approved for publication
- Wetland*Summary* - view wildlife statistics, species lists for a range of area types, and access WildNet species profiles
- WildNet wildlife records - published - Queensland - spatial layer of WildNet records approved for publication generated weekly
- Generalised distribution and densities of Queensland wildlife - Queensland species distributions and densities generalised to a 10 km grid resolution
- Conservation status of Queensland wildlife - access current lists of priority species for Queensland including nomenclature and status information
- Queensland Confidential Species - the list of species flagged as confidential in the WildNet database.

Please direct queries about this report to the WildNet Team WildNet@detsi.qld.gov.au.

Other useful sites for accessing Queensland biodiversity data include:

- Useful wildlife resources
- Queensland Government Data
- Atlas of Living Australia (ALA)
- Online Zoological Collections of Australian Museums (OZCAM)
- Australasian Virtual Herbarium (AVH)
- Protected Matters Search Tool

Disclaimer

Whilst every care is taken to ensure the accuracy of the information provided in this report, the Queensland Government, to the maximum extent permitted by law, makes no representations or warranties about its accuracy, reliability, completeness, or suitability, for any particular purpose and disclaims all responsibility and all liability (including without limitation, liability in negligence) for all expenses, losses, damages (including indirect or consequential damage) and costs which the user may incur as a consequence of the information being inaccurate or incomplete in any way and for any reason.

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Annex C Metocean Assessment

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Department of Transport and Main Roads (Maritime Safety Queensland)

Coastal Investigation Report

Shute Harbour – New Boating Infrastructure Facility

14 July 2026

Report No: P25648_ShuteHarbour_FinalReport_R1.00

bluecoast
CONSULTING ENGINEERS

Document Summary

Document Title	Coastal Investigation Report
Project Name	Shute Harbour – New Boating Infrastructure Facility
Client	Department of Transport and Main Roads (end client), BMT (lead consultant)
Report No.	P25648_ShuteHarbour_FinalReport_R1.00

Document History

Version	Date	Author(s)	Reviewer(s)	Status	Signature
1.00	14/07/2026	A.Waterhouse M.Barnes	I.Teakle	Draft	

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CONSULTING ENGINEERS

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1. Introduction

1.1 About this report

This report supports the Shute Harbour New Boating Infrastructure Facility – Key Investigations and Legislative Approval Submissions (the Project) being delivered by BMT and Bluecoast on behalf of the Queensland Department of Transport and Main Roads (DTMR) and Maritime Safety Queensland (MSQ). Bluecoast is supporting the Project with the following services:

1. Development of preliminary baseline metocean criteria,
2. Breakwater size and orientation optimisation,
3. Sedimentation and maintenance dredging assessment, and
4. Final metocean criteria to support detailed design.

This report summarises all the technical methodologies and results undertaken for the Project. It presents the final outputs and results, including the metocean criteria for the current design.

During the project delivery, site geotechnical investigations found poor ground conditions requiring a redesign. The proposed breakwater included as part of the concept layout was removed and the facility relocated further landward within Grubby Bay. The final metocean criteria and sedimentation assessment are all undertaken for the revised layout provided to Bluecoast (as of 23rd June 2026).

1.2 Report context

The Project responds to the Queensland Recreational Boating Facilities Demand Forecasting Study 2022 (MSQ 2023) which identified within the Whitsunday region:

- A very high proportion of visiting recreational boat users,
- Constraints at the existing Shute Harbour recreational boat ramp resulting in a facility that is insufficient to meet launching needs, and
- Overall lack of capacity within the Whitsunday Local Government Area (LGA) owing to terrain and foreshore availability with limited opportunities to build new facilities.

The priority recommendation of the Demand Forecasting Study for the Whitsunday LGA was to develop the Grubby Bay site within Shute Harbour (refer Figure 1), including land reclamation to provide 130 car-trailer unit (CTU) spaces and a four-lane, two floating walkway boat launching facility.

1.3 Project location

The layout for the new facility developed, revision dated 23rd June 2026, is shown Figure 2. This layout may be further refined as part of the Project and engineering design development (being undertaken by others).

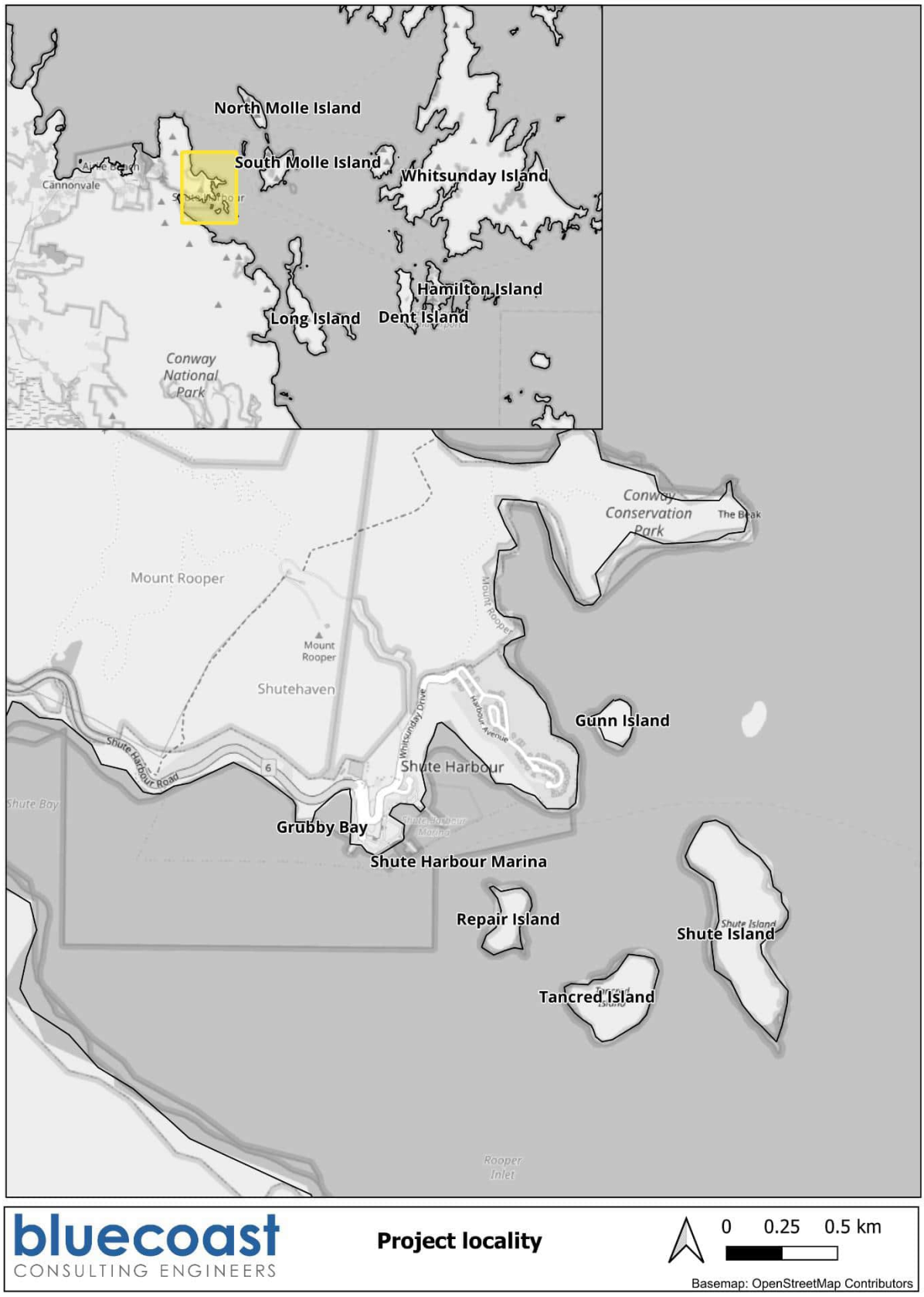

Figure 1: Shute Harbour locality map

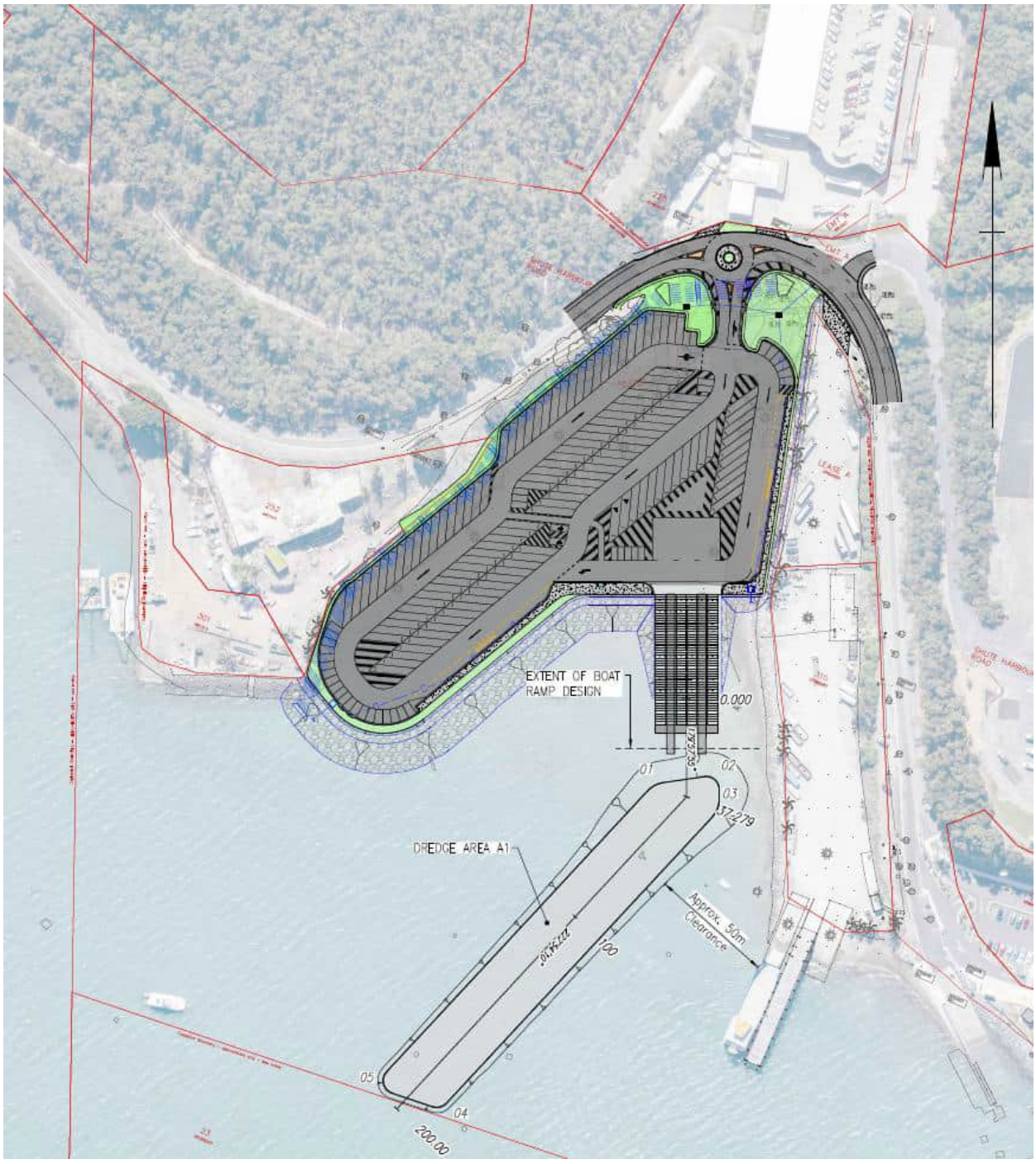

Figure 2: Layout for the new recreational boating facility at Shute Harbour (Grubby Bay) (provided by MSQ)

1.4 Scope and structure of this report

This technical note describes the existing literature, datasets and numerical modelling used to develop the metocean criteria and undertake assessments for the new boating facility at Shute Harbour. It is set out as:

1. Introduction (this section)
2. Data Sources
3. Numerical model development
4. Metocean design criteria
5. Facility layout assessments
6. Appendix A: extreme wave model outputs
7. Appendix B: extreme wave criteria comparisons

2. Data Sources

2.1 Existing reports and data collation

The following key reports, datasets and hindcast model outputs have been used to develop the preliminary metocean conditions at the new recreational boating facility location:

- BMT & SEA (2017). Bowen Water Hazards Assessment Stage 1: Storm Tide Modelling Basis Report.
- MSQ (2026). Semidiurnal Tidal Planes – 2026.
- Department of Resources (2026). Permanent Survey Mark (PSM) 75758 Survey Control Mark Report.
- Australian Bureau of Meteorology and State of Queensland (2025). Shute Harbour tide gauge historical observations and predictions, 31/12/1982 to 16/03/2018.
- Bureau of Meteorology (BoM) Atmospheric Regional Reanalysis for Australia version 2 (BARRA2) 10-minute average wind speed and direction, 01/01/1979 to 31/12/2023.
- BoM and CSIRO Wave Hindcast for the Australian Climate Services (WHACS) significant wave height, wave peak period and mean wave direction, 01/01/2008 to 31/12/2023.
- Geoscience Australia (2018). National Tropical Cyclone Hazard Assessment (TCHA18).
- AS/NZS 1170.2.2021 (Wind Actions).
- Harper (1999). Numerical Modelling of extreme tropical cyclone winds, Journal of Wind Engineering and Industrial Aerodynamics, 83, pp 35-47.
- Harper, B.A., Kepert, J.D. and Ginger J.D. (2010). Guidelines for converting between various wind averaging periods in tropical cyclone conditions. World Meteorological Organization, WMO/TD-No. 1555.
- Cardno Lawson Treloar (2008). Shute Harbour Marina Development, Coastal Processes Report to Support and EIS.
- Geoscience Australia (2020). 30 m resolution depth model for the Great Barrier Reef (GBR30, version 10).
- GBA Projects (2012). Supplementary Environmental Impact Statement, Shute Harbour Marina Resort. Revision 4

3. Numerical model development

3.1 Spectral wave model

3.1.1 Description

A spectral wave model has been developed to investigate the operational and extreme wave climate at the proposed new boating facility site. This has used the industry standard Simulating Waves Nearshore (SWAN) software. SWAN (Delft University of Technology, 2006) is a third-generation spectral wave model which simulates the generation of waves by wind, dissipation by white-capping, depth-induced wave breaking, bottom friction and wave-wave interactions in both deep and shallow water. SWAN simulates wave propagation in two dimensions, including shoaling and refraction due to spatial variations in bathymetry and currents.

3.1.2 Domain and bathymetry

The nested grid modelling approach adopted for the Project is shown in Figure 3. A 'Passage' grid (500 m resolution) covers the Whitsunday Passage area, a 'Transition' grid (100 m resolution) covers the larger fetch distances relevant to Shute Harbour, and the 'Shute' grid provides detail within Shute Bay and at the new boating facility location. The 'Shute' grid was run at a 25m resolution for the hindcast and initial modelling, while the final extreme design criteria simulations used a resolution of 10m to accurately represent the facility layout within the model grid.

The Passage and Transition wave model domain bathymetry was defined using the 30 m resolution depth model for the Great Barrier Reef (GBR30, version 10, Geoscience Australia 2020). The Shute wave domain used local survey provided by MSQ:

- March 2026 survey of Shute Bay, plan G802-054
- July 2024 survey of Shute Bay, plan G802-053
- May 2018 survey of Shute Bay, plan G802-046

3.1.3 Validation

Validation of the wave model has been undertaken against the field data collected from a Nortek Signature ADCP deployment offshore of Grubby Bay in 2026. Wind forcing was provided by ECMWF's ERA5 global atmospheric reanalysis, the best available forcing product at the time of this investigation. Results are presented in Figure 4 and show:

- Significant wave height is generally well resolved, with a consistent small over-prediction by the model of approximately 5 cm.
- Peak wave period and mean wave direction show good agreement, with the model not resolving sub-daily variability associated with local sea breeze effects. The full hindcast uses the BARRA2[1] wind product at 4 km resolution which would better capture these influences, though they are not of sufficient magnitude to materially affect ambient metocean criteria.

The validation period represents a low-energy, non-cyclonic sea state which is appropriate for assessing the model's ability to propagate and transform waves through the Whitsunday Passage under well-defined forcing conditions. Rare tropical cyclone events, which drive the governing extreme conditions at this site, are included in the assessment but cannot be validated due to the absence of in-situ field observations coincident with historical events. The validation exercise therefore serves to confirm the

[1] BARRA2 wind hindcast products covering the ADCP deployment period were not available at the time of this investigation

numerical framework and grid configuration, rather than calibrate model performance under extreme forcing.

3.1.4 Model scenarios

The nested wave modelling system has been used to:

- Simulate a downscaled 10-year wave hindcast using wind, swell and water level boundary conditions derived from:
    - Spatially and temporally varying wind field from the BARRA2 model,
    - The high-resolution reanalysis Wave Hindcast for the Australian Climate Services (WHACS) model waves applied to the northern and southern boundary of the Regional grid, and
    - Historical water level observations at Shute Harbour from 2008 to 2017.
- Develop extreme wave criteria based on design winds speeds derived from:
    - AS/NZS 1170.2.2021 (Wind Actions)
    - 2018 National Tropical Cyclone Hazard Assessment (Geoscience Australia)

The wave modelling assessment results are presented in Section 4.

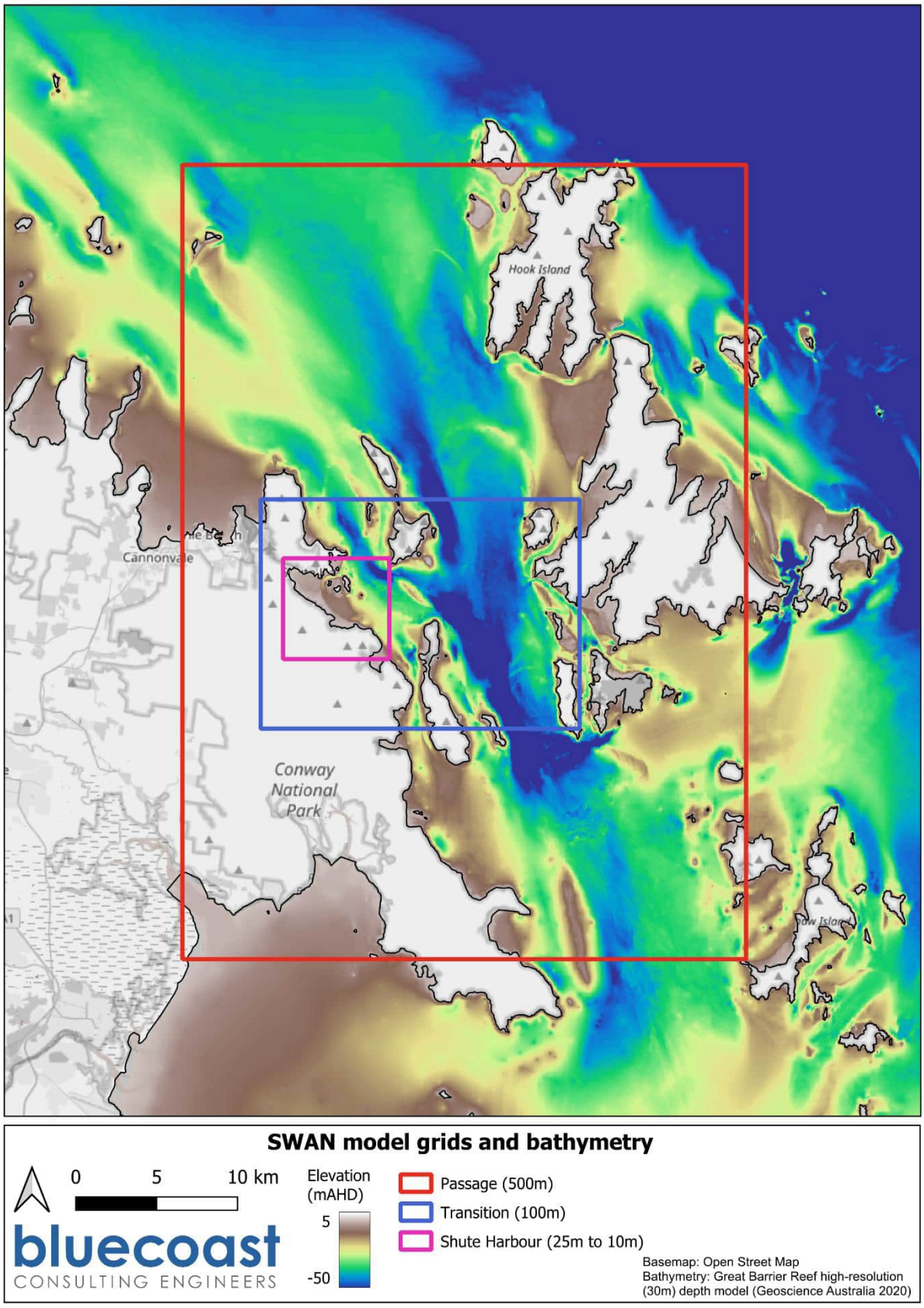

Figure 3: SWAN model grids and bathymetry

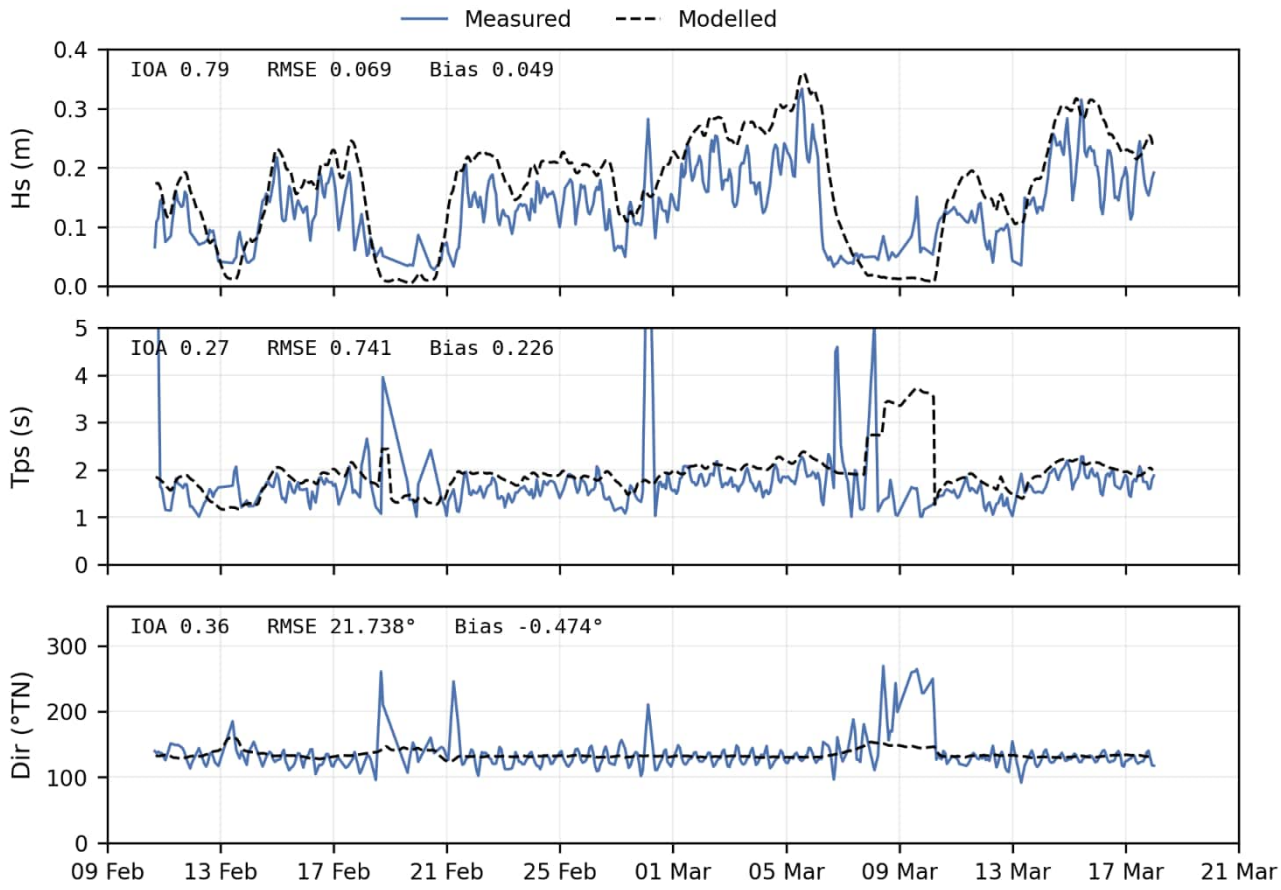

Figure 4: Comparison of measured and modelled wave parameters immediately offshore of Grubby Bay in 2026

3.2 Hydrodynamic model

3.2.1 Description

A hydrodynamic and fine sediment transport model has been developed to investigate maintenance dredging requirements at the proposed new boating facility. This has used TUFLOW FV, a numerical solver for the Non-Linear Shallow Water Equations (NLSWE), suitable for modelling a wide range of hydrodynamic systems of different scales. The Finite-Volume (FV) numerical scheme applied by TUFLOW FV can solve the NLSWE on structured rectilinear grids and unstructured meshes extending form high resolution areas of interest, to lower resolution in the far field without requiring domain nesting. Further details regarding the numerical scheme employed by TUFLOW FV are provided in the TUFLOW FV Science Manual (BMT 2023).

3.2.2 Domain and bathymetry

A triangular horizontal mesh consisting of around 28,000 elements was adopted, with element edge lengths varying between 15 - 20 m in the immediate area of interest and out to about 100 m in open waters. The model mesh is shown in Figure 5.

The model bathymetry was defined from the same datasets as the SWAN model (refer to Section 3.1.2).

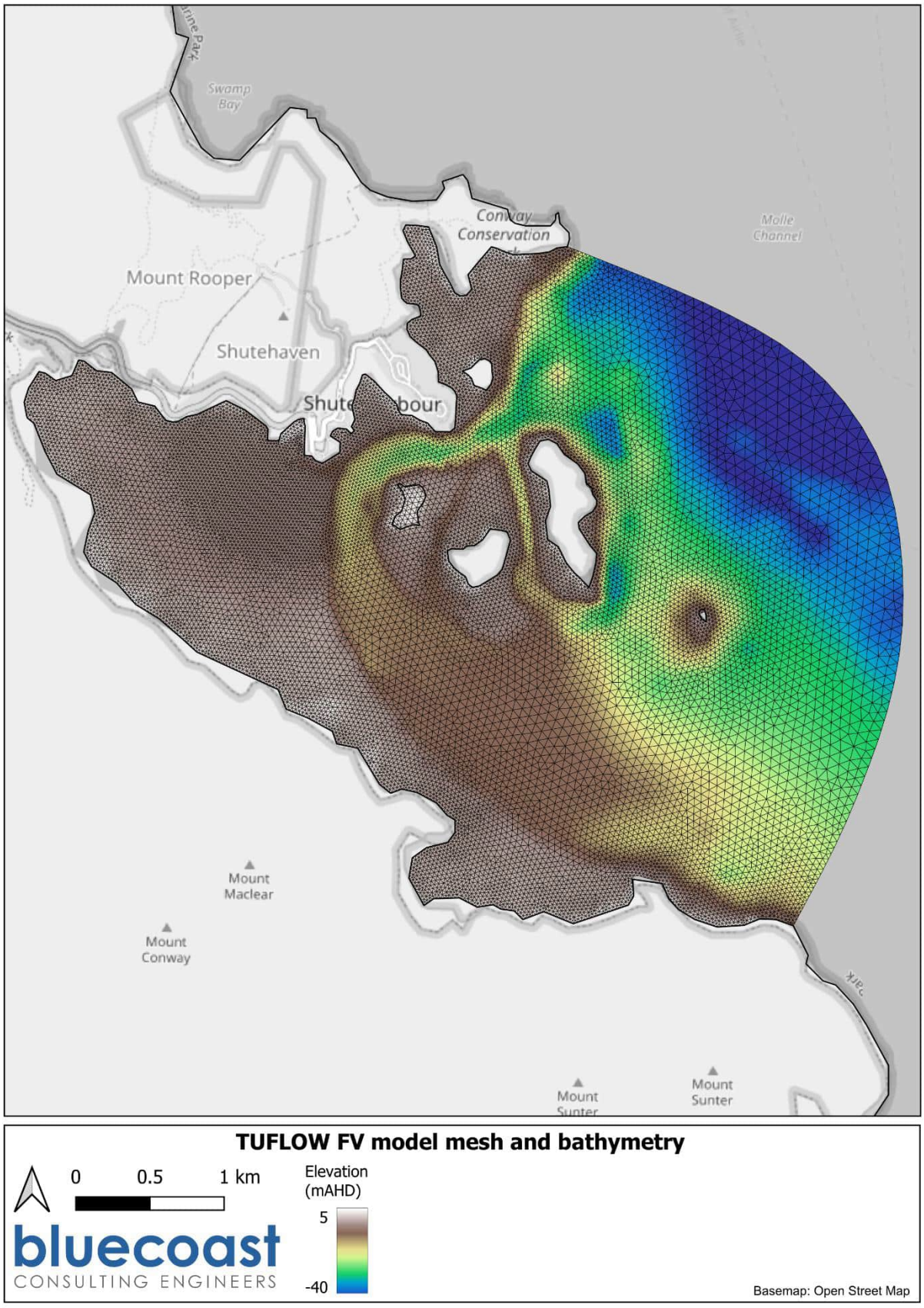

Figure 5: TUFLOW FV model mesh and bathymetry

3.2.3 Validation of hydrodynamics

Calibration of the hydrodynamic model has been undertaken using the field data collected from a Nortek Signature ADCP deployment offshore of Grubby Bay in 2026. Wind forcing was provided by ECMWF's ERA5 global atmospheric reanalysis, the best available forcing product at the time of this investigation. Results are presented in Figure 6 and show that the model resolves hydrodynamics at the ADCP location with very good agreement for water-levels, current speed and direction.

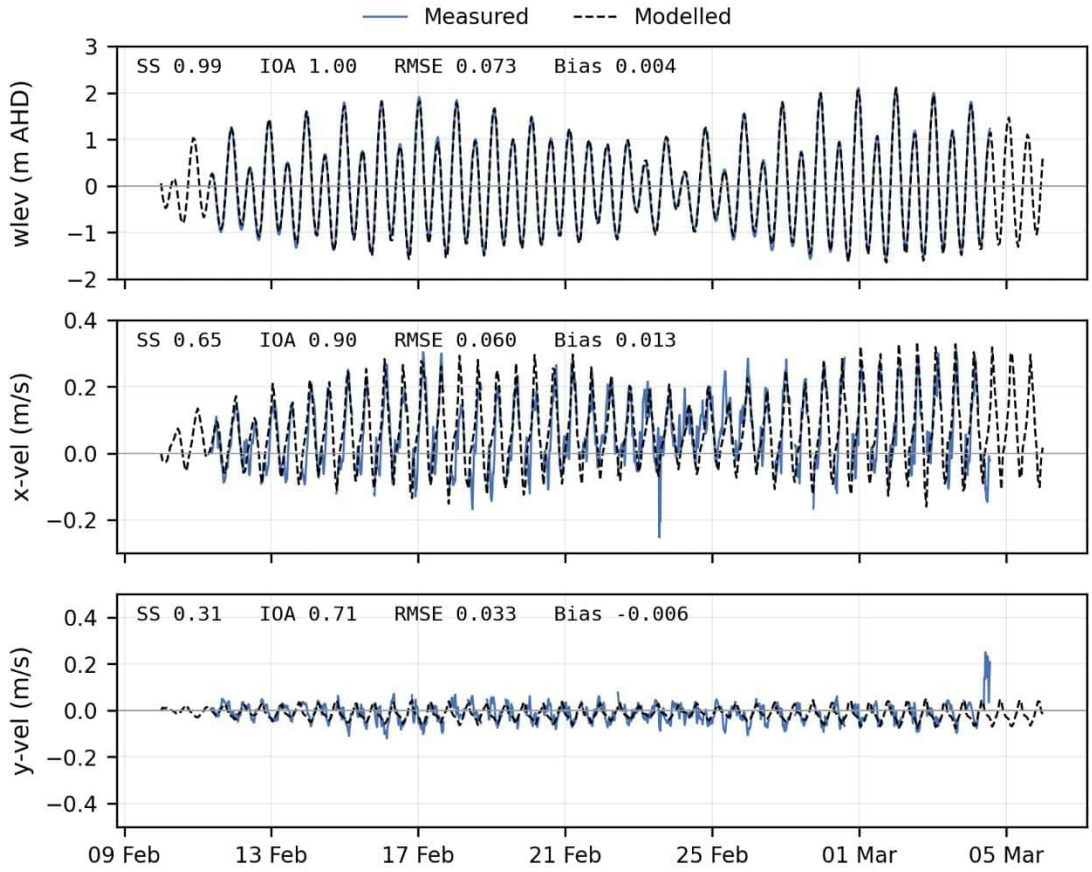

Figure 6: Comparison of measured and modelled water-level, current speed and direction immediately offshore of Grubby Bay in 2026

3.3 Sediment transport model

TUFLOW FV's Sediment Transport Module (STM) was used to model silt/clay transport behaviour and investigate siltation potential at the new boat ramp and navigation channel. This modelling could not be informed by measured data (e.g. past hydrographic surveys, turbidity monitoring), so typical literature default values were adopted where appropriate. Critical shear stress for erosion (0.2 Pa) and deposition (0.18 Pa), settling velocity (0.5 mm/s) and erosion rate (0.4 g/m^2/s) were all set to typical literature values for silt/clay material. The ambient bed was first warmed up by running the model for a year with a low mass of fines available, which cleared sediment from high energy areas.

This setup was informed by in-situ sediment sampling at and around the project site (BMT, 2026), which found that the sediment is typically characterised by a large proportion of clays and silts (43% and 37% respectively), with only a small amount of sand (16%) and gravel (4-5%). Settleability testing (conducted at a concentration of 10%, well above typical in-situ suspended concentrations) confirmed hindered settling behaviour consistent with cohesive sediment.

3.4 Phase resolving wave model

Superseded concept layouts for the new boat ramp facility were exposed to larger wind-sea waves and included a breakwater to achieve operability limits and protect vulnerable infrastructure like floating walkways. A breakwater optimisation assessment was undertaken to investigate breakwater length and leeward design criteria. This section outlines the specifics of the phase resolving model used to investigate individual wave propagation around the proposed breakwater.

This assessment was undertaken using the Simulating Waves till Shore (SWASH) software (Zijlema et al., 2011). SWASH is a non-hydrostatic wave-flow model for predicting transformation of dispersive surface waves from offshore to the beach for studying the surf zone and swash zone dynamics, wave propagation and agitation in ports and harbours.

The phase resolving wave model assessment results are presented and discussed in Section 5.1. It is noted that these assessments have been superseded following further design development and removal of the breakwater in response to poor geotechnical conditions.

3.4.1 Model grid and bathymetry

A set of SWASH model domains were developed for each directional case that has been simulated to ensure that the model domain best aligns with the incoming wave direction, which in turn supports model stability.

The model domains varied in length and width depending on the features that needed to be represented in the domain for that specific wave direction, and were typically around 380m wide and 500m long, with a resolution of 1m. An example model domain is shown in Figure 7, including an early facility layout concept that included a breakwater.

The model bathymetry was defined from the same datasets as the SWAN model (refer to Section 3.1.2).

The most recent approved plans for the Shute Harbour Marina Resort development (GBA Projects, 2012) were also included in the base case model, including a newly established deep navigational channel and hard reclamation.

All sloped rock revetment structures within the model domain were represented as porous structures with a low porosity value of 0.3. The breakwater has been represented with the core as an impermeable obstacle included in the bathymetry, and the rock armour modelled as a 1m thick layer with a porosity of 0.4 and grain size of 0.5m. The adopted porosity value (0.4) is the recommended value in SWASH for rock armour breakwaters and is on the lower (conservative) side of typical values.

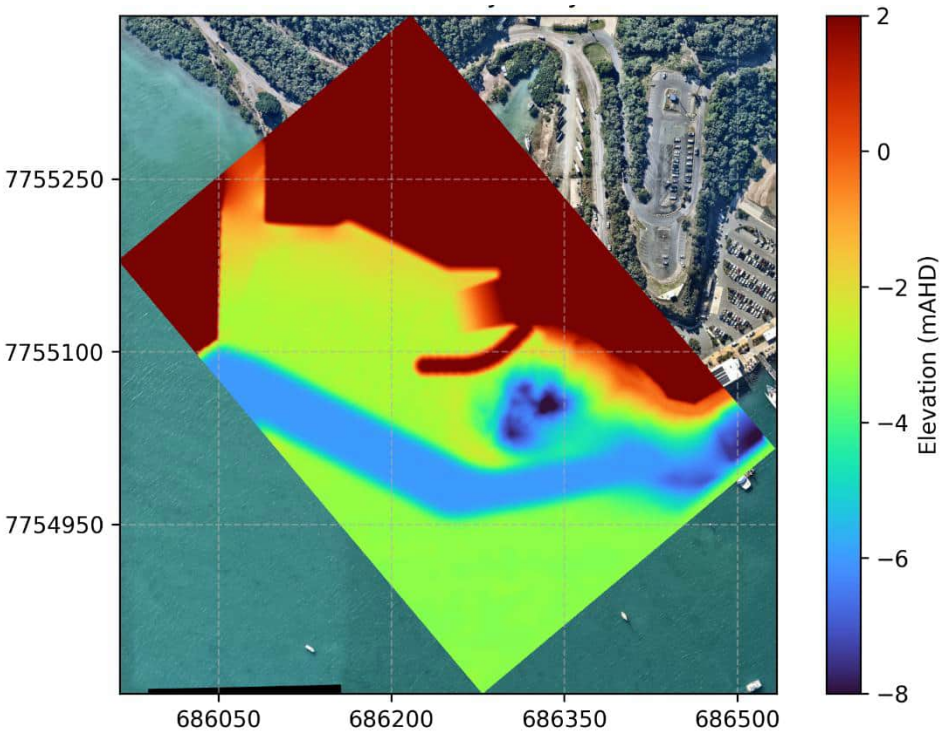

Figure 7: Example model domain for the 140°TN wave direction model.
Note: Design layout shown has been superseded.

3.4.2 Model configuration

The model was configured per SWASH manual recommended defaults for nearshore scale simulations. Two vertical layers were used due to the relatively deep channel configuration to ensure accuracy of the linear dispersion relationship. Waves were generated using a JONSWAP spectrum with a directional spreading of 25°. Manning's friction was applied with a coefficient of 0.016. A background viscosity of 1×10^{-4} m²/s was specified in addition to Smagorinsky turbulence closure. All numerical settings were left at default values beyond use of the Minmod gradient limiter for water depth.

4. Metocean design criteria

4.1 General methodology

Information and datasets regarding the metocean conditions at Shute Harbour are limited. A permanent tide gauge operated by the Queensland Government at Shute Harbour was decommissioned in 2018, and there are no wave monitoring sites close to the study area. Previous studies to support recent development at the Shute Harbour Marine Terminal have not been made available to the Project.

The water-level extreme criteria are based on a storm tide study completed on behalf of the Whitsunday Regional Council (BMT & SEA, 2017).

Two key datasets have been used to define the wind criteria:

- Ambient: Bureau of Meteorology (BoM) Atmospheric Regional Reanalysis for Australia version 2 (BARRA2) 10-minute average wind speed and direction, 01/01/1979 to 31/12/2023.
- Extreme: Geoscience Australia (2018) National Tropical Cyclone Hazard Assessment (TCHA18). This dataset provides Average Recurrence Interval (ARI) wind speeds associated with tropical storms.

Ambient and extreme wave criteria are based on new spectral wave modelling that has been undertaken for the Project, using the model described in Section 3.1, and output at locations shown in Figure 8.

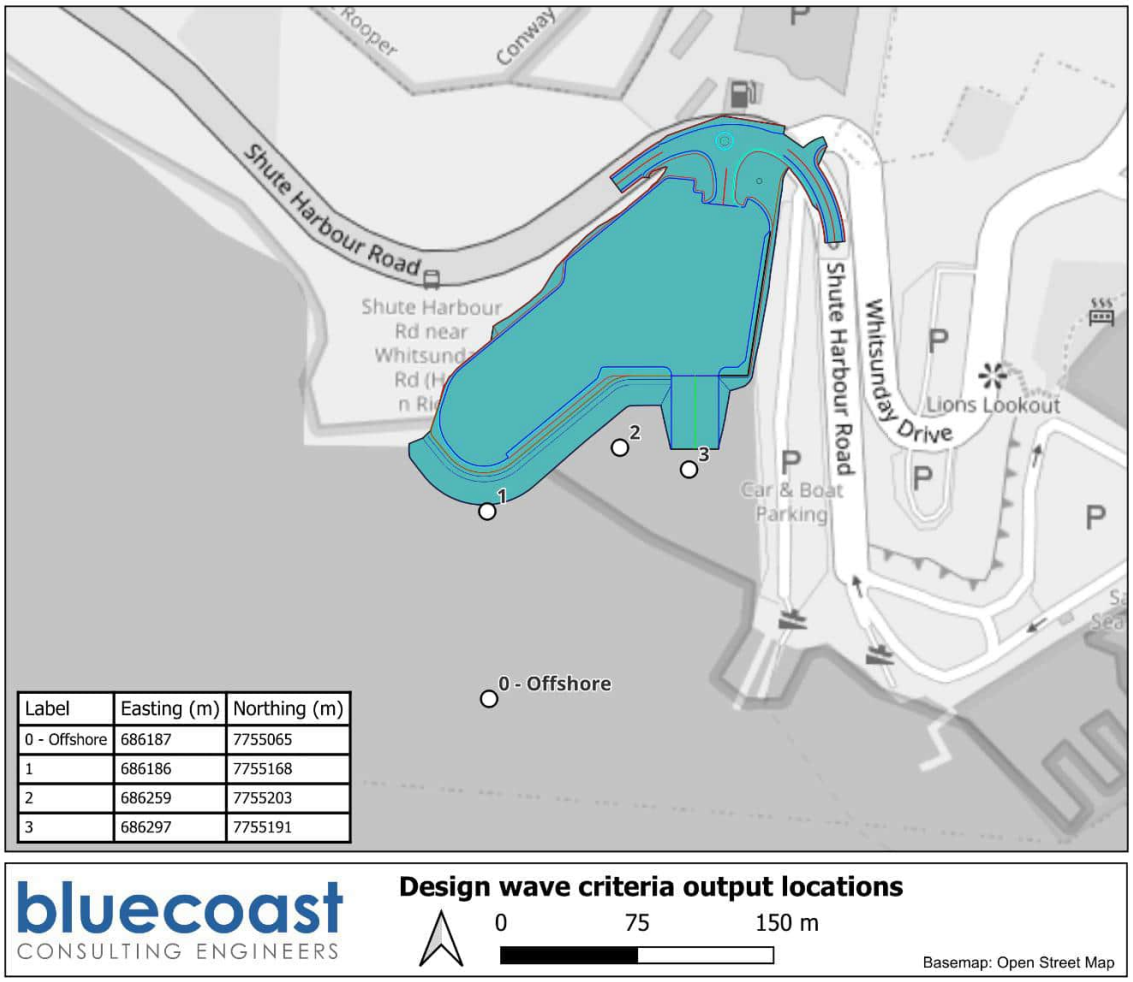

Figure 8: Design wave criteria output locations

4.2 Ambient criteria

4.2.1 Water level

The published tidal planes for Shute Harbour relative to the Queensland Port Datum (LAT 1992) are provided in Table 1. The tidal planes have been determined using the 20-year tidal datum epoch 2010 to 2029 (MSQ 2026). The LAT levels were converted to AHD using the Permanent Survey Mark (PSM) 75758 (Department of Resources 2026).

Table 1: Shute Harbour semi-diurnal tidal planes (MSQ 2026).

Tidal Plane	Level to LAT (m)	Level to AHD* (m)
Highest Astronomical Tide (HAT)	4.39	2.51
Mean High Water Spring (MHWS)	3.35	1.47
Mean High Water Neap (MHWN)	2.62	0.74
Mean Sea Level (MSL)	1.97	0.09
Mean Low Water Neap (MLWN)	1.31	-0.57
Mean Low Water Spring (MLWS)	0.58	-1.30
Lowest Astronomical Tide (LAT)	0.00	-1.88

*PSM 75758 LAT level is 12.735 m; AHD level is 10.859 m (Department of Resources 2026).

4.2.2 Wind

Outputs from the BoM BARRA2 hindcast (1979 to 2023) have been used to summarise the prevailing winds at Shute Harbour using a wind rose (Figure 9), joint wind speed-direction frequency (Table 2) and monthly wind speed frequency (Table 3). It is noted that the wind direction is given in degrees relative to true north (TN°), corresponding to the direction from which the wind originates. Based on the BARRA2 dataset the key features of the wind climate at Shute Harbour include:

- The prevailing wind patterns are typical of coastal areas along the east coast of Queensland, dominated by southeasterly trade winds which are strongest from April to September (winter/dry season).
- Winds are from the east-southeast to south-southeast (ESE to SSE, or approximately 100-170 TN°) for more than 60% of the time.
- The dominant regime is moderate, persistent winds (6-10 m/s) from the east-southeast to southeast (ESE to SE).
- The strongest winds (>14 m/s) also tend to occur from the east-southeast to south-southeast (ESE to SSE). Strong winds from other directions occur less frequently, noting strong winds from the westerly sectors (approximately 190-280 TN°) are rare.

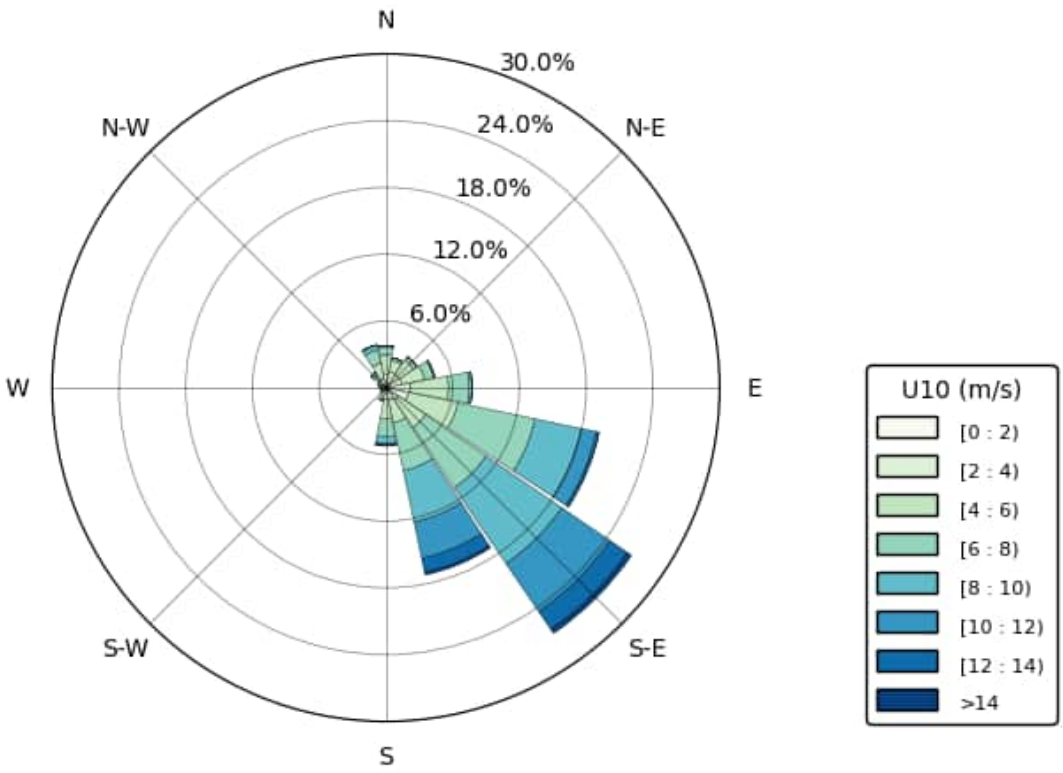

Figure 9: Wind rose of 10-minute wind speed and direction offshore from Shute Harbour (BARRA2 hourly data from 1979 to 2023).

Table 2: Occurrence percentage (%) of 10-minute wind speed and direction offshore from Shute Harbour (BARRA2 hourly data 1979 to 2023).

Wind speed (m/s)	Direction (°TN)																Total
	348.75-11.25	11.25-33.75	33.75-56.25	56.25-78.75	78.75-101.25	101.25-123.75	123.75-146.25	146.25-168.75	168.75-191.25	191.25-213.75	213.75-236.25	236.25-258.75	258.75-281.25	281.25-303.75	303.75-326.25	326.25-348.75	
19-20							0.01	0.01									0.03
18-19	0.01						0.01	0.01	0.01								0.03
17-18	0.01						0.02	0.01	0.01								0.05
16-17	0.01						0.03	0.04									0.08
15-16						0.01	0.12	0.07	0.01							0.01	0.22
14-15				0.01		0.03	0.30	0.17	0.02						0.01		0.54
13-14						0.07	0.65	0.42	0.03							0.01	1.18
12-13						0.2	1.25	0.83	0.04							0.01	2.36
11-12	0.01	0.01			0.01	0.47	2.12	1.27	0.06					0.01		0.01	3.98
10-11				0.02	0.01	0.92	3.11	2.04	0.09					0.01	0.02	0.03	6.26
9-10	0.02	0.01	0.01	0.02	0.04	1.66	3.94	2.34	0.18	0.01				0.01	0.13	0.14	8.51
8-9	0.06	0.01	0.01	0.05	0.19	2.57	4.29	2.37	0.38	0.01				0.02	0.20	0.27	10.45
7-8	0.24	0.04	0.07	0.20	0.59	3.46	3.78	2.41	0.63	0.04	0.02	0.01		0.04	0.26	0.52	12.30
6-7	0.52	0.19	0.28	0.64	1.28	3.62	2.81	2.01	0.98	0.07	0.04	0.03	0.01	0.07	0.23	0.72	13.48
5-6	0.83	0.42	0.66	1.01	1.86	2.75	1.85	1.26	1.07	0.17	0.05	0.03	0.04	0.11	0.23	0.75	13.08
4-5	0.84	0.62	0.90	1.05	1.59	1.79	1.12	0.81	0.73	0.22	0.08	0.06	0.08	0.12	0.18	0.62	10.80
3-4	0.65	0.71	0.73	0.76	1.15	1.08	0.62	0.52	0.49	0.27	0.11	0.09	0.14	0.13	0.17	0.46	8.07
2-3	0.39	0.50	0.45	0.45	0.66	0.65	0.41	0.36	0.31	0.25	0.11	0.13	0.14	0.11	0.14	0.23	5.29
1-2	0.14	0.19	0.21	0.21	0.27	0.27	0.25	0.20	0.16	0.13	0.11	0.09	0.07	0.08	0.08	0.12	2.59
Total	3.74	2.72	3.33	4.43	7.67	19.53	26.69	17.15	5.20	1.16	0.52	0.43	0.48	0.71	1.66	3.90	100

Table 3: Monthly occurrence percentage (%) of 10-minute wind speed offshore from Shute Harbour (BARRA2 hourly data 1979 to 2023).

Wind speed (m/s)	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	All Year
19-20	0.10	0.07	0.12	0.01									0.03
18-19	0.11	0.03	0.18		0.01								0.03
17-18	0.16	0.14	0.23	0.04	0.04								0.05
16-17	0.24	0.26	0.23	0.07	0.08	0.05	0.03						0.08
15-16	0.74	0.51	0.81	0.12	0.09	0.07	0.19			0.01		0.02	0.22
14-15	1.06	1.00	1.78	0.92	0.24	0.38	0.52	0.10	0.01	0.14		0.19	0.54
13-14	1.30	1.92	3.19	2.34	0.60	1.35	1.32	0.40	0.43	0.58	0.19	0.50	1.18
12-13	1.98	3.01	5.86	4.16	2.17	3.01	2.49	1.50	1.35	1.38	0.62	0.65	2.36
11-12	3.14	4.86	7.64	6.77	5.13	5.07	4.25	3.36	1.79	2.54	1.68	1.44	3.98
10-11	5.06	6.85	8.51	10.76	8.81	8.68	7.88	5.8	2.75	4.44	2.94	2.72	6.26
9-10	8.04	8.23	9.49	12.34	11.26	10.74	10.29	7.49	4.97	7.56	5.74	6.00	8.51
8-9	9.12	9.70	11.34	13.68	14.26	11.71	12.18	8.79	7.05	9.71	9.00	8.96	10.45
7-8	11.19	12.09	11.54	12.75	13.72	12.33	12.78	11.75	11.86	11.97	13.07	12.59	12.30
6-7	14.17	12.27	10.08	10.28	12.53	12.01	13.93	12.62	13.13	16.21	17.33	17.17	13.48
5-6	14.17	11.33	7.78	7.30	11.27	11.67	11.51	11.72	14.01	17.18	19.44	19.56	13.08
4-5	11.76	10.16	7.08	6.03	7.85	8.56	7.82	11.14	15.64	13.85	15.06	14.79	10.80
3-4	8.67	8.00	6.36	5.47	5.21	6.58	5.72	11.04	13.33	8.54	9.07	8.98	8.07
2-3	5.54	5.91	4.59	4.29	3.90	4.58	4.85	8.56	8.77	4.20	4.02	4.38	5.29
1-2	2.69	2.95	2.42	2.13	2.14	2.43	3.35	4.33	4.05	1.47	1.47	1.69	2.59
Total	100	100	100	100	100	100	100	100	100	100	100	100	100

4.2.3 Waves

Shute Harbour is typically a low energy wave environment characterised by local wind-generated waves from the east-southeast to southeast. The larger Whitsunday islands limit the wind fetch distance from most directions and provide shelter from the conditions originating in the Coral Sea and Great Barrier Reef lagoon. The existing Shute Harbour Marine Terminal is leeward of Repair, Tancred and Shute Islands and their surrounding shallow reef areas. At the new recreational boating facility location, the largest fetch (approximately 8.5 km) is from the southeasterly sector and aligned with the prevailing winds (refer Section 4.2.2). Infrequent high energy conditions, often associated with tropical cyclones, can occur and are discussed further in Section 4.3.3.

No historical wave measurements for Shute Harbour were available and therefore numerical modelling methods have been used to derive the ambient wave climate statistics. Details of the wave model are provided in Section 3.1.

The wave rose (Figure 10), joint wave height-direction frequency (Table 4), monthly wave height frequency (Table 5) and joint wave height-wave period frequency (Table 6) are based on the 10-year wave hindcast and extracted timeseries at the offshore location ("0"), shown in Figure 8. The model water depth at this location is approximately 3 m below AHD. The hindcast years 2008-2017 were selected as they included notable weather events (e.g. TC Dylan in January 2014 and TC Debbie in March 2017) and were aligned with a period when observed water level data from the Shute Harbour tide gauge was also available (as noted above, the gauge was decommissioned in March 2018).

Based on the 10-year wave hindcast the key features of the wave climate at the new boating facility location include:

- Approximately 90% of all waves are from the east-southeast to southeast (ESE to SE, or approximately 100-145 TN°)
- The significant wave height is:
  - between 0.1-0.2 m around 65% of the time
  - below 0.3 m around 90% of the time, and
  - rarely greater than 0.5 m.
- The largest waves (significant wave height >0.5 m) occur from the southeast (aligned with the largest fetch) and typically between January and April.
- The peak wave period is 1.5-2.5 s around 90% of the time, characteristic of waves that are locally wind-generated with no significant swell energy.

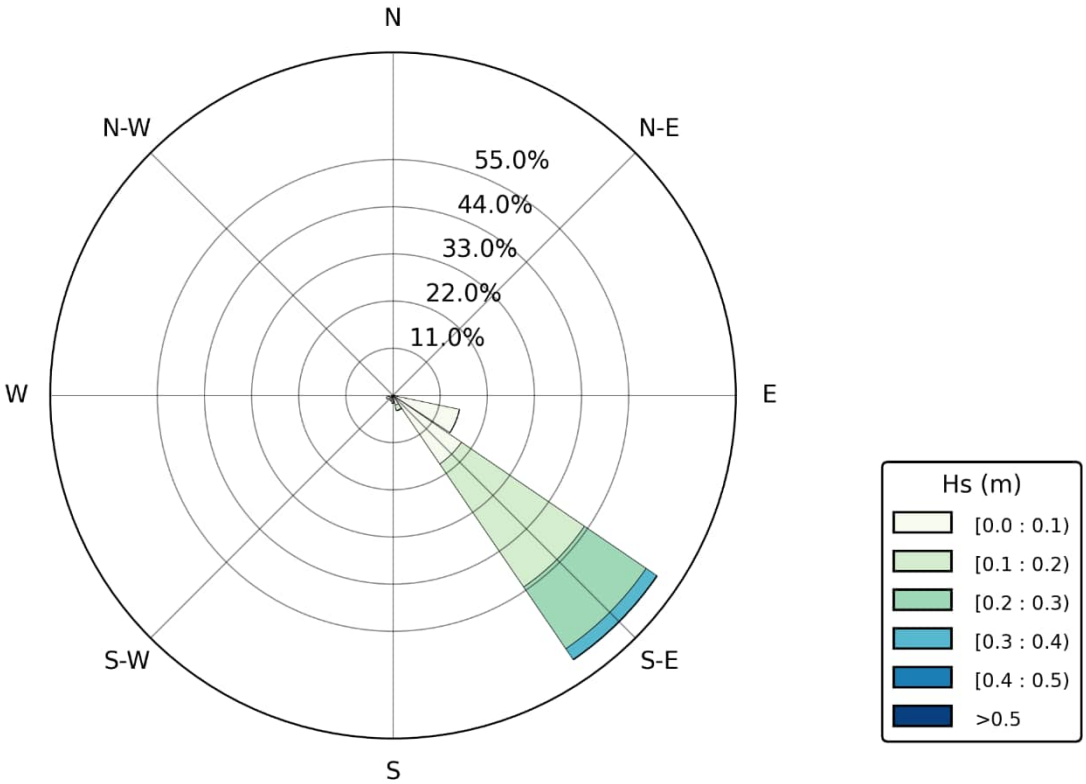

Figure 10: Wave rose of significant wave height (Hs) and direction offshore of the facility (location "0", SWAN hindcast 2008 to 2017).

Table 4: Occurrence percentage (%) of significant wave height (Hs) and direction offshore of the facility (location "0", SWAN hindcast 2008 to 2017).

Hs (m)	Direction (°TN)																Total
	348.75-11.25	11.25-33.75	33.75-56.25	56.25-78.75	78.75-101.25	101.25-123.75	123.75-146.25	146.25-168.75	168.75-191.25	191.25-213.75	213.75-236.25	236.25-258.75	258.75-281.25	281.25-303.75	303.75-326.25	326.25-348.75	
0.7-0.8																	
0.6-0.7							0										0.00
0.5-0.6							0.02	0.001									0.03
0.4-0.5							0.18	0.01									0.19
0.3-0.4							2.97	0.03									3
0.2-0.3							17.44	0.05									17.5
0.1-0.2						0.06	34.75	1.29	0.29	0.08	0.01						36.48
0.0-0.1					0.48	15.8	19.33	2.27	1.52	1.26	0.5	1.57	0.07				42.8
Total					0.48	15.87	74.7	3.66	1.81	1.34	0.51	1.58	0.07				100

Table 5: Monthly occurrence percentage (%) of significant wave height (Hs) offshore of the facility (location "0", SWAN hindcast 2008 to 2017).

Hs (m)	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	All Year
0.7-0.8													0.00
0.6-0.7			0.05										0.2
0.5-0.6	0.16	0.03	0.11										1.38
0.4-0.5	1.17	0.35	0.63	0.1		0.04							5.76
0.3-0.4	4.15	5.96	9.6	5.07	1.76	2.54	1.22	0.6	1.29	2.33	0.96	0.75	14.53
0.2-0.3	18.09	19.99	28.25	27.99	21.64	18.18	16.34	10.75	8.33	17.39	11.47	11.6	23.24
0.1-0.2	26.55	29.08	31.81	42.79	45.48	42.65	47.41	36.3	33.99	35.12	33.56	32.65	24.84
0.0-0.1	49.88	44.58	29.54	24.06	31.12	36.58	35.03	52.34	56.39	45.16	54.01	55	29.99
Total	100	100	100	100	100	100	100	100	100	100	100	100	100

Table 6: Occurrence percentage (%) of significant wave height (Hs) and wave peak period (Tp) offshore of the facility (location "0", SWAN hindcast 2008 to 2017).

	Peak period (s)									
Hs (m)	**1.0-1.5**	**1.5-2.0**	**2.0-2.5**	**2.5-3.0**	**3.0-3.5**	**3.5-4.0**	**4.0-4.5**	**4.5-5.0**	**≥5.0**	**Total**
0.7-0.8										
0.6-0.7				0.00	0.00					0.00
0.5-0.6				0.03						0.03
0.4-0.5			0.11	0.08						0.19
0.3-0.4			2.95	0.06	0.03					3.03
0.2-0.3		12.27	5.29	0.08		0.01				17.66
0.1-0.2	7.45	27.88	1.39	0.04	0.03	0.03				36.83
0.0-0.1	31.32	8.42	1.09	0.39	0.44	0.33	0.15	0.05	0.07	42.26
Total	38.77	48.57	10.82	0.68	0.5	0.37	0.15	0.05	0.07	100

4.3 Extreme metocean criteria

4.3.1 Water level

Water levels exceeding HAT occur at Shute Harbour, typically associated with tropical cyclones or other non-cyclonic severe weather systems. Notable historical total water level events recorded by the Shute Harbour tide gauge (decommissioned in 2018) include:

- 30/01/2014 (TC Dylan): 2.87 m AHD
- 08/02/2001 (unnamed event): 2.57 m AHD
- 28/03/2017 (TC Debbie): 2.55 m AHD
- 21/07/2005 (unnamed event): 2.54 m AHD
- 11/01/2009 (unnamed event): 2.53 m AHD

BMT and SEA (2017) reported tropical cyclone (TC) and non-tropical cyclone (non-TC) water level statistics for Shute Harbour. The approach combined the statistical analysis of historical TCs which have

impacted the Whitsunday region, numerical modelling of historical and synthetic TC events, and non-TC tidal residual analysis. The resulting 'tide plus surge' water level return period curves and 'combined' water level statistics are provided in Figure 11 and Table 7.

The 'tide plus surge' water levels reported by BMT and SEA (2017) were based on the 20-year tidal datum epoch 1992 to 2011. Table 7 provides the 'tide plus surge' water levels adjusted to tidal datum epoch 2010 to 2029, consistent with the published tidal planes (MSQ 2026) for Shute Harbour (refer Section 4.2.1).

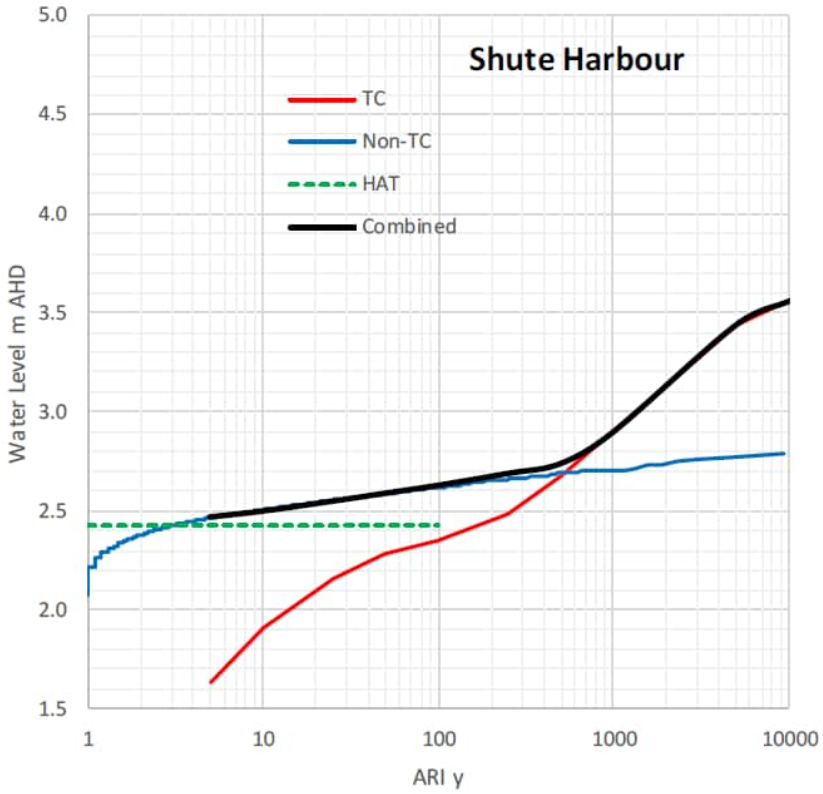

Figure 11: Return period curves for tide plus surge water level at Shute Harbour: TC, non-TC and combined statistics, relative to tidal datum epoch 1992 to 2011 (BMT WBM & SEA 2017).

Table 7: Combined TC and non-TC tide plus surge water level ARIs (BMT WBM & SEA 2017)

ARI (years)	Storm tide level (mAHD)
HAT	2.51
10	2.59
50	2.67
100	2.71
200	2.73
500	2.79
1,000	2.81
2,000	2.87
5,000	3.08
10,000	3.64

4.3.2 Wind

Representative extreme wind speeds for Shute Harbour have been obtained from:

- Geoscience Australia 2018 National Tropical Cyclone Hazard Assessment (TCHA18)
- AS/NZS 1170.2.2021 (Wind Actions) (AS1170)

Table 8 provides the TCHA18 and AS1170 3-second gust wind speed ARIs and the equivalent 10-minute average wind speeds derived by applying the 'off-sea' conversion factor (1.38) recommended by Harper et al. (2010). The AS1170 10-minute wind speeds are approximately 5 m/s higher than TCHA18 for all ARIs.

The TCHA18 wind speed ARIs have been selected as the basis for the modelling used to estimate the extreme wave criteria for the Project and presented in Section 4.3.3. The TCHA18 probabilistic dataset is designed for risk assessment, infrastructure planning, and, by extension, wave and storm surge modelling. AS1170 wind speed ARIs, primarily intended for wind loading calculations, are considered conservative estimates of extreme winds speeds for Queensland coastal regions (e.g. Harper 1999).

A comparison of the extreme wave criteria estimated using the AS1170 wind speed ARIs is presented in Appendix B.

Table 8: TCHA18 and AS1170 peak gust speed and converted 10-minute average wind speed.

ARI (years)	TCHA18 3s gust (m/s)	AS1170 3s gust (m/s)	TCHA18 10-min (m/s)	AS1170 10-min (m/s)
5	24.6	33.0	17.8	23.9
10	31.2	39.0	22.6	28.3
50	44.4	52.0	32.2	37.7
100	49.4	56.0	35.8	40.6
200	53.9	61.0	39.0	44.2
500	59.3	66.0	43.0	47.8
1,000	63.0	70.0	45.6	50.7

4.3.3 Waves

Design wave criteria for the Project have been developed using numerical modelling methods. Details of the wave model are provided in Section 3.1.

The approach for developing the wave statistics involved modelling the TCHA18 10-minute average wind speed ARIs (Table 8) in 10-degree directional bins between 45-215 TN° (northeast to south-southwest, NE to SSW) and for the associated extreme water level criteria (refer Table 7). This approach assumed full dependence between the design wind, water level and wave condition. This assumption is considered further in Section 4.3.4.

Table 9 to Table 12 provides the non-directional wave criteria at the new boating facility for the output locations shown in Figure 8 and based on modelling of the TCHA18 wind speed ARIs. The tables include:

- The associated ‘tide plus surge’ water level used as input to the modelling
- Significant wave height (Hs)
- Peak wave period (Tp) associated with the peak significant wave height
- Mean wave period (Tm) associated with the peak significant wave height
- Zero-crossing wave period (Tz) associated with the peak significant wave height

These results suggest there is the potential for significant wave heights between 0.8-1.8 m with associated wave peak periods around 4.0-4.5 s at the new facility location and for the ARIs considered.

A comparison of these results to a previous investigation (Cardno Lawson Treloar 2008) that adopted an alternative methodology for estimating extreme wave criteria is provided in Appendix B.

Table 9: Extreme wave criteria for the new boating facility based on TCHA18 extreme wind speeds and associated water level at location 0 – offshore.

ARI (years)	Water level (mAHD)	Hs (m)	Tp (s)	Tm (s)	Tz (s)
5	2.56	0.76	4.13	3.01	2.16
10	2.59	1.01	4.28	3.33	2.49
50	2.67	1.40	4.02	3.72	2.93
100	2.71	1.55	4.15	3.80	3.06
200	2.73	1.64	4.20	3.87	3.14
500	2.79	1.75	4.28	4.00	3.25
1,000	2.81	1.83	4.38	4.02	3.32

Table 10: Extreme wave criteria for the new boating facility based on TCHA18 extreme wind speeds and associated water level at location 1

ARI (years)	Water level (mAHD)	Hs (m)	Tp (s)	Tm (s)	Tz (s)
5	2.56	0.67	3.09	2.78	1.97
10	2.59	0.88	3.42	3.10	2.26
50	2.67	1.23	3.86	3.47	2.68
100	2.71	1.35	4.03	3.60	2.82
200	2.73	1.43	4.08	3.67	2.91
500	2.79	1.53	4.17	3.76	3.02
1,000	2.81	1.60	4.23	3.82	3.09

Table 11: Extreme wave criteria for the new boating facility based on TCHA18 extreme wind speeds and associated water level at location 2

ARI (years)	Water level (mAHD)	Hs (m)	Tp (s)	Tm (s)	Tz (s)
5	2.56	0.51	2.78	2.41	1.68
10	2.59	0.67	3.09	2.70	1.89
50	2.67	0.93	3.54	3.07	2.21
100	2.71	1.02	3.68	3.19	2.32
200	2.73	1.12	3.31	3.05	2.55
500	2.79	1.25	3.44	3.17	2.67
1,000	2.81	1.30	3.50	3.25	2.76

Table 12: Extreme wave criteria for the new boating facility based on TCHA18 extreme wind speeds and associated water level at location 3

ARI (years)	Water level (mAHD)	Hs (m)	Tp (s)	Tm (s)	Tz (s)
5	2.56	0.44	2.16	2.00	1.57
10	2.59	0.57	2.40	2.24	1.81
50	2.67	0.87	2.88	2.67	2.21
100	2.71	0.98	3.05	2.80	2.35
200	2.73	1.07	3.14	2.91	2.46
500	2.79	1.18	3.31	3.02	2.56
1,000	2.81	1.25	3.38	3.12	2.68

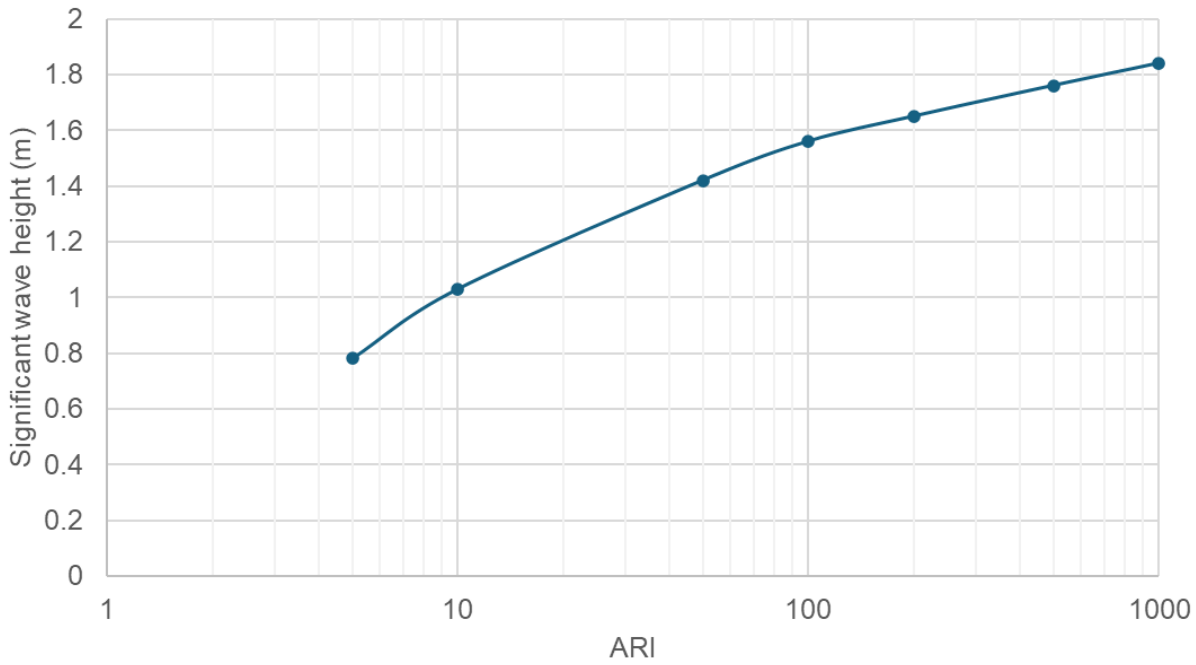

Figure 12: Significant wave height return period curve for the new boating facility based on TCHA18 extreme wind speeds (refer Table 8) and associated water level (refer Table 7).

It is noted that for each ARI, the peak significant wave height was associated with either the 135 or 145 TN° (southeast sector) directional bins. The modelling showed waves with longer peak periods (up to around 6 s) are associated with the north-easterly sector directional bins. These waves originating in the Whitsunday Passage are relatively smaller than waves from the southeast sector once they reach the new boating facility location, with significant wave heights around 1 m.

Figure 13 shows an example of significant wave height and peak wave period pairs from the 10-year hindcast illustrating the steepness-limited relationship between wave height and period in the critical south-easterly direction. Figure 13 also shows the presence of longer period waves with small associated wave heights.

The smaller, longer period waves may have implications for the new boating facility layout and engineering design. For completeness, the directional extreme wave model outputs for the offshore location (“0”) are provided in Appendix A.

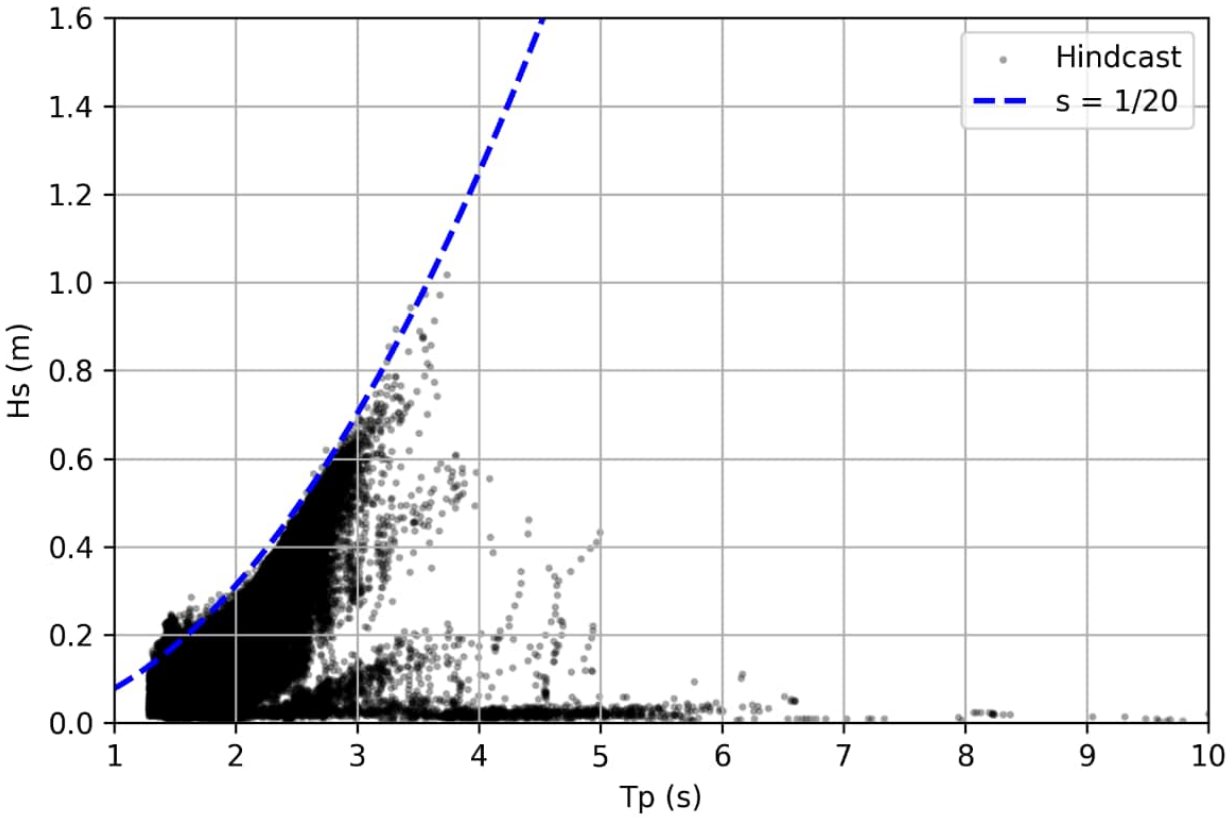

Figure 13: Significant wave height (Hs) and peak wave period (Tp) pairs from the 10-year hindcast overlaid with deepwater wave steepness curves. The steeper curve (s=1/20) is representative of the dominant south-easterly sector that produces the largest waves and is associated with shorter periods than less dominant directions.

4.3.4 Joint probability water level and waves

As noted in the previous sections, Shute Harbour is sheltered from swell energy by the Whitsunday Islands and the surrounding local islands (Repair, Tancred and Shute Islands) and shallow reefs. Consequently, both storm tide water levels (meteorologically driven water levels above predicted tide) and wave heights at the site are governed primarily by local wind forcing.

Analysis of the available 10-year hindcast record indicates a moderate positive correlation between residual water level (the surge component of the storm tide water level) and significant wave height at Shute Harbour. As shown in Figure 14, the conditional median residual water level increases with significant wave height, indicating a tendency for large waves and elevated surge to coexist during energetic wind events. However, the hindcast record contains limited tropical cyclone representation, which prohibits robust estimation of joint exceedance probabilities at the extreme tail of the distribution.

Given the shared physical forcing between variables, the observed positive dependence in the hindcast, and the potential for tropical cyclones to simultaneously generate both extreme waves and significant storm surge, the assumption of full dependence between extreme wave heights and total water levels (tide plus surge) is appropriate for design purposes. This is considered a likely conservative approach in the absence of sufficient data to reliably characterise the joint tail behaviour.

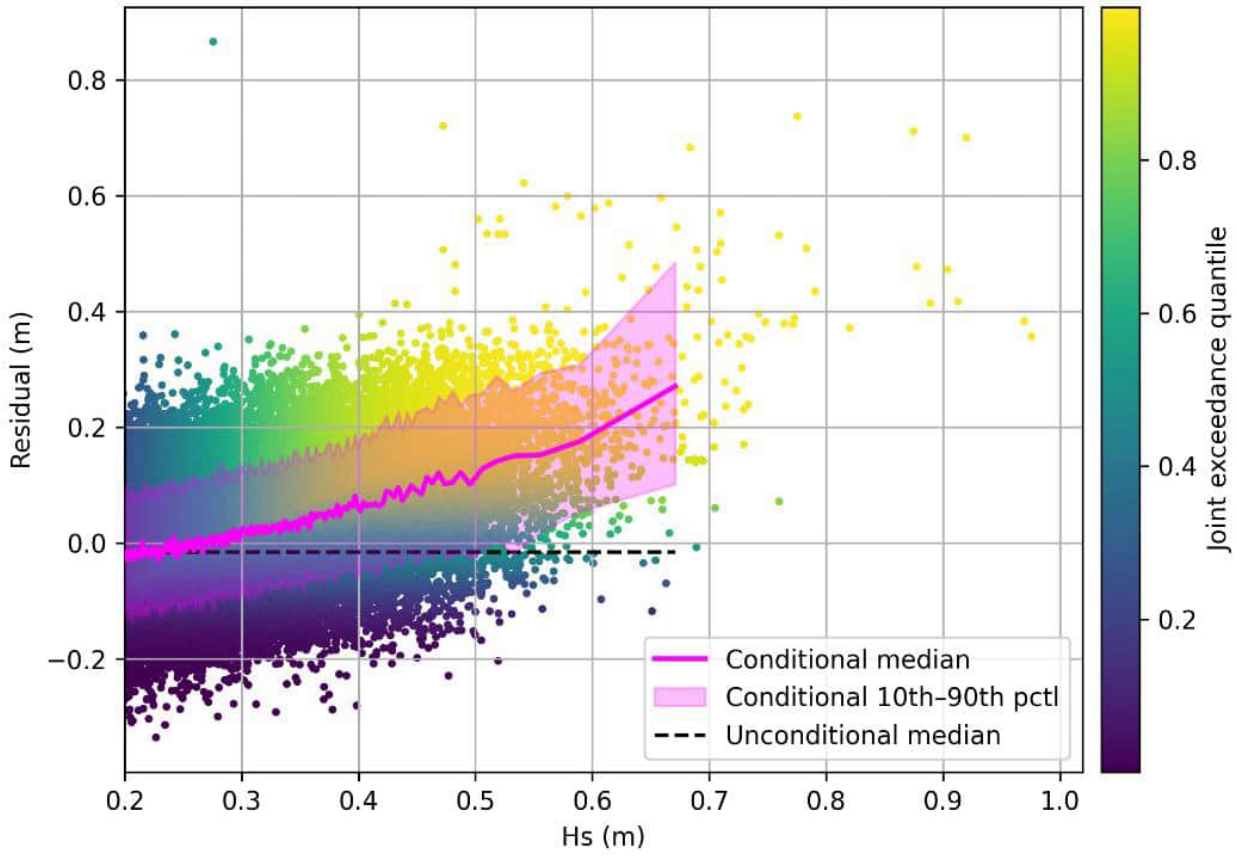

Figure 14: Significant wave height (Hs) and residual water-level pairs from the 10-year hindcast coloured by joint exceedance quantile.

Note: The conditional median residual water level (magenta dashed line) and 10th–90th percentile band (shaded) increase with significant wave height, indicating a positive dependence between residual water levels and local wave energy. The unconditional median residual (black dashed line) is shown for reference.

5. Facility layout assessments

5.1 Harbour tranquillity

Initial concept layouts of the new boat ramp facility were located further seaward in Grubby Bay than the design presented in this report. These initial concepts were exposed to greater wind-generated wave action and required a breakwater to meet the standard operational limits defined in AS3962 Guidelines for Design of Marinas. Site geotechnical investigations found poor ground conditions with insufficient bearing capacity to support a breakwater (EDG Consulting, pers. comm. 2 April 2026). The facility layout was consequently moved further landward into Grubby Bay, affording increased sheltering from waves but not to the standard a breakwater would provide.

The following sections summarise the harbour tranquillity modelling results for the superseded concept layouts. These results may help inform future design iterations but are otherwise superseded by the current design at the time of this report.

5.1.1 Scenarios

Details of the SWASH numerical model used to undertake this assessment are provided in Section 3.4.

Several geometric configurations were tested as described below:

- **Existing**, which included the neighbouring approved but unconstructed Shute Harbour Marina Resort assumed navigation channel and sheet piled quay wall reclamation structure
- **Base case**, as above including the proposed new boat ramp facility, with the breakwater represented with a 1.5H:1V slope
- **No-marina**, as above but without the approved but unconstructed Marina Resort.
- **Breakwater slope sensitivity**, as per base case but with a shallower breakwater slope (2H:1V).
- **Breakwater length sensitivities**, as per base case but with 20m added and subtracted from the breakwater overall length.

The wave scenarios defined in Table 13 were adopted for the harbour tranquillity assessment. These scenarios are based on the directional sectors associated with the highest predicted extreme wave heights (130°N and 140°N) and a more oblique direction (160°N) that marked the direction beyond which wave height reduces more rapidly. Each directional scenario was modelled for the 1-yr and 50-yr ARI return periods.

Table 13: Harbour tranquillity assessment wave boundary condition scenarios

	130 (TN°)		140 (TN°)		160 (TN°)	
ARI (years)	**Hs (m)**	**Tp (s)**	**Hs (m)**	**Tp (s)**	**Hs (m)**	**Tp (s)**
1	1.0	4.4	0.8	3.5	0.6	2.8
50	1.4	4.1	1.3	4.4	1.2	3.8

5.1.2 Results

Each geometric configuration and wave condition was assessed using a 25-minute SWASH simulation, with a 15-minute averaging period, corresponding to around 200-250 individual waves. Example wave field results are shown in Figure 15 (1-yr ARI) and Figure 16 (50-year ARI) for the two most critical directions for these return levels.

The SWASH results showed that:

- The base case and no-marina scenarios met the most stringent “good” harbour climate standard under AS3962 for all wave scenarios.
- A breakwater length reduction of around 20 m was feasible, still meeting the “good” standard, though only marginally.
- The approved Shute Harbour Marina Resort reduced offshore wave height via the navigation channel but slightly raised wave heights within the harbour (up to approximately 5%) due to reflections from the quay wall.

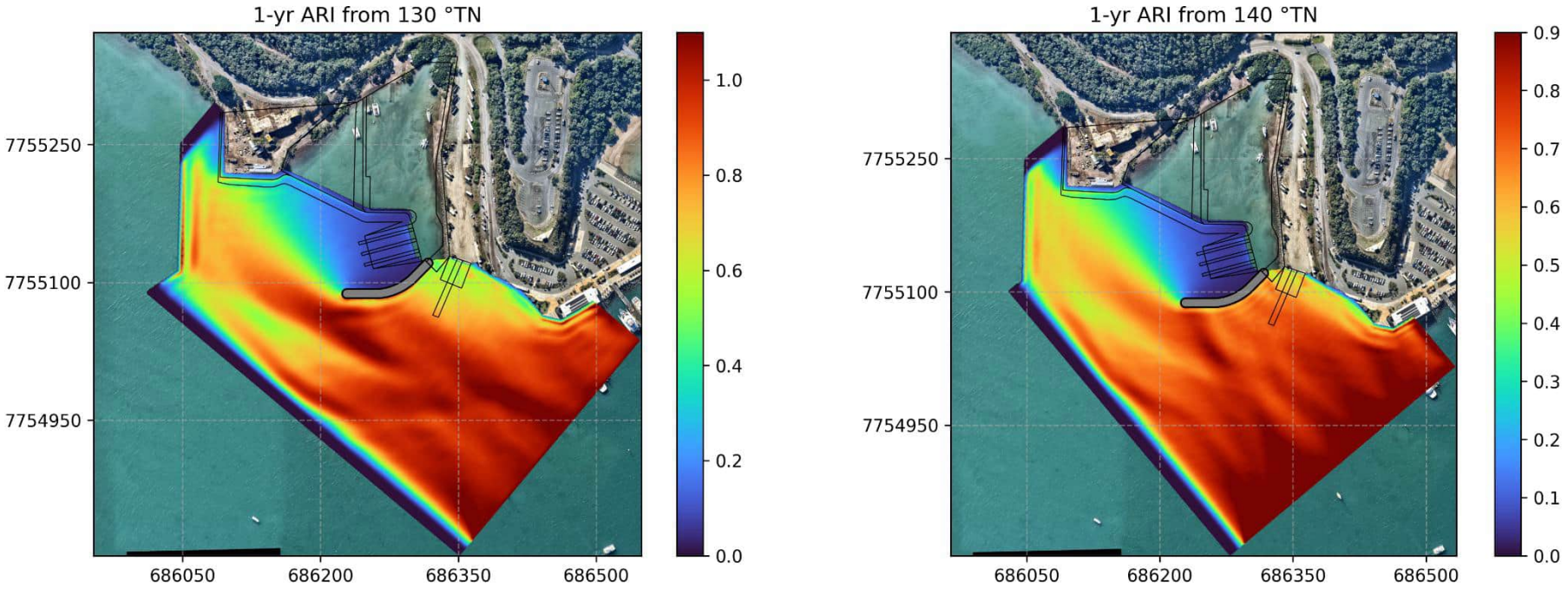

Figure 15: Modelled significant wave height (m) for a 1-year ARI wave from 130°N (left) and 140°N (right)

Note: Superseded design layout

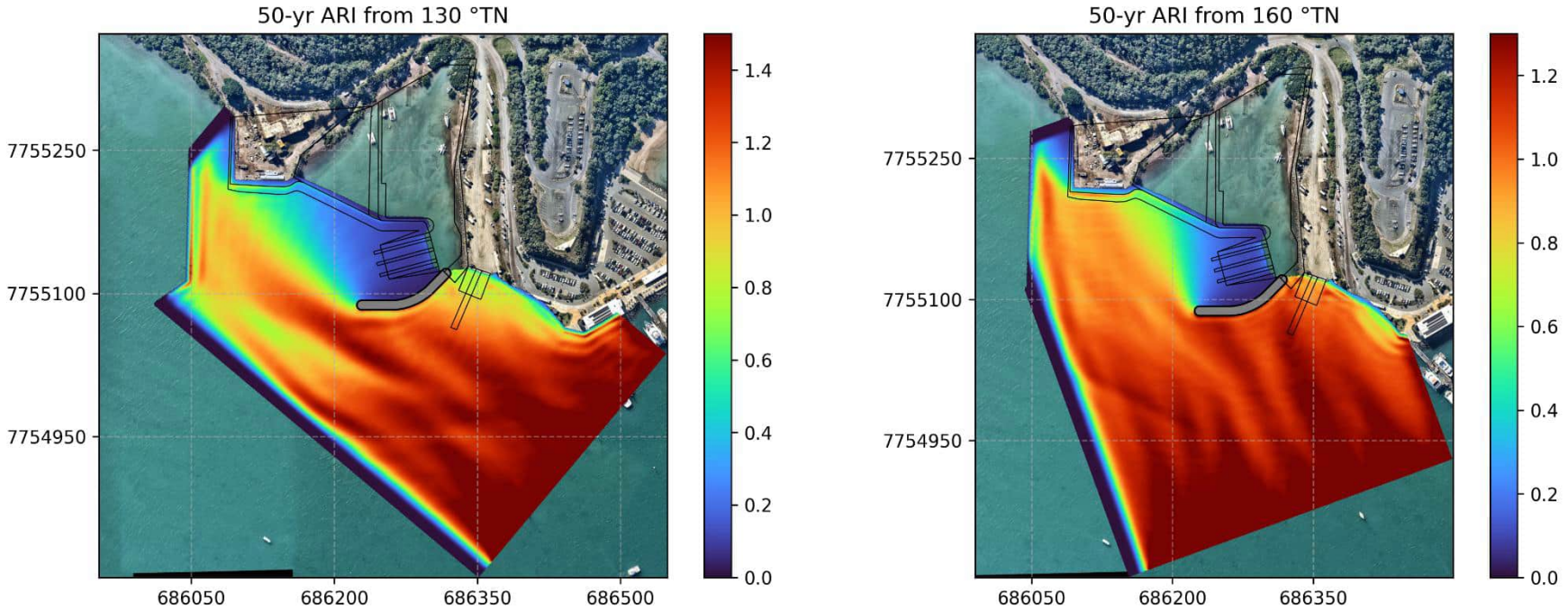

Figure 16: Modelled significant wave height (m) for a 50-year ARI wave from 130°N (left) and 160°N (right)

Note: Superseded design layout

5.1.3 Current design investigation

The current facility design (at the time of reporting) no longer featured a breakwater due to the poor geotechnical conditions and the greater natural protection afforded by its more landward position in Grubby Bay. As there is no breakwater to generate wave diffraction effects that require a phase-resolving model (SWASH), updated metocean design criteria were prepared using SWAN, a more computationally efficient phase-averaged model.

An independent check was performed on the new layout by running the two most critical wave scenarios with the current facility design through SWASH and comparing the outputs with the corresponding SWAN outputs. This comparison is shown in Figure 17 (140°N, 50-yr ARI) and Figure 18 (160°N, 50-year ARI). Results show generally good agreement between the SWAN and SWASH models, with SWAN producing slightly larger (more conservative) wave heights. SWAN has therefore been adopted to prepare the design criteria for the current design (as reported in Section 4.3.3) with the added benefit of providing results across all wave directions in 10° increments and several key return periods.

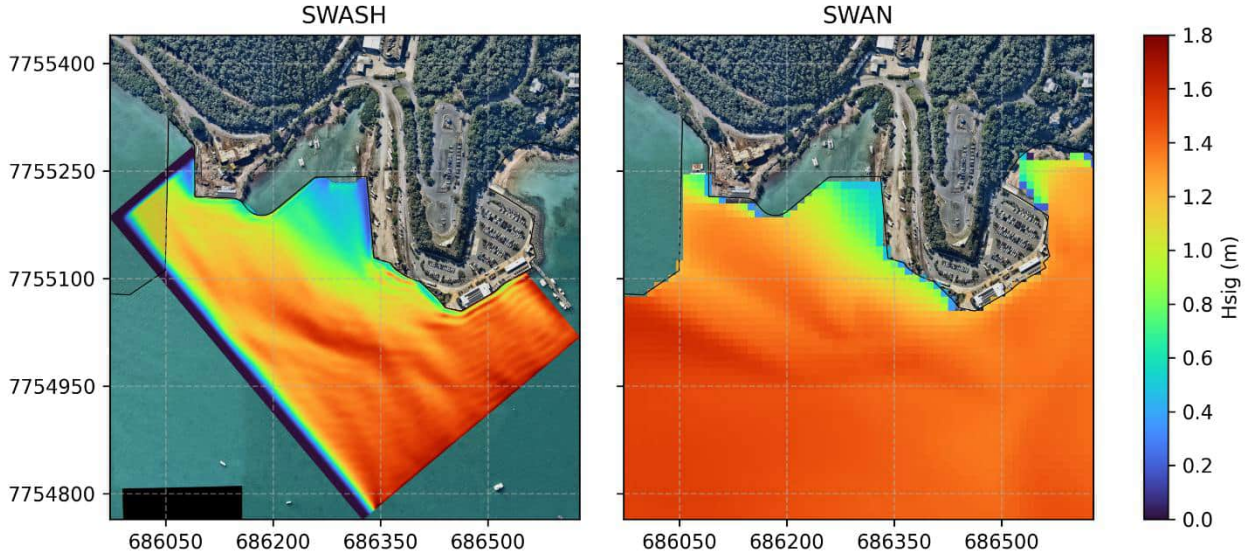

Figure 17: Comparison of significant wave height (m) between SWASH and SWAN for a 140°N wave

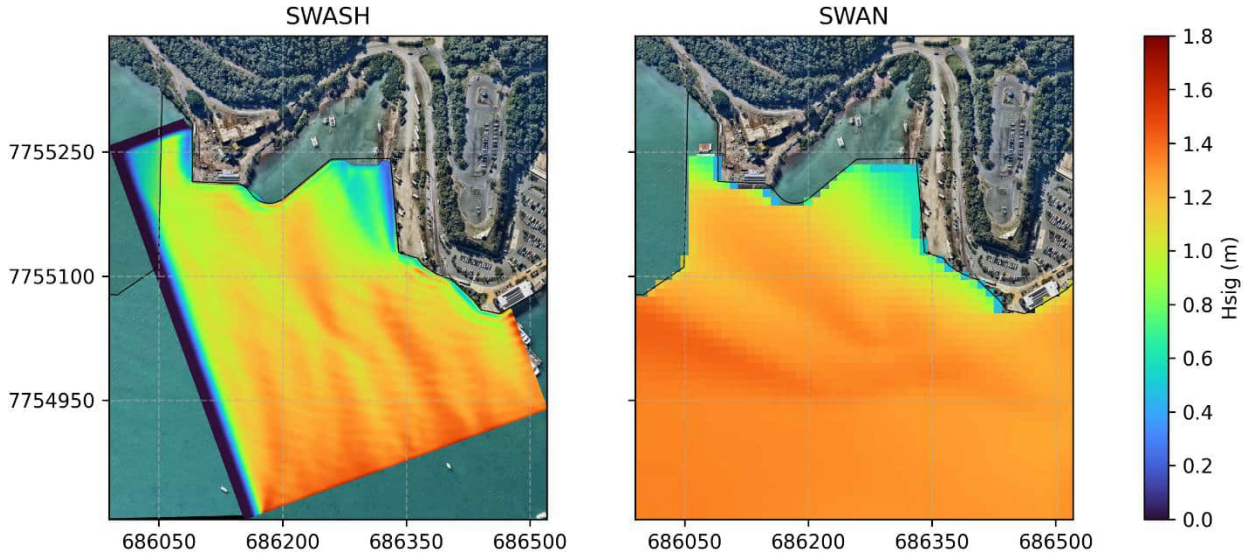

Figure 18: Comparison of significant wave height (m) between SWASH and SWAN for a 160°N wave

5.2 Maintenance dredging

The new boat ramp facility design features a dredged navigation channel extending from the boat ramp toe in Grubby Bay out to deeper waters in Shute Bay. This channel will have a design depth -1.2 mLAT, with a minimum depth requirement for -0.5 mLAT to provide all tide access to the facility.

A maintenance dredging assessment has been carried out for the facility using the TUFLOW FV hydrodynamic and sediment transport model described in Section 3.2 and Section 3.3. This model has been configured to simulate the transport of silt/clay sediment fractions.

The siltation modelling comprised:

- A 1-year hindcast of 2016 as a representative typical year, run at channel depths of -1.5, -1.2 and -0.8 mLAT to assess siltation as the channel infills.
- Individual 28-day simulations of 4 regional flood events and 10 wave events, run at the design depth of -1.2 mLAT.

The full year hindcast showed very little active transport within the bay, consistent with the prevailing very low energy wave climate. Strong currents are sometimes observed in the main channel (>0.5 m/s), but fine material was quickly cleared from these areas during the bed warmup and was therefore not available for transport. The key transport mechanism was during wave events, where even modest waves could stir up fines on the shallow muddy flats. Under the existing case there was very little net siltation in Grubby Bay or surrounding areas such as the Marine Terminal. This aligns with anecdotal accounts that little to no maintenance has been necessary in the area.

Under the developed case a small amount of siltation was predicted throughout the dredged navigation channel, particularly at the boat ramp toe where the cut into the surrounding seabed was highest. Average siltation across the full year runs ranged from around 120 mm/year at the deepest channel depth to 60 mm/year at the shallowest, equating to a volume of roughly 300 to 500 m^3/year. The result showed a clear spatial gradient. Siltation peaked at the boat ramp toe at 270 to 340 mm/year and reduced to around 60 mm/year toward open water. Trapping efficiency also reduces as the channel infills, so the rate is expected to slow as the channel shallows.

On average siltation alone, the modelling supports a roughly decadal maintenance cycle to hold the declared depth of -0.5 mLAT. The boat ramp toe may need more frequent attention, in the order of 3 to 4 years on the model prediction. These volumes are small and sit at the low end of what the model can reliably resolve without monitoring data, so the predictions are best treated as a planning basis, particularly if the model is under predicting.

Vessel induced scour is expected to offset some of the predicted infill, though it cannot be quantified with the model. The active bed material is soft silt/clay, which makes freshly settled material susceptible to disturbance from vessel wash. Shute Bay and Grubby Bay are both low energy environments, so vessel movement is a novel and relatively strong forcing for this setting. The boat ramp toe is both the highest siltation area and the area most exposed to vessel activity, so these two effects will oppose and may cancel one another. Local evidence at the Hamilton Island barge ramp and comparable harbour entrance channels such as Manly Boat Harbour suggests vessel activity may extend maintenance intervals beyond the model estimate.

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Appendix A: Extreme wave model outputs

The directional extreme wave model outputs for the offshore location (“0”), shown in Figure 8, are presented in the following tables.

These results are based on modelling the TCHA18 and AS1160 10-minute average wind speed ARIs (Table 8) in 10-degree directional bins between 45-265 TN° (northeast to south-southwest, NE to SSW) and for the associated water level criteria (Table 7). Tabulated results are shown to 215°TN, beyond which they continue to drop down and are not shown for brevity. This approach assumes full dependence between the design wind, water level and wave condition.

Table 14: TCHA18 directional extreme wave results – significant wave height (m)

	Forcing wind directional bins (TN°)																	
ARI (years)	**45**	**55**	**65**	**75**	**85**	**95**	**105**	**115**	**125**	**135**	**145**	**155**	**165**	**175**	**185**	**195**	**205**	**215**
5	0.38	0.44	0.51	0.58	0.64	0.69	0.74	0.76	0.76	0.76	0.75	0.69	0.61	0.58	0.55	0.52	0.49	0.47
10	0.49	0.57	0.66	0.76	0.84	0.90	0.96	0.99	1.01	1.01	1.00	0.92	0.85	0.76	0.73	0.69	0.65	0.61
50	0.72	0.81	0.91	1.02	1.12	1.20	1.28	1.34	1.38	1.40	1.40	1.34	1.26	1.17	1.12	1.08	1.02	0.96
100	0.81	0.90	1.01	1.12	1.23	1.32	1.39	1.46	1.52	1.54	1.55	1.47	1.39	1.30	1.25	1.20	1.14	1.07
200	0.86	0.96	1.07	1.18	1.29	1.39	1.47	1.55	1.60	1.63	1.64	1.59	1.49	1.42	1.37	1.32	1.25	1.19
500	0.93	1.03	1.15	1.27	1.38	1.49	1.58	1.66	1.72	1.75	1.75	1.68	1.62	1.55	1.50	1.45	1.37	1.30
1,000	0.99	1.09	1.20	1.32	1.45	1.56	1.65	1.73	1.79	1.82	1.83	1.76	1.68	1.61	1.56	1.51	1.43	1.37

Table 15: TCHA18 directional extreme wave results – wave peak period (s)

	Forcing wind directional bins (TN°)																	
ARI (years)	**45**	**55**	**65**	**75**	**85**	**95**	**105**	**115**	**125**	**135**	**145**	**155**	**165**	**175**	**185**	**195**	**205**	**215**
5	4.27	4.25	4.41	4.46	4.46	4.44	4.39	4.13	3.86	3.69	3.62	3.33	3.01	2.83	2.73	2.50	2.25	2.16
10	4.59	4.72	4.88	4.92	4.92	4.88	4.78	4.45	4.28	4.09	4.01	3.73	3.60	3.13	2.99	2.78	2.52	2.40
50	5.31	5.44	5.55	5.81	3.45	3.56	3.70	3.80	3.90	4.02	4.10	4.07	3.90	3.73	3.50	3.27	2.96	2.86
100	5.49	5.72	5.91	3.45	3.58	3.74	3.85	3.96	4.05	4.11	4.15	4.14	4.07	3.91	3.66	3.34	3.14	3.01
200	5.64	5.91	6.00	3.52	3.69	3.81	3.95	4.04	4.11	4.17	4.20	4.18	4.12	4.02	3.80	3.48	3.20	3.13
500	5.92	6.04	3.50	3.66	3.78	3.92	4.05	4.13	4.21	4.28	4.31	4.25	4.19	4.09	3.96	3.53	3.38	3.22
1,000	6.00	3.48	3.58	3.72	3.85	4.01	4.12	4.19	4.28	4.35	4.38	4.35	4.24	4.12	3.99	3.57	3.43	3.35

Table 16: TCHA18 directional extreme wave results – wave mean period (s)

	Forcing wind directional bins (TN°)																	
ARI (years)	**45**	**55**	**65**	**75**	**85**	**95**	**105**	**115**	**125**	**135**	**145**	**155**	**165**	**175**	**185**	**195**	**205**	**215**
5	2.25	2.42	2.61	2.73	2.93	2.99	3.01	3.01	2.99	2.95	2.87	2.71	2.52	2.39	2.28	2.16	2.07	2.00
10	2.60	2.81	2.99	3.13	3.24	3.30	3.33	3.34	3.33	3.29	3.23	3.07	2.90	2.70	2.59	2.47	2.35	2.25
50	2.85	3.12	3.32	3.47	3.58	3.65	3.70	3.72	3.73	3.72	3.67	3.56	3.41	3.23	3.10	2.97	2.83	2.72
100	2.93	3.18	3.38	3.54	3.66	3.74	3.80	3.83	3.85	3.84	3.80	3.68	3.54	3.37	3.24	3.10	2.97	2.85
200	2.97	3.21	3.41	3.57	3.70	3.80	3.86	3.90	3.92	3.91	3.87	3.78	3.63	3.49	3.36	3.22	3.08	2.97
500	3.03	3.26	3.46	3.63	3.77	3.87	3.94	3.98	4.01	4.00	3.96	3.86	3.74	3.60	3.48	3.34	3.20	3.06
1,000	3.06	3.29	3.49	3.67	3.81	3.91	3.99	4.03	4.06	4.06	4.02	3.92	3.79	3.66	3.54	3.41	3.26	3.17

Table 17: TCHA18 directional extreme wave results – wave zero crossing period (s)

	Forcing wind directional bins (TN°)																	
ARI (years)	**45**	**55**	**65**	**75**	**85**	**95**	**105**	**115**	**125**	**135**	**145**	**155**	**165**	**175**	**185**	**195**	**205**	**215**
5	1.41	1.46	1.59	1.64	1.88	2.02	2.10	2.16	2.15	2.14	2.10	1.99	1.85	1.78	1.72	1.67	1.63	1.59
10	1.54	1.67	1.82	1.98	2.12	2.27	2.38	2.45	2.49	2.49	2.46	2.33	2.20	2.06	2.02	1.98	1.91	1.84
50	1.61	1.81	2.02	2.23	2.43	2.59	2.73	2.82	2.90	2.93	2.92	2.85	2.74	2.61	2.54	2.49	2.41	2.33
100	1.68	1.86	2.08	2.30	2.51	2.69	2.84	2.95	3.03	3.07	3.06	2.97	2.88	2.76	2.69	2.62	2.55	2.47
200	1.73	1.92	2.13	2.36	2.57	2.76	2.91	3.03	3.12	3.15	3.14	3.09	2.98	2.88	2.81	2.74	2.66	2.60
500	1.82	1.99	2.19	2.43	2.66	2.86	3.01	3.13	3.22	3.25	3.25	3.17	3.10	3.00	2.95	2.85	2.78	2.67
1,000	1.89	2.05	2.25	2.49	2.73	2.94	3.09	3.20	3.29	3.32	3.32	3.25	3.15	3.06	3.01	2.93	2.85	2.79

Appendix B: Extreme wave criteria comparisons

AS1170 wind speeds

Table 18 provides extreme wave criteria based on the AS1170 wind speed ARIs presented in Table 8 and the same modelling approach described in Section 4.3.3. As discussed in Section 4.3.2, AS1170 is considered a conservative basis for estimating extreme wave criteria in Queensland coastal regions and therefore these results are simply provided for context and comparison with the wave criteria estimated using the TCHA18 wind speed ARIs. These results, and those from another previous study, are discussed further below.

Table 18: Extreme wave criteria based on AS1170 extreme wind speeds (refer Table 8) and associated water level (refer Figure 13).

ARI (years)	Water level (mAHD)	Hs (m)	Tp (s)	Tm (s)	Tz (s)
5	2.56	1.07	4.04	3.35	2.58
10	2.59	1.25	3.84	3.56	2.79
50	2.67	1.61	4.17	3.87	3.16
100	2.71	1.70	4.25	3.94	3.24
200	2.73	1.78	4.34	4.01	3.31
500	2.79	1.88	4.42	4.09	3.40
1,000	2.81	1.95	4.47	4.15	3.46

Shute Harbour Marina Development EIS

Cardno Lawson Treloar (2008) (CLT) reported design significant wave heights based on spectral wave modelling with SWAN as part of Shute Harbour Marina Development EIS. The marina layout originally proposed is shown in Figure 19 and indicates ‘cyclone wave output locations’ (red dots) 4, 5 and 6 as being close to Grubby Bay and the new boating facility location.

It is noted that that marina layout shown in Figure 19 was not resolved in the numerical model used to estimate the design wave conditions for breakwater design (i.e. the modelled waves were not influenced by the proposed structures).

Table 19 provides a summary of the ‘design wave heights for breakwater design’ reported at ‘cyclone wave output locations’ 4, 5 and 6. These estimates are based on the modelled peak wave conditions associated with 30 historical tropical cyclones tracks and parameterised Holland (1980) wind fields. Each tropical cyclone simulation adopted a high tide condition approximately equivalent to MHWS, with CLT noting the sensitivity of the wave height results to the modelled water level (likely due to the simulated depth-limited wave growth and/or wave breaking within the relatively shallow Shute Bay area). Extreme Value Analysis (EVA) techniques were used to estimate the significant wave height ARIs, noting full details of the tropical cyclone wave modelling and EVA were not provided in the CLT report.

At the 500-year ARI, the CLT assessment suggests a peak significant wave height of 2.1 m close to the new boating facility (cyclone wave output location 6) and a peak significant wave height up 2.3 m further offshore at cyclone wave output locations 4 and 5.

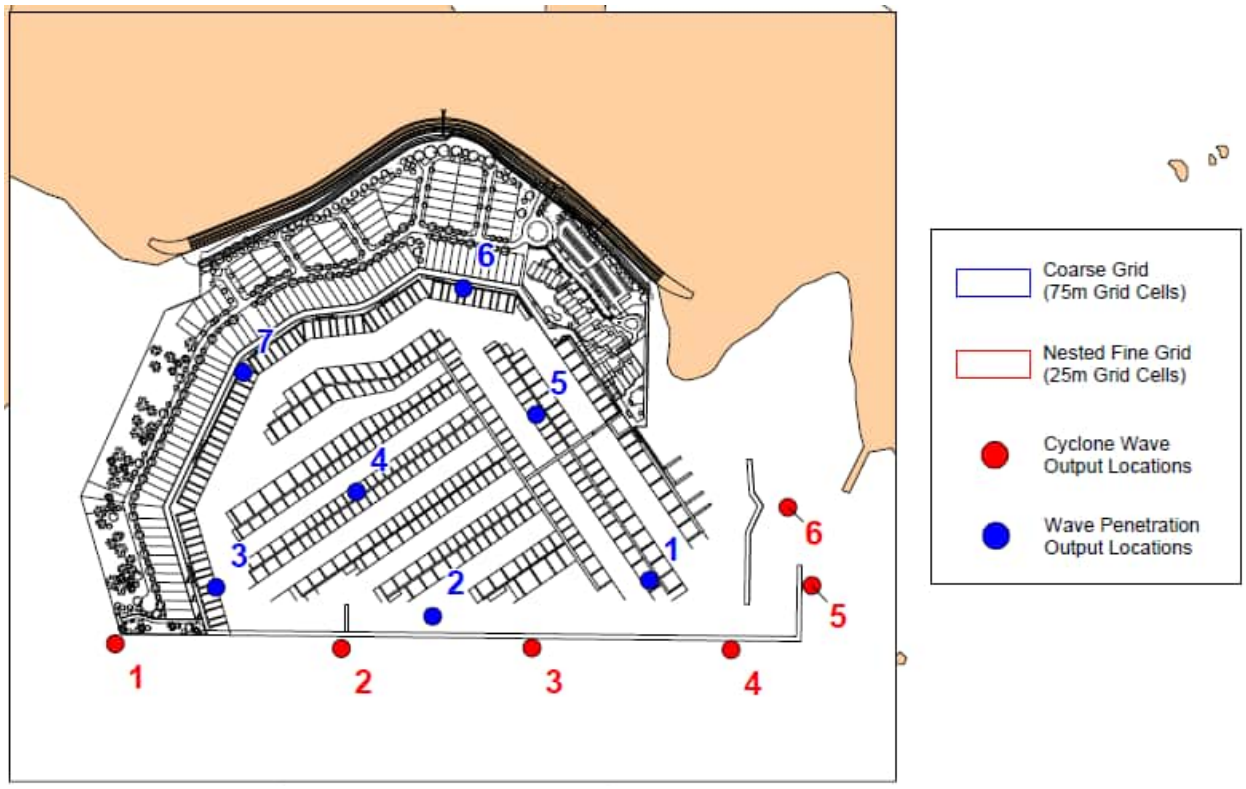

Figure 19: Shute Harbour Marina Development layout (now superseded) and wave model output locations reported by Cardno Lawson Treloar (2008).

Table 19: Significant wave height ARIs for breakwater design at 'cyclone wave output locations' 4, 5 and 6 reported by Cardno Lawson Treloar (2008).

ARI (years)	Location 4 (m)	Location 5 (m)	Location 6 (m)
10	0.91	0.88	0.79
25	1.30	1.27	1.16
50	1.55	1.52	1.38
100	1.78	1.75	1.60
200	2.00	1.98	1.81
500	2.30	2.28	2.09

Table 20 and Figure 20 provide comparisons of the significant wave height ARIs estimated for the Project (based on TCHA18, refer Table 9), AS1170 (refer Table 18) and those reported by CLT. This comparison suggests:

- The more frequent, moderate wave events (10 and 50-year ARI) are underestimated by CLT compared to TCHA18 and AS1170.
- Good agreement across the three scenarios at the 100 and 200-year ARI (approximately ~9% difference in significant wave height).

- Beyond the 50-year ARI the CLT significant wave height curve steepens compared to TCHA18 and AS1170. This may be due to the CLT EVA method and statistical extrapolation to the 200 and 500-year ARIs being based on the simulation of a relatively short historical record (1956 to 2006) and small population of tropical cyclones.
- Gradual convergence of the TCHA18 and AS1170 significant wave height with increasing ARI.

Table 20: Comparison of significant wave height ARIs developed for the Project (TCHA18), AS1170 and Cardno Lawson Treloar (2008) (CLT2008).

ARI (years)	CLT2008 location 6 (m)	TCHA18 (m)	AS1170 (m)
10	0.79	1.01	1.25
50	1.38	1.40	1.61
100	1.60	1.55	1.70
200	1.81	1.64	1.78
500	2.09	1.75	1.88

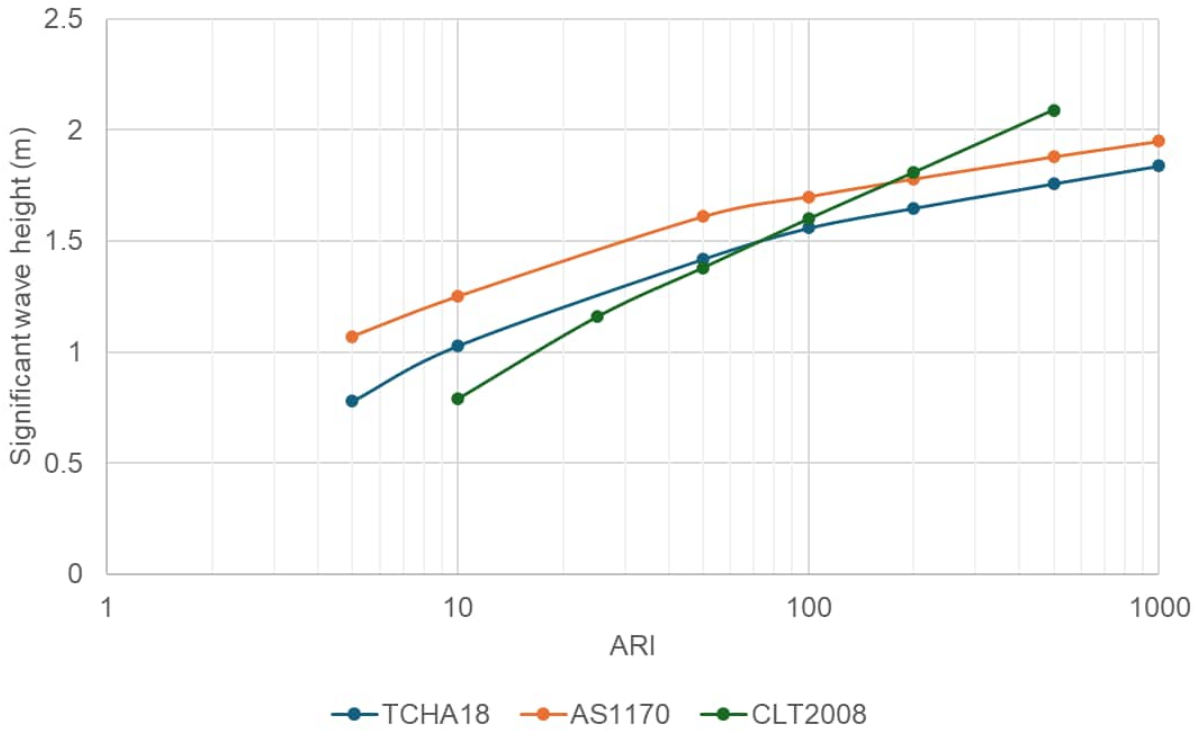

Figure 20: Comparison of significant wave height return period curves developed for the Project (TCHA18), AS1170 and Cardno Lawson Treloar (2008) (CLT2008).

Annex D Geophysical Assessment

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Client:

Civil Geotechnical Consultants

Project:

Shute Harbour Development - Marine Geophysical Survey

DATE: 31 MARCH 2026
REFERENCE: MES_1389_REPORT_SHUTEHARBOURGEOPHYSICAL_AA.DOCX

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Project Name: Shute Harbour Development - Marine Geophysical Survey

Client Name: Civil Geotechnical Consultants

Client Ref:

Prepared For: Mike Shackelton

MES Job No. MES_1389

QUALITY INFORMATION

Document Name MES_1389_Report_ShuteHarbourGeophysical_aa.docx

Date 30/03/2026

Prepared By RF/DPK

Reviewed By DPK

Revision History

Rev	Revision Date	Details	Name/Position	Signature
01	30/03/2026	Version aa	DPK/PG	

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1 INTRODUCTION

Marine & Earth Sciences Pty Ltd (MES) was commissioned by Civil Geotechnical Consultants (CGC) to undertake a marine geophysical study as part of an infrastructure program at Shute Harbour, QLD. The survey acquired geophysical data to inform foundation design and dredging conditions.

The study objectives were to map p-wave seismic velocities over the site on a series of transects to inform founding and potential piling conditions. The seismic refraction technique was used to achieve this to assess densities of material overlying bedrock as well as assess bedrock strength and weathering characteristics.

In addition to seismic refraction a sub-bottom profiler was deployed to achieve a broader appreciation of the bedrock surface and thickness of sediment overlying this. It provides rapid coverage on closer spaced lines to allow generation of contour levels of major boundaries rather than 2D slices beneath the broader spaced seismic refraction lines.

The data acquisition was completed from the 11th to the 13th of March 2026. No incidents or accidents occurring during the program.

2 SCOPE OF WORKS

Sub-Bottom Profiling an Applied Acoustics boomer system was used to map sub-seabed reflectors over the footprint of the site. Primary lines were run at approximately 10m to 20 m spacing, with orthogonal tie lines at approximately 50m spacing to ensure adequate coverage for tracking features between the primary lines.

Continuous Marine Seismic Refraction, using a surface-towed velocity profiler to map the distribution of seismic P-wave velocities and correlate with geotechnical boreholes for complete subsurface site characterisation. A total of 3 CMSR lines were performed at the site.

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3 FIELD TECHNIQUES AND EQUIPMENT SPECIFICATIONS

3.1 Sub-Bottom Profiling Survey (SBP)

An Applied Acoustics Boomer system was used to acquire single-channel SBP data for mapping shallow geological layers across the study area. The boomer seismic source was operated at energy levels ranging from 200 joules and a firing rate of 3 to 4 pulses per second. Return signals were received via the 12-element hydrophone array streamer, which was interfaced to a 24-bit analogue-to-digital converter. This converter, in turn, was interfaced to the Chesapeake Technology acquisition system. The seismic acquisition system was interfaced with the GPS, with position, heading, speed, and ping number appended to the SEG-Y seismic file. The hydrophone streamer and transducer catamaran were towed 20 meters behind the vessel, with a separation of approximately 3 meters. The vessel speed was maintained between 2.0 and 2.5 knots. Prestart equipment checks included a tap test on the hydrophones array and checking the response on the digital oscilloscope.

The vessel speed was maintained between 2.0 and 2.5 knots. Vessel track plots are shown in Figure A below.

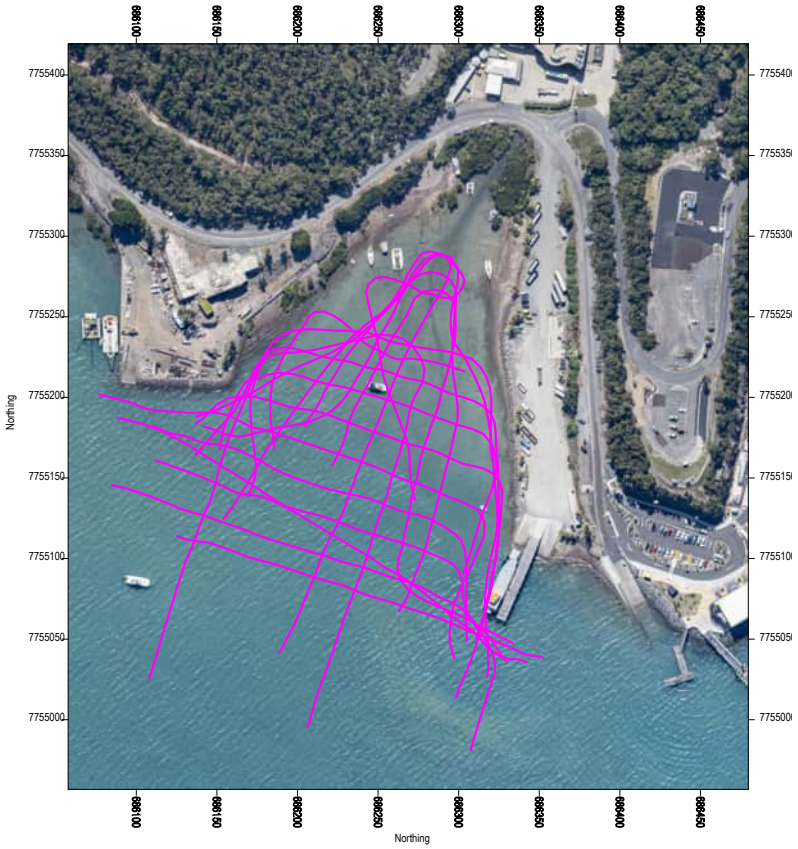

Figure A –Sub-Bottom Profiling Vessel Trackplots

3.2 Continuous Marine Seismic Refraction Survey

The CMSR technique is a bottom-towed velocity profiler designed to measure the compressional P-wave velocity of sub-bottom materials and their distribution. The correlation between compressional P-wave velocities and in situ material strength can provide valuable information for engineering projects, such as dredging, tunnelling, and foundation design. This approach has proven successful in targeting geotechnical boreholes more effectively over areas where shallow, high-velocity, and high-strength material has been identified, which can significantly impact dredging operations.

CMSR data was acquired with a Geometrics Geode 24-channel digital enhancement seismograph. Acquisition parameters for the Geode were configured with a sampling interval of 0.125 milliseconds and a record length of 0.25 seconds. Seismic data was time-stamped with the navigation log file and backed up daily to a digital medium for post-processing. The seismic

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refraction survey deployed a 24-channel hydrophone array with 2-meter sensor spacing. Seismic energy was provided by a 2800LX Bolt airgun fitted with a 5-cubic-inch chamber. The airgun unit and hydrophone array were towed on or very close to the sea floor along six pre-selected alignments, using the onboard GNSS navigation system and tow-body altimeter for guidance. A gun phone was fitted to the airgun to provide the recording seismograph with an accurate time zero for each shot. Prestart equipment checks were undertaken to ensure precise time breaks from airgun initiation, as well as quality-control checks on hydrophone responses to the airgun to ensure first arrivals on the seismic records are clear and reliable for post-processing. At start-up, the digital seismograph performs internal tests and calibrations of A-D converters.

CMSR lines were undertaken along predefined alignments at the site and are presented on Figure 2.

4 DATA PROCESSING AND INTERPRETATION PROCEDURES

4.1 Sub-Bottom Profiling Survey

The interpretation process involved replaying the digital seismic data using Chesapeake software and applying layback corrections, bandpass filters, and time-variable gains to optimise the detection of reflectors from subsurface layers. The data were then imported into IHS Kingdom software for interpretation.

An interpretation of the SBP records has been undertaken to map subsurface reflectors related to geology, which involved replaying the records to identify and digitise coherent, laterally continuous reflectors. The digitised reflector information contains the position and two-way travel time of the reflector. The position is corrected for layback behind the DGPS antenna, and the two-way travel time is converted to depth with an assigned velocity. The seismic velocity assigned for time conversion to depth is 1,550 for R1 and 1,600m/s for R2a and 1,800m/s between R2a and R2. If the actual seismic velocity of the sub-bottom material is lower than this value, the depth calculation to the reflector (s) would be overestimated, and vice versa for a higher actual seismic velocity. The fact that the velocity profile may vary laterally along the alignment will also affect the calculated distance from the sea floor to reflectors when assigning an average near-surface velocity, especially if the investigation area is large and comprises long lines. It is essential to bear in mind that the interpretation of seismic reflection data is subjective. Alternative assessments of the presence, location, and nature of seismic reflectors are possible and could yield interpretations different from those presented here. This subjectivity may increase where data quality varies across adjacent survey lines and crosslines due to variations in sea conditions. The expected accuracy of the interpreted seismic reflector levels is approximately +/- 5% of the subsurface depth. There are potential errors associated with the determination of strata thickness due to the inherent, relatively long wavelength of the boomer seismic signal (up to several metres), rendering it very difficult to detect layers shallower than 1.0 to 1.5 metres accurately.

4.2 Continuous Marine Seismic Refraction Survey

The digital seismic data have been archived in the Marine & Earth Sciences seismic database. The digital seismic records were examined on a computer, and the first arrival times were determined using Rayfract, an engineering seismic refraction software package. Generally, the seismic data was considered of good quality and adequate for interpretation. Shot points, receivers and associated first breaks were assigned an X, Y position based on the layback of the source and receivers from the vessel's DGPS antenna. These locations were converted to seismic chainage using the GPS positions of the designated start locations for each seismic line.

The seismic refraction data along each line were merged to construct a combined travel-time plot using elevations determined from bathymetric data collected by MES. This merged travel time plot was imported to Rayfract software and processed with the Wavepath Eikonal Travel-time (WET) tomography algorithm. This technique can resolve strong lateral and vertical velocity gradients in relatively complex topography and efficiently handle large seismic refraction data sets. As with all seismic methods, seismic refraction has inherent limitations and problems in effectively and accurately representing subsurface conditions in all geological environments. These limitations are discussed in Appendix A.

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5 RESULTS

5.1 Sub-Bottom Profiling

The interpretation of the sub-bottom profiling records has identified three sub-surface reflectors across the site. The summary of these reflectors is provided in Table 2 below with a typical record with interpretation provided in Figure B.

Table 1 – Geophysical Units and Interpreted Geological Model

Reflector / Unit No.	Interpretative Comments
Seabed Reflector	
Unit A	Marine Sediments – seismically transparent unit indicative of fine to very fine marine sediments
R1	Internal marker bed within sedimentary sequence. Elevation ranges from -10m to -7.9m AHD
Unit B	Sub-horizontal interbedded very fine to fine marine sediments. This unit onlaps onto R2a.
R2a	Characterised by diffractions and chaotic reflection responses. Elevation ranges from -18.1m to -2.6m AHD
Unit C	Variably thick Residual Bedrock
R2	Characterised by strong diffractions and limited penetration below this reflector. Elevation ranges from -23.1m to -4.1m AHD
Unit C	Bedrock

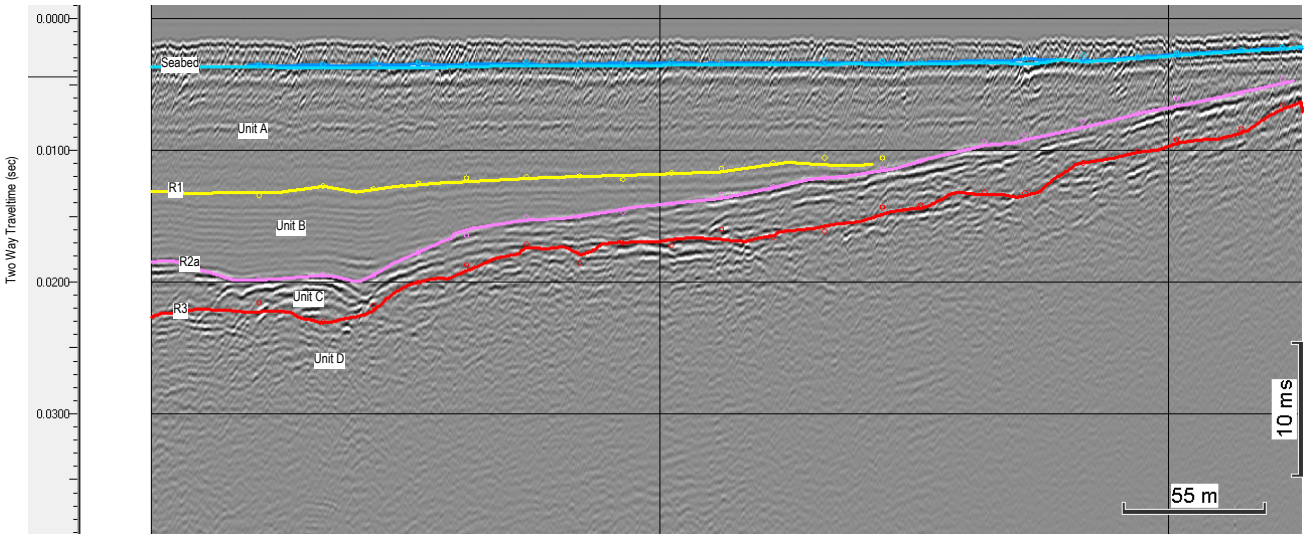

Figure B - Sub-bottom Profiling Record and Interpreted Reflectors

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5.2 Continuous Marine Seismic Refraction

The seismic velocity profiles show three distinct gradients where velocity increases rapidly over a short depth interval, indicating marked density contrasts within the subsurface. These occur at approximately the 1,850m/s, 2,100m/s, and 2,400m/s contours, and are interpreted to represent the top of the residual material, the top of extremely to highly weathered rock, and the onset of moderately to slightly weathered rock, respectively.

A subtle, sub-horizontal velocity inversion is also evident along the lines, where a relatively higher velocity band is present within otherwise lower velocity material. This is interpreted to likely reflect a denser and/or coarser-grained sedimentary deposit within the sequence.

6 DISCUSSION AND RECOMMENDATIONS

The reduced levels of the interpreted seismic reflectors have been projected onto the seismic refraction sections. These show that the R1 reflector generally aligns with the 1,600m/s contour interval. Velocities above this reflector (Unit A) are very low, indicating very soft material between the seabed and this horizon. The subtle velocity inversion occurs within this interval and likely reflects a minor density contrast, possibly associated with a slightly stiffer and/or coarser-grained layer within the marine sediment sequence. Unit B, which lies between R1 and R2a, has seismic velocities ranging from 1,600m/s to 1,800m/s and is interpreted to correlate with loose to medium dense or firm to stiff sediments.

The R2a reflector generally coincides with the 1,800 to 1,900m/s contour interval and is interpreted to represent the residual bedrock surface. Velocity values between approximately 1,800m/s and 2,050m/s, occurring between R2a and R2 (Unit C), are considered consistent with residual material. Localised zones of slightly elevated velocity within this unit may indicate marginally stronger extremely weathered rock. The R2a reflector also shows good agreement with the onset of the shallowest identified velocity gradient.

The R2 reflector generally corresponds with the 2,000 to 2,200m/s contour interval, with materials in this range typically correlating with extremely to highly weathered rock. The transition to moderately to slightly weathered rock is interpreted to occur at velocities greater than about 2,400m/s, corresponding to the third identified velocity gradient.

The thickness of material between the 1,900m/s and 2,400m/s contour intervals is variable and is interpreted to reflect changes in the depth and development of the weathering profile. From the start of CMSR Line 3 to approximately CH60m, and towards the end of CMSR Line 2, the velocity gradient is relatively sharp, suggesting a comparatively thin weathering profile in these areas.

It is recommended that the interpretation be reviewed following completion of the geotechnical programme to refine the model and assess the consistency of the interpretation on a site-specific basis.

For and on behalf of

MARINE & EARTH SCIENCES PTY LTD

David King

Principal Geophysicist

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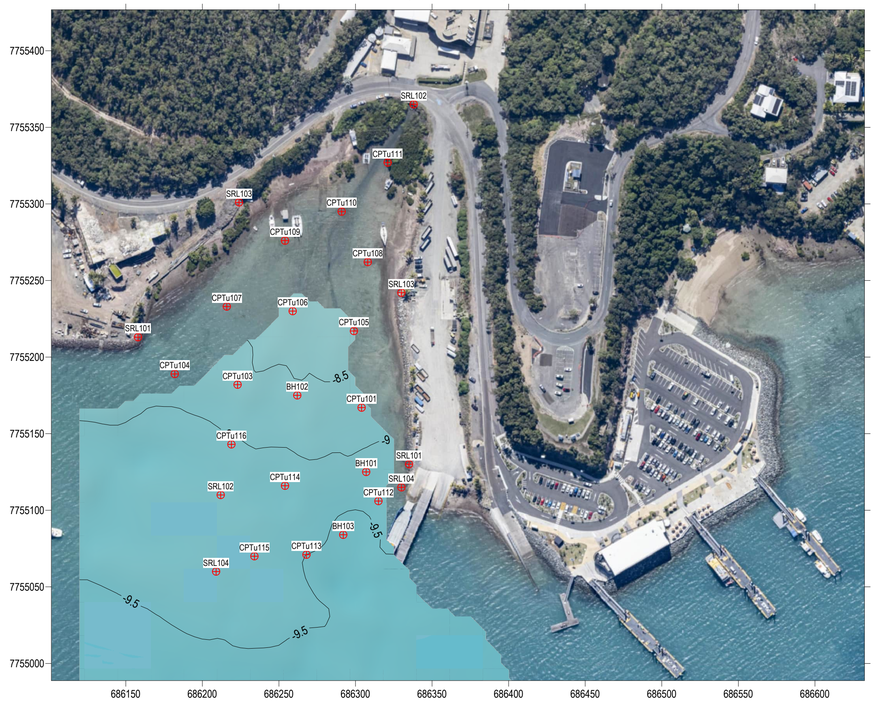
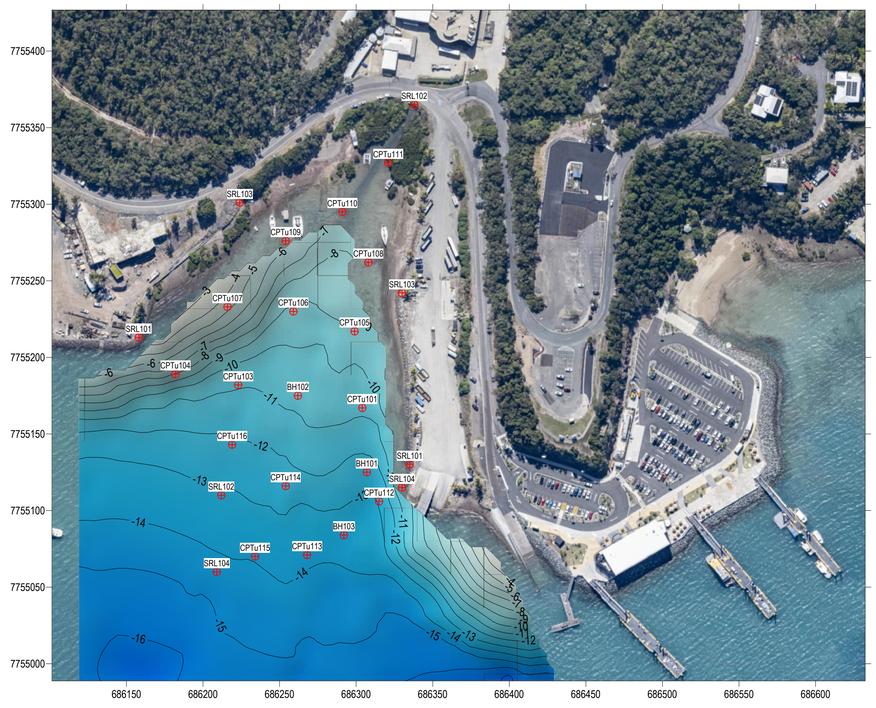
Seabed Level Contours AHD

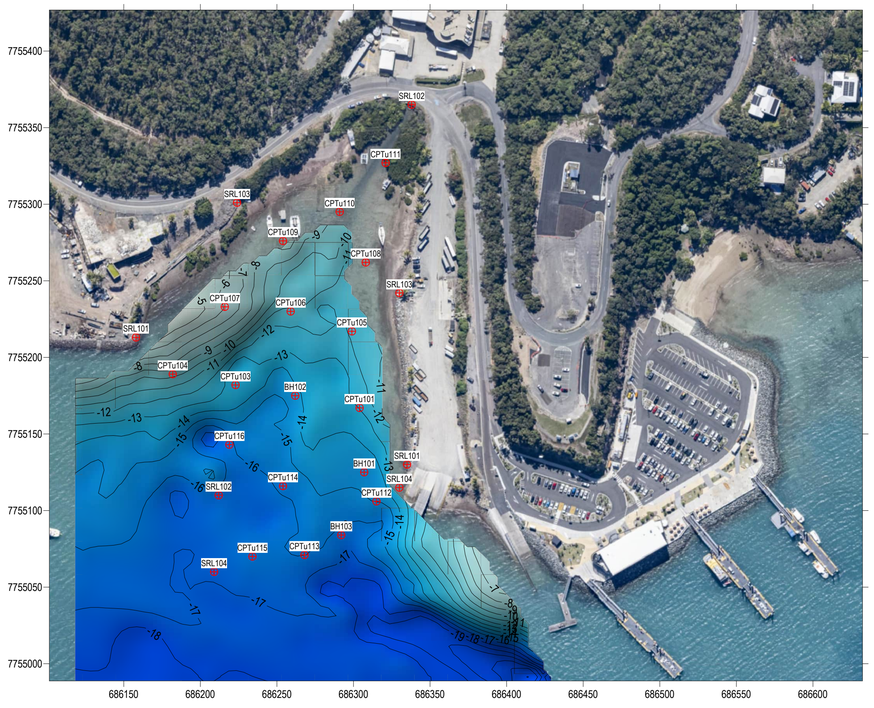
Iinterpreted R1 Reflector RL (AHD)



Iinterpreted R2a Reflector RL (AHD)



Iinterpreted R2 Reflector RL (AHD)



LEGEND

Reduced Level (m) AHD

-18 -17 -16 -15 -14 -13 -12 -11 -10 -9 -8 -7 -6 -5 -4 -3 -2 -1 0 1 2 3 4

CLIENT	CIVIL GEOTECHNICAL CONSULTANTS (CGC)
PROJECT	SHUTE HARBOUR DEVELOPMENT
SURVEY DATE	10 - 13 MARCH 2026

SUB-BOTTOM PROFILING SURVEY

INTERPRETED SEISMIC REFLECTOR BOUNDARY CONTOUR PLANS

LOCATION MAP

GEODETIC INFORMATION

Horizontal Datum	GDA2020 UTM Zone 55S
Vertical Datum	Australian Height Datum (m) AHD

SCALE : 1:2,000 (A1)

Project Ref: **MES_1389** Figure No. **1**

NOTES

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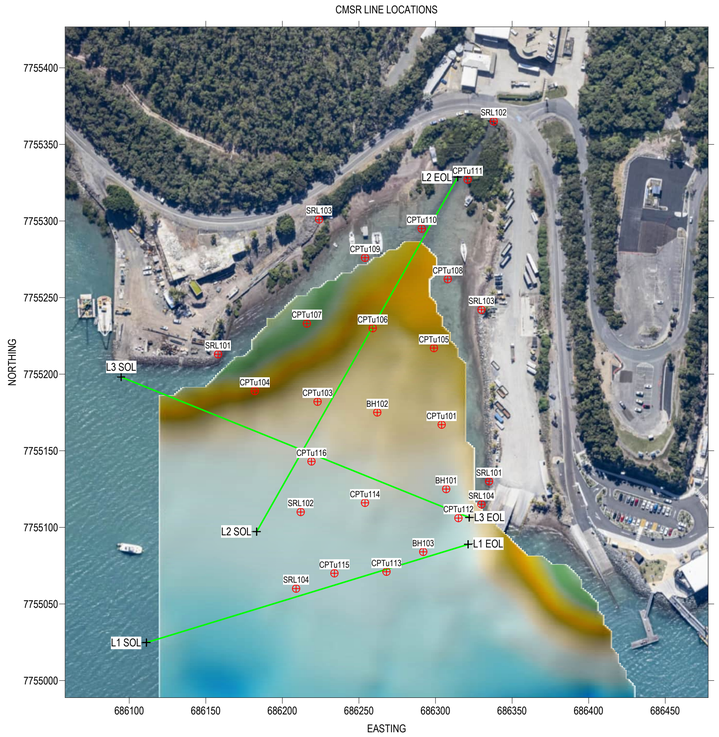

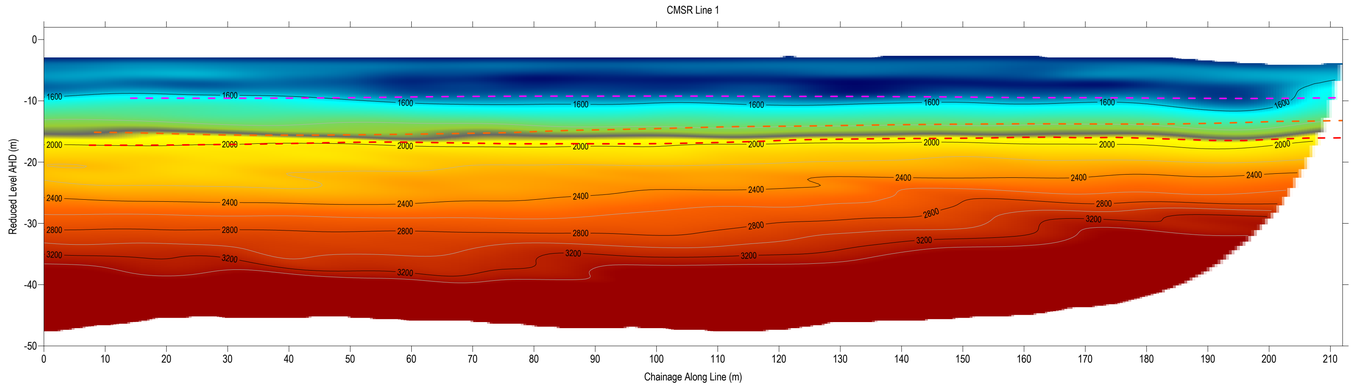

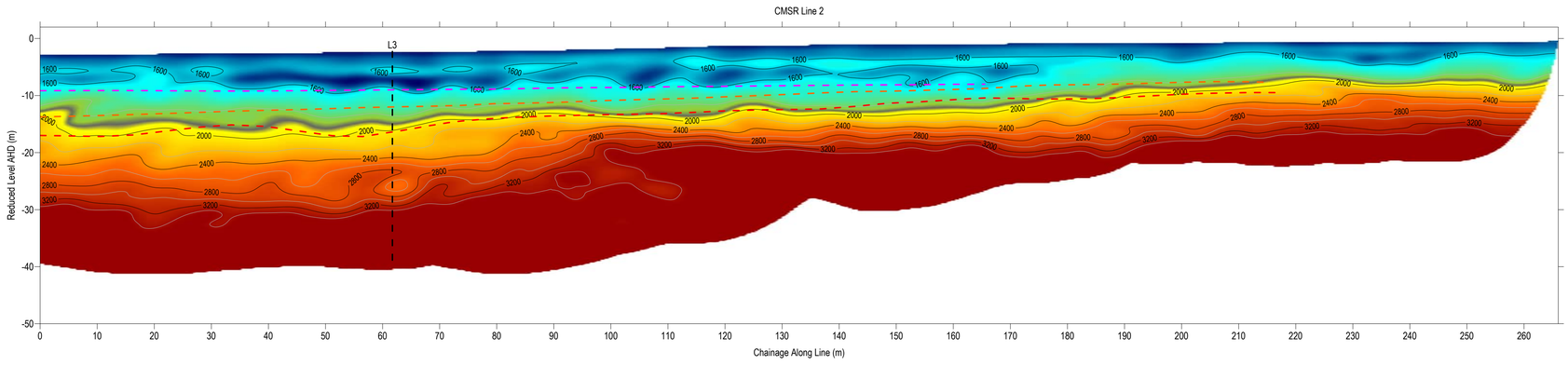

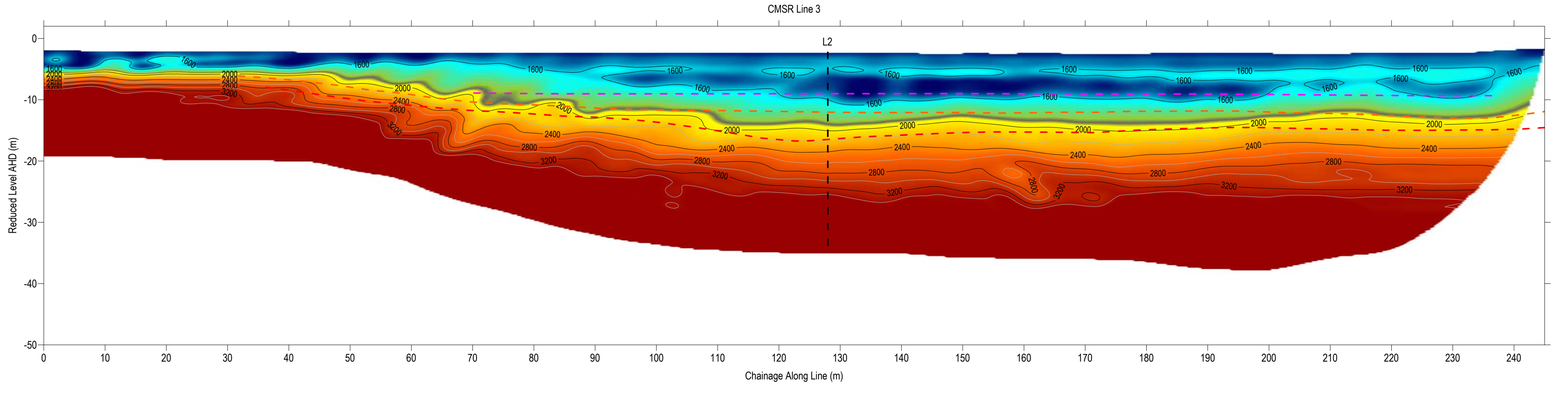

LEGEND

- CMSR Line Location
- SBP Reflector 1
- SBP Reflector 2a
- SBP Reflector 2

Seismic P-Wave Velocity (m/s)

1500 1600 1700 1800 1900 2000 2100 2200 2300 2400 2500 2600 2700 2800 2900 3000 3100 3200 3300 3400 3500

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PROJECT	SHUTE HARBOUR DEVELOPMENT
SURVEY DATE	10 - 13 MARCH 2026

CONTINUOUS MARINE SEISMIC REFRACTION SURVEY

LOCATION PLAN AND
INTERPRETED SEISMIC REFRACTION CROSS SECTIONS

LOCATION MAP

GEODETIC INFORMATION

Horizontal Datum	GDA2020 UTM Zone 55S
Vertical Datum	Australian Height Datum (m) AHD

PLAN SCALE: 1:2,000 (A1)
CROSS SECTION SCALE 1:500

Project Ref: **MES_1389**	Figure No. **2**

NOTES

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Issue No.	Date	Description	Surv.	Interp.	Drawn	Appr.
1	28/03/26	Version aa	AG/ME	DPK/ME	DPK	DPK
2						
3						

APPENDIX A – LIMITATIONS AND ASSUMPTIONS OF THE SEISMIC REFRACTION METHOD

1. INTRODUCTION

The interpreted seismic refraction sections are presented as profiles immediately beneath the seismic traverse. These sections present a two-dimensional distribution of seismic velocities with depth which have been interpreted from the first arrival travel time data. The following summarises the methods of interpretation as well as the limitations and assumptions.

2. METHODS OF INTERPRETATION

First arrival travel times determined from the digital seismic traces are picked manually and plotted against distance from the seismic source, as travel time curves. Quantitative seismic interpretation is carried out using the intercept time and reciprocal methods (Hawkins 1961). These methods of interpretation provide a simplified seismic profile of the subsurface and rely on a number of assumptions. The main assumptions are:

- The subsurface consists of a series of discrete homogeneous layers.
- The boundaries between these layers are distinct.
- Seismic velocity increases with depth
- Each layer is sufficient thickness to critically refract energy to produce a refracted wave arrival at the surface.

Each assumption reflects an ideal condition that is unlikely to be fully met in all geological settings. The extent at which each assumption is valid may vary greatly from site to site and within a site. However, at all sites the interpreted seismic sections are a simplification of the actual subsurface velocity distribution. The degree of simplification is related to the interpretation methods employed and the amount of data available for the analysis.

Because such violations may be undetectable and the interpretation process is in any case partly subjective, other interpretations of the data are possible and may differ considerably from that presented in this report.

The effects of violations of the assumptions are discussed in Section 4 below. Other effects which may be relevant to the understanding of the seismic sections are discussed in Section 5.

It should be noted that at a given site these effects can occur in any combination and that as a result even highly complex geology may give rise to relatively simplified seismic sections.

3. PRECISION AND ACCURACY OF RESULTS

Interpreted seismic velocities are not regarded as being accurate to better than +/- 10% as a measure of actual field velocities, without independent calibration from drilling or excavation.

Calculated layer thicknesses are subject to the same degree of error. This has a cumulative effect on interpreted velocities for subsequent deeper layers.

These errors are inherent in the procedure and must be taken into account in any use which is made of the seismic sections e.g. estimating the volume of material represented by each layer in a proposed excavation.

4. EFFECTS OF VIOLATION OF ASSUMPTIONS

4.1 Assumption of Discrete Homogeneous Layers

The most common violations are:

- Continuous increase in seismic velocity with depth

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- In-homogeneity below the scale of resolution of the survey

The first of these occur in many geological settings. It can be allowed for in a number of ways but contributes to the uncertainty in depth calculations. It also means that further interpretation based on the calculated seismic velocities may give erroneous results.

The second violation under ideal conditions of a refraction survey is that resolution of localised features as small as 1.5 to 2 times the geophone spacing is possible. In general, however, the limit of resolution is considered about 2 to 3 times the geophone spacing.

4.2 Assumption of Distinct Boundaries

Real geological boundaries are often gradational and or irregular. The seismic method inevitably disguises gradation and smooths irregularities. The importance of this varies from site to site but it is common for interpreted seismic boundaries to appear at an intermediate level somewhere between the limits of gradation.

4.3 Assumption of Increasing Velocity with Depth

This assumption may be violated for a number of different reasons, and such violations (velocity inversion) often cannot be detected from the travel time data alone. They may be inferred from borehole or geological data where available.

In general, it is not possible to allow for a velocity inversion in the interpretation unless there is an independent means of estimating both the thickness and the velocity of the layer. If an undetected velocity inversion occurs all calculated depths below the reversal will be greatly in error and be significantly overestimated.

4.4 Assumption of Detectability

Two main types of violation occur:

- Layer is too thin to transmit seismic wave
- Effect of a layer transmitting a wave yet is not detected due to waves from a deeper, higher velocity layer reaching the surface earlier

The first type of violation may occur in many geological settings and is due to the presence of thin high velocity layers within lower velocity material. Thin in this context is defined in terms of seismic detectability and can imply a thickness in the order of 1.0 to 1.5m. The effect cannot be detected from the seismic data alone but may be inferred from borehole information or surface mapping. If such a layer were thick enough to be detected it would be represented as a velocity inversion.

5. OTHER FACTORS

There a number of other factors that can lead to differences between the seismic section and actual geological conditions. These effects are:

- Three Dimensional Effects
- Effects of Water
- Anisotropy

5.1 Three Dimensional Effects

The interpreted seismic sections are two-dimensional representations and only apply to a narrow zone below the line of traverse. However, the actual subsurface is three dimensional and as a result significant lateral variation can occur without being detected, even within short distances to the side of the traverse. If this occurs features may be projected below the traverse and be displaced from the actual position.

5.2 Effects of Water

The presence of water can greatly increase the field velocity of materials which have low velocities when dry. This effect is most prominent in unconsolidated material such as sands where seismic velocities may be ~400 m/s when dry and increase to ~1600 m/s when saturated. It is also possible for water saturation to cause a decrease in seismic velocity where highly expansive clay minerals are present and the material is unconfined. Velocity changes due to the presence of a water table cannot be distinguished from the seismic data alone and may be inferred from geological setting and or borehole information.

5.3 Anisotropy

Field velocities may vary with the direction of the seismic traverse. This is most common in steeply dipping sediments or metasediments but can occur in other settings. When measured across strike the velocity is averaged form the different materials present. Along strike the higher velocity materials or fresher more competent materials will be measured. This effect may be detectable form cross spreads which show markedly higher or lower velocities than longitudinal traverses.

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Annex E MNES Searches

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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: 25-Feb-2026

Summary
Details
- Matters of NES
- Other Matters Protected by the EPBC Act
- Extra Information

Caveat
Acknowledgements

Summary

Matters of National Environment Significance

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

World Heritage Properties:	1
National Heritage Places:	1
Wetlands of International Importance (Ramsar	None
Great Barrier Reef Marine Park:	2
Commonwealth Marine Area:	None
Listed Threatened Ecological Communities:	2
Listed Threatened Species:	40
Listed Migratory Species:	45

Other Matters Protected by the EPBC Act

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

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

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

Commonwealth Lands:	None
Commonwealth Heritage Places:	None
Listed Marine Species:	85
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:	4
Regional Forest Agreements:	None
Nationally Important Wetlands:	None
EPBC Act Referrals:	4
Key Ecological Features (Marine):	None
Biologically Important Areas:	5
Bioregional Assessments:	None
Geological and Bioregional Assessments:	None

Details

Matters of National Environmental Significance

World Heritage Properties [Resource Information]

Name	State	Legal Status	Buffer Status
Great Barrier Reef	QLD	Declared property	In feature area

National Heritage Places [Resource Information]

Name	State	Legal Status	Buffer Status
Natural			
Great Barrier Reef	QLD	Listed place	In feature area

Great Barrier Reef Marine Park [Resource Information]

Zone Type	Zone ID	IUCN	Buffer Status
Conservation Park	CP-20-4083	IV	In feature area
Habitat Protection	HP-19-5165	VI	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
Broad leaf tea-tree (Melaleuca viridiflora) woodlands in high rainfall coastal north Queensland	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 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			
Calidris acuminata			
Sharp-tailed Sandpiper [874]	Vulnerable	Species or species habitat may occur within area	In feature area
Calidris canutus			
Red Knot, Knot [855]	Vulnerable	Species or species habitat may occur within area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
[Calidris ferruginea](#) Curlew Sandpiper [856]	Critically Endangered	Species or species habitat may occur within area	In feature area
[Charadrius leschenaultii](#) Greater Sand Plover, Large Sand Plover [877]	Vulnerable	Species or species habitat may occur within area	In feature area
[Erythrotriorchis radiatus](#) Red Goshawk [942]	Endangered	Species or species habitat likely to occur within area	In feature area
[Falco hypoleucos](#) Grey Falcon [929]	Vulnerable	Species or species habitat likely to 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 may occur within area	In feature area
[Geophaps scripta scripta](#) Squatter Pigeon (southern) [64440]	Vulnerable	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
[Limosa lapponica baueri](#) Nunivak Bar-tailed Godwit, Western Alaskan Bar-tailed Godwit [86380]	Endangered	Species or species habitat likely 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
[Neochmia ruficauda ruficauda](#) Star Finch (eastern), Star Finch (southern) [26027]	Endangered	Species or species habitat may occur within area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
[Numenius madagascariensis](#) Eastern Curlew, Far Eastern Curlew [847]	Critically Endangered	Species or species habitat likely to occur within area	In feature area
[Poephila cincta cincta](#) Southern Black-throated Finch [64447]	Endangered	Species or species habitat may occur within area	In feature area
[Pterodroma neglecta neglecta](#) Kermadec Petrel (western) [64450]	Vulnerable	Foraging, feeding or related behaviour 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
[Sternula albifrons](#) Little Tern [82849]	Vulnerable	Species or species habitat may occur within area	In feature area
[Tyto novaehollandiae kimberli](#) Masked Owl (northern) [26048]	Vulnerable	Species or species habitat may occur within area	In feature area
MAMMAL			
[Balaenoptera musculus](#) Blue Whale [36]	Endangered	Species or species habitat may occur within area	In feature area
[Dasyurus hallucatus](#) Northern Quoll, Digul [Gogo-Yimidir], Wijingadda [Dambimangari], Wiminji [Martu] [331]	Endangered	Species or species habitat likely to occur within area	In feature area
[Macroderma gigas](#) Ghost Bat [174]	Vulnerable	Species or species habitat likely to occur within area	In feature area
[Orcaella heinsohni](#) Australian Snubfin Dolphin [81322]	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

Scientific Name	Threatened Category	Presence Text	Buffer Status
Petrogale persephone			
Proserpine Rock-wallaby [226]	Endangered	Species or species habitat known to 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 likely to occur within area	In feature area
Sousa sahulensis			
Australian Humpback Dolphin [87942]	Vulnerable	Breeding known to occur within area	In feature area
Xeromys myoides			
Water Mouse, False Water Rat, Yirrkoo [66]	Vulnerable	Species or species habitat likely to occur within area	In buffer area only
PLANT			
Phlegmariurus tetrastichoides			
Square Tassel Fern [86555]	Vulnerable	Species or species habitat may occur within area	In buffer area only
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	Breeding known to occur within area	In feature area
Dermochelys coriacea			
Leatherback Turtle, Leathery Turtle, Luth [1768]	Endangered	Breeding likely to occur within area	In feature area
Egernia rugosa			
Yakka Skink [1420]	Vulnerable	Species or species habitat may occur within area	In feature area
Eretmochelys imbricata			
Hawksbill Turtle [1766]	Vulnerable	Foraging, feeding or related behaviour known to occur within area	In feature area
Lepidochelys olivacea			
Olive Ridley Turtle, Pacific Ridley Turtle [1767]	Endangered	Breeding likely to occur within area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
Natator depressus Flatback Turtle [59257]	Vulnerable	Breeding known to occur within area	In feature area
SHARK			
Carcharodon carcharias White Shark, Great White Shark [64470]	Vulnerable	Species or species habitat likely to occur within area	In feature area
Pristis zijsron Green Sawfish, Dindagubba, Narrowsnout Sawfish [68442]	Vulnerable	Breeding may occur within area	In feature area
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

Listed Migratory Species		[Resource Information]	
Scientific Name	Threatened Category	Presence Text	Buffer Status
null			
Balaenoptera omurai Omura's Whale [87136]		Species or species habitat likely to occur within area	In feature area
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]		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

Scientific Name	Threatened Category	Presence Text	Buffer Status
[Fregata minor](#) Great Frigatebird, Greater Frigatebird [1013]		Species or species habitat likely 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
[Phaethon lepturus](#) White-tailed Tropicbird [1014]		Species or species habitat may occur within area	In feature area
[Phaethon rubricauda](#) Red-tailed Tropicbird [994]		Species or species habitat likely to occur within area	In feature area
[Sternula albifrons](#) Little Tern [82849]	Vulnerable	Species or species habitat may occur within area	In feature area
Migratory Marine Species			
[Anoxypristis cuspidata](#) Narrow Sawfish, Knifetooth Sawfish [68448]		Species or species habitat likely to occur within area	In feature area
[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
[Carcharhinus longimanus](#) Oceanic Whitetip Shark [84108]		Species or species habitat may occur within area	In feature area
[Carcharias taurus](#) Grey Nurse Shark [64469]		Species or species habitat may occur within area	In feature area
[Carcharodon carcharias](#) White Shark, Great White Shark [64470]	Vulnerable	Species or species habitat likely to occur within area	In feature area

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	Breeding known to occur within area	In feature area
Crocodylus porosus Salt-water Crocodile, Estuarine Crocodile [1774]		Species or species habitat likely to occur within area	In feature area
Dermochelys coriacea Leatherback Turtle, Leathery Turtle, Luth [1768]	Endangered	Breeding likely to occur within area	In feature area
Dugong dugon Dugong [28]		Species or species habitat known to occur within area	In feature area
Eretmochelys imbricata Hawksbill Turtle [1766]	Vulnerable	Foraging, feeding or related behaviour known to occur within area	In feature area
Lamna nasus Porbeagle, Mackerel Shark [83288]		Species or species habitat may occur within area	In feature area
Lepidochelys olivacea Olive Ridley Turtle, Pacific Ridley Turtle [1767]	Endangered	Breeding likely to occur within area	In feature area
Megaptera novaeangliae Humpback Whale [38]		Species or species habitat known to occur within area	In feature area
Mobula alfredi as Manta alfredi Reef Manta Ray, Coastal Manta Ray [90033]		Species or species habitat likely to occur within area	In feature area
Mobula birostris as Manta birostris Giant Manta Ray [90034]		Species or species habitat likely to occur within area	In feature area
Natator depressus Flatback Turtle [59257]	Vulnerable	Breeding known to occur within area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
Orcaella heinsohni Australian Snubfin Dolphin [81322]	Vulnerable	Species or species habitat likely to occur within area	In feature area
Orcinus orca Killer Whale, Orca [46]		Species or species habitat may occur within area	In feature area
Pristis zijsron Green Sawfish, Dindagubba, Narrowsnout Sawfish [68442]	Vulnerable	Breeding may occur within area	In feature area
Rhincodon typus Whale Shark [66680]	Vulnerable	Species or species habitat may occur within area	In feature area
Sousa sahulensis as Sousa chinensis Australian Humpback Dolphin [87942]	Vulnerable	Breeding 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
Migratory Wetlands Species			
Actitis hypoleucos Common Sandpiper [59309]		Species or species habitat likely to occur within area	In feature area
Calidris acuminata Sharp-tailed Sandpiper [874]	Vulnerable	Species or species habitat may occur within area	In feature area
Calidris canutus Red Knot, Knot [855]	Vulnerable	Species or species habitat may occur within area	In feature area
Calidris ferruginea Curlew Sandpiper [856]	Critically Endangered	Species or species habitat may occur within area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
[Calidris melanotos](#)			
Pectoral Sandpiper [858]		Species or species habitat may occur within area	In feature area
[Charadrius leschenaultii](#)			
Greater Sand Plover, Large Sand Plover [877]	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 may occur within area	In feature area
[Limosa lapponica](#)			
Bar-tailed Godwit [844]		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 likely to occur within area	In feature area
[Pandion haliaetus](#)			
Osprey [952]		Species or species habitat known to occur within area	In feature area

Other Matters Protected by the EPBC Act

Listed Marine Species			[Resource Information]
Scientific Name	Threatened Category	Presence Text	Buffer Status
Bird			
[Actitis hypoleucos](#)			
Common Sandpiper [59309]		Species or species habitat likely to occur within area	In feature area
[Anous stolidus](#)			
Common Noddy [825]		Species or species habitat likely to occur within area	In feature area
[Anseranas semipalmata](#)			
Magpie Goose [978]		Species or species habitat may occur within area overfly marine 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 carneipes as Puffinus carneipes](#) Flesh-footed Shearwater, Fleshy-footed Shearwater [82404]		Species or species habitat may 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 may occur within area	In feature area
[Calidris canutus](#) Red Knot, Knot [855]	Vulnerable	Species or species habitat may occur within area overfly marine area	In feature area
[Calidris ferruginea](#) Curlew Sandpiper [856]	Critically Endangered	Species or species habitat may occur within area overfly marine area	In feature area
[Calidris melanotos](#) Pectoral Sandpiper [858]		Species or species habitat may occur within area overfly marine area	In feature area
[Chalcites osculans as Chrysococcyx osculans](#) Black-eared Cuckoo [83425]		Species or species habitat likely to occur within area overfly marine area	In feature area
[Charadrius leschenaultii](#) Greater Sand Plover, Large Sand Plover [877]	Vulnerable	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

Scientific Name	Threatened Category	Presence Text	Buffer Status
Fregata minor Great Frigatebird, Greater Frigatebird [1013]		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 may 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
Limosa lapponica Bar-tailed Godwit [844]		Species or species habitat likely 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
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 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 likely to occur within area	In feature area
Pandion haliaetus Osprey [952]		Species or species habitat known to occur within area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
Phaethon lepturus White-tailed Tropicbird [1014]		Species or species habitat may occur within area	In feature area
Phaethon rubricauda Red-tailed Tropicbird [994]		Species or species habitat likely to 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
Sternula albifrons as Sterna albifrons Little Tern [82849]	Vulnerable	Species or species habitat may occur within area	In feature area
Symposiachrus trivirgatus as Monarcha trivirgatus Spectacled Monarch [83946]		Species or species habitat known 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
Campichthys tryoni Tryon's Pipefish [66193]		Species or species habitat may occur within area	In feature area
Choeroichthys brachysoma Pacific Short-bodied Pipefish, Short-bodied Pipefish [66194]		Species or species habitat may occur within area	In feature area
Choeroichthys suillus Pig-snouted Pipefish [66198]		Species or species habitat may occur within area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
Corythoichthys amplexus Fijian Banded Pipefish, Brown-banded Pipefish [66199]		Species or species habitat may occur within area	In feature area
Corythoichthys flavofasciatus Reticulate Pipefish, Yellow-banded Pipefish, Network Pipefish [66200]		Species or species habitat may occur within area	In feature area
Corythoichthys intestinalis Australian Messmate Pipefish, Banded Pipefish [66202]		Species or species habitat may occur within area	In feature area
Corythoichthys ocellatus Orange-spotted Pipefish, Ocellated Pipefish [66203]		Species or species habitat may occur within area	In feature area
Corythoichthys paxtoni Paxton's Pipefish [66204]		Species or species habitat may occur within area	In feature area
Corythoichthys schultzi Schultz's Pipefish [66205]		Species or species habitat may occur within area	In feature area
Cosmocampus darrosanus D'Arros Pipefish [66207]		Species or species habitat may occur within area	In feature area
Doryrhamphus excisus Bluestripe Pipefish, Indian Blue-stripe Pipefish, Pacific Blue-stripe Pipefish [66211]		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
Halicampus dunckeri Red-hair Pipefish, Duncker's Pipefish [66220]		Species or species habitat may occur within area	In feature area
Halicampus grayi Mud Pipefish, Gray's Pipefish [66221]		Species or species habitat may occur within area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
Halicampus nitidus Glittering Pipefish [66224]		Species or species habitat may occur within area	In feature area
Halicampus spinirostris Spiny-snout Pipefish [66225]		Species or species habitat may occur within area	In feature area
Hippichthys cyanospilos Blue-speckled Pipefish, Blue-spotted Pipefish [66228]		Species or species habitat may occur within area	In feature area
Hippichthys heptagonus Madura Pipefish, Reticulated Freshwater Pipefish [66229]		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 bargibanti Pygmy Seahorse [66721]		Species or species habitat may occur within area	In feature area
Hippocampus kuda Spotted Seahorse, Yellow Seahorse [66237]		Species or species habitat may occur within area	In feature area
Hippocampus planifrons Flat-face Seahorse [66238]		Species or species habitat may occur within area	In feature area
Hippocampus zebra Zebra Seahorse [66241]		Species or species habitat may occur within area	In feature area
Micrognathus andersonii Anderson's Pipefish, Shortnose Pipefish [66253]		Species or species habitat may occur within area	In feature area
Micrognathus brevirostris thorntail Pipefish, Thorn-tailed Pipefish [66254]		Species or species habitat may occur within area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
Nannocampus pictus Painted Pipefish, Reef Pipefish [66263]		Species or species habitat may occur within area	In feature area
Solegnathus hardwickii Pallid Pipehorse, Hardwick's Pipehorse [66272]		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
Solenostomus paradoxus Ornate Ghostpipefish, Harlequin Ghost Pipefish, Ornate Ghost Pipefish [66184]		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
Trachyrhamphus longirostris Straightstick Pipefish, Long-nosed Pipefish, Straight Stick Pipefish [66281]		Species or species habitat may occur within area	In feature area
Mammal			
Dugong dugon Dugong [28]		Species or species habitat known to occur within area	In feature area
Reptile			
Aipysurus duboisii Dubois' Sea Snake, Dubois' Seasnake, Reef Shallows Sea Snake [1116]		Species or species habitat may occur within area	In feature area
Aipysurus laevis Olive Sea Snake, Olive-brown Sea Snake [1120]		Species or species habitat may occur within area	In feature area
Aipysurus mosaicus as Aipysurus eydouxii Mosaic Sea Snake [87261]		Species or species habitat may occur within area	In feature area

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	Breeding known to occur within area	In feature area
Crocodylus porosus Salt-water Crocodile, Estuarine Crocodile [1774]		Species or species habitat likely to occur within area	In feature area
Dermochelys coriacea Leatherback Turtle, Leathery Turtle, Luth [1768]	Endangered	Breeding likely to occur within area	In feature area
Eretmochelys imbricata Hawksbill Turtle [1766]	Vulnerable	Foraging, feeding or related behaviour known to occur within area	In feature area
Hydrophis elegans Elegant Sea Snake, Bar-bellied Sea Snake [1104]		Species or species habitat may occur within area	In feature area
Hydrophis hardwickii as Lapemis hardwickii Spine-bellied Sea Snake [93516]		Species or species habitat may occur within area	In feature area
Hydrophis kingii as Disteira kingii Spectacled Sea Snake [93511]		Species or species habitat may occur within area	In feature area
Hydrophis macdowelli as Hydrophis mcdowelli MacDowell's Sea Snake, Small-headed Sea Snake, [75601]		Species or species habitat may occur within area	In feature area
Hydrophis major as Disteira major Olive-headed Sea Snake [93512]		Species or species habitat may occur within area	In feature area
Hydrophis ornatus Spotted Sea Snake, Ornate Reef Sea Snake [1111]		Species or species habitat may occur within area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
Hydrophis peronii as Acalyptophis peronii Horned Sea Snake [93509]		Species or species habitat may 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
Hydrophis stokesii as Astrotia stokesii Stokes' Sea Snake [93510]		Species or species habitat may occur within area	In feature area
Hydrophis zweifeli as Enhydrina schistosa Australian Beaked Sea Snake [93514]		Species or species habitat may occur within area	In feature area
Laticauda colubrina Yellow-lipped Sea Krait [1092]		Species or species habitat may occur within area	In feature area
Laticauda laticaudata a sea krait [1093]		Species or species habitat may occur within area	In feature area
Lepidochelys olivacea Olive Ridley Turtle, Pacific Ridley Turtle [1767]	Endangered	Breeding likely to occur within area	In feature area
Natator depressus Flatback Turtle [59257]	Vulnerable	Breeding 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 feature area
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

Current Scientific Name	Status	Type of Presence	Buffer Status
Balaenoptera omurai Omura's Whale [87136]		Species or species habitat likely to 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
Grampus griseus Risso's Dolphin, Grampus [64]		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 feature area
Orcaella heinsohni Australian Snubfin Dolphin [81322]	Vulnerable	Species or species habitat likely to occur within area	In feature area
Orcinus orca Killer Whale, Orca [46]		Species or species habitat may occur within area	In feature area
Sousa sahulensis Australian Humpback Dolphin [87942]	Vulnerable	Breeding known to occur within area	In feature area
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
Conway	Conservation Park	QLD	In feature area
Conway	National Park	QLD	In feature area
Great Barrier Reef Coast	Marine Park	QLD	In feature area
Molle Islands	National Park	QLD	In buffer area only

EPBC Act Referrals [Resource Information]

Title of referral	Reference	Referral Outcome	Assessment Status	Buffer Status
Controlled action				
Construction of marina facility	2003/1308	Controlled Action	Completed	In feature area
Construction of Marina Facility	2006/2939	Controlled Action	Post-Approval	In feature area
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
Refuelling Facility Upgrade	2001/330	Not Controlled Action	Completed	In feature area

Biologically Important Areas [Resource Information]

Scientific Name	Behaviour	Presence	Buffer Status
Dolphins			
Sousa chinensis			
Indo-Pacific Humpback Dolphin [50]	Breeding	Known to occur	In feature area
Tursiops aduncus			
Indo-Pacific/Spotted Bottlenose Dolphin [68418]	Breeding	Likely to occur	In feature area
Marine Turtles			
Natator depressus			
Flatback Turtle [59257]	Nesting	Known to occur	In feature area
Seabirds			
Sterna sumatrana			
Black-naped Tern [800]	Breeding	Known to occur	In feature area
Whales			

Scientific Name	Behaviour	Presence	Buffer Status
Megaptera novaeangliae			
Humpback Whale [38]	Breeding and calving	Known to occur	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 is 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 on the contents of this report.

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 point locations and environmental data layers.

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 when time permits.

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 breeding sites; and
- 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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Annex F MSQ Cultural Heritage Risk Assessment

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MSQ CULTURAL HERITAGE RISK ASSESSMENT

Shute Harbour Reconfiguring 3552018

Kathy Lai
Date 31 Oct 2025
CHRA valid to: 31/10/2026

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Definitions

Term	Definition
Aboriginal Party	As per the definition in the ACHA 2003
ACHA	Aboriginal Cultural Heritage Act 2003
Developed Area	As per the definition in the Guidelines
DETSI	Department of the Environment, Tourism, Science and Innovation
DWATSIPM	Department of Women, Aboriginal and Torres Strait Islander Partnerships and Multiculturalism
ECH	Environment and Cultural Heritage (TMR)
ECHO	Environment and Cultural Heritage Observations (TMR)
Guidelines	ACHA Duty of Care Guidelines
MSQ	Maritime Safety Queensland
No Additional Surface Disturbance	As per the definition in the Guidelines
Protected Zone	Area declared as a Protected Zone under the UCHA
Significant Ground Disturbance	As per the definition in the Guidelines
Surface Disturbance	As per the definition in the Guidelines
TMR	Transport and Main Roads
UCH	Underwater Cultural Heritage
UCHA	Underwater Cultural Heritage Act 2018 (Commonwealth)
UCHA Guidelines	Department of Climate Change, Energy, the Environment and Water (DCCEEW) *Assessing and Managing Impacts to Underwater Cultural Heritage in Australian Waters: Guidelines on the application of the Underwater Cultural Heritage Act 2018* (June 2024)

Executive Summary

This Cultural Heritage Risk Assessment (CHRA) provides an analysis of the cultural heritage risks pertaining to Shute Harbour Reconfiguring (Project ID 3552018), "the Project", including a critique of both Historical and Aboriginal heritage requirements. The CHRA finds the Project is a **high** risk to cultural heritage because the project involves additional disturbance in a high risk landscape and works will impact within the boundaries of a registered National & World heritage place. In summary, the Project has the following risk profile:

☒ Aboriginal heritage issues: Consultation with the Aboriginal Party is required due to additional disturbance in high risk landscape.

In accordance with the UCHA Guidelines, the following consequence ratings have been considered when assessing the potential impact of project works to UCH. All projects with an impact higher than negligible are required to have mitigation and management measures in place.

Negligible	Minor	Moderate	Major	Severe
No measurable alterations to existing condition with integrity remaining fully intact	Low level physical impact to UCH with the integrity remaining largely intact	Medium level physical impact to UCH with partial reduction of integrity	High level of physical impact to UCH resulting in substantial reduction of integrity	Very high level of impact resulting in substantial or complete loss of integrity and UCH value

Overall management recommendations for the Project are provided in Table 7 on page 19.

Project Details

PDO District	Mackay / Whitsunday District		
Project name & number	Shute Harbour Reconfiguring 3552018		
Project manager	Chris Voisey	**Contact**	Chris.J.Voisey@msq.qld.gov.au
Location	Shute Harbour -20.29094375765703, 148.7841160031943		
Local Government	Whitsunday Regional Council	**WBS**	52-03552018.O.PL.2.1
Asset ID/Facility No / Road No	NA	**DMS reference**	TBC

Project Scope

Nature of Works:	☐ Maintenance	☒ New construction	☐ Site Investigations	
	☐ Other: e.g. dredging			
Phase:	☒ Concept	☐ Development	☐ Construction	☐ Other:
Estimated works start date:	TBA			
Scope of works:	Planning stage for reconfiguration of Shute Harbour Bay Install: - 11 single car parking bay - 2 accessibility car park spaces - 1.5m offset boundary - Amenities block - Rigging lane - Roundabout at entrance/exit intersection with Shute Harbour Rd and Whitsunday Dr - 205 car trailer unit (STU) parking bays - Kerbing - De-rigging lane - 6 lane boat ramp and 3 floating walkway - Pedestrian accessible breakwater - Road access - Concreted rock shoulder			
Are there ancillary works?	None known at this stage, if ancillary works locations are identified outside of the assessed area, an additional assessment will need to be completed.			

Aboriginal Party/ies for project area:	**Gia and Ngaro Peoples** Contact: Ashley Jan North Queensland Land Council Aboriginal Corporation 61 Anderson Street Manunda QLD 4870 Phone: 07 4042 7000
Has there been previous cultural heritage assessment/s for any or all of the project area?	None identified for project area. One external report for a nearby TMR development (Proposed Airlie Beach Road Diversion) in 2007 identified area of mangrove fringe as high risk for cultural heritage due to high archaeological potential. Additionally, cycads were identified via consultation with the Aboriginal Party as cultural significant plants as a food resource used by Aboriginal people.

Project Map

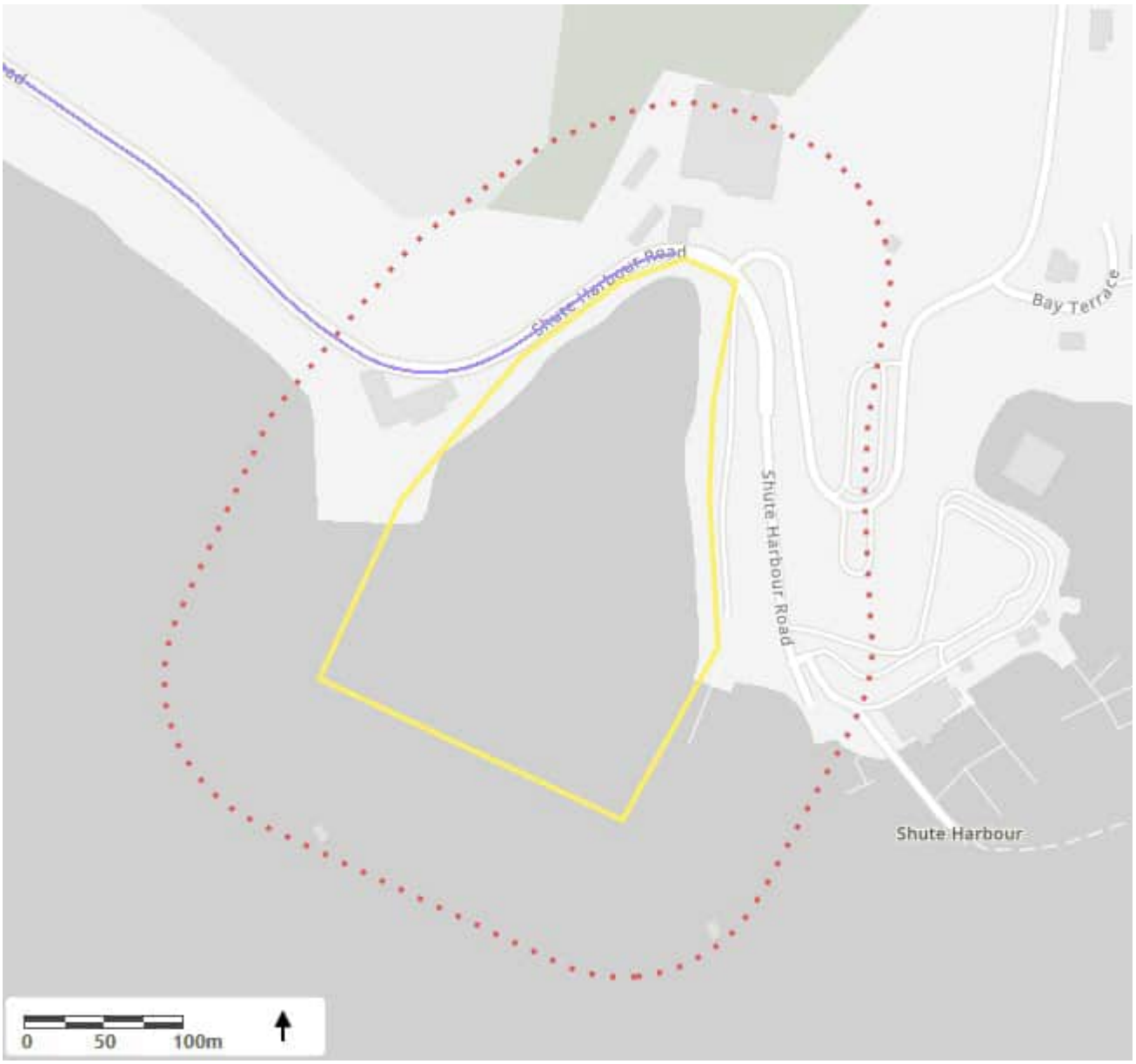
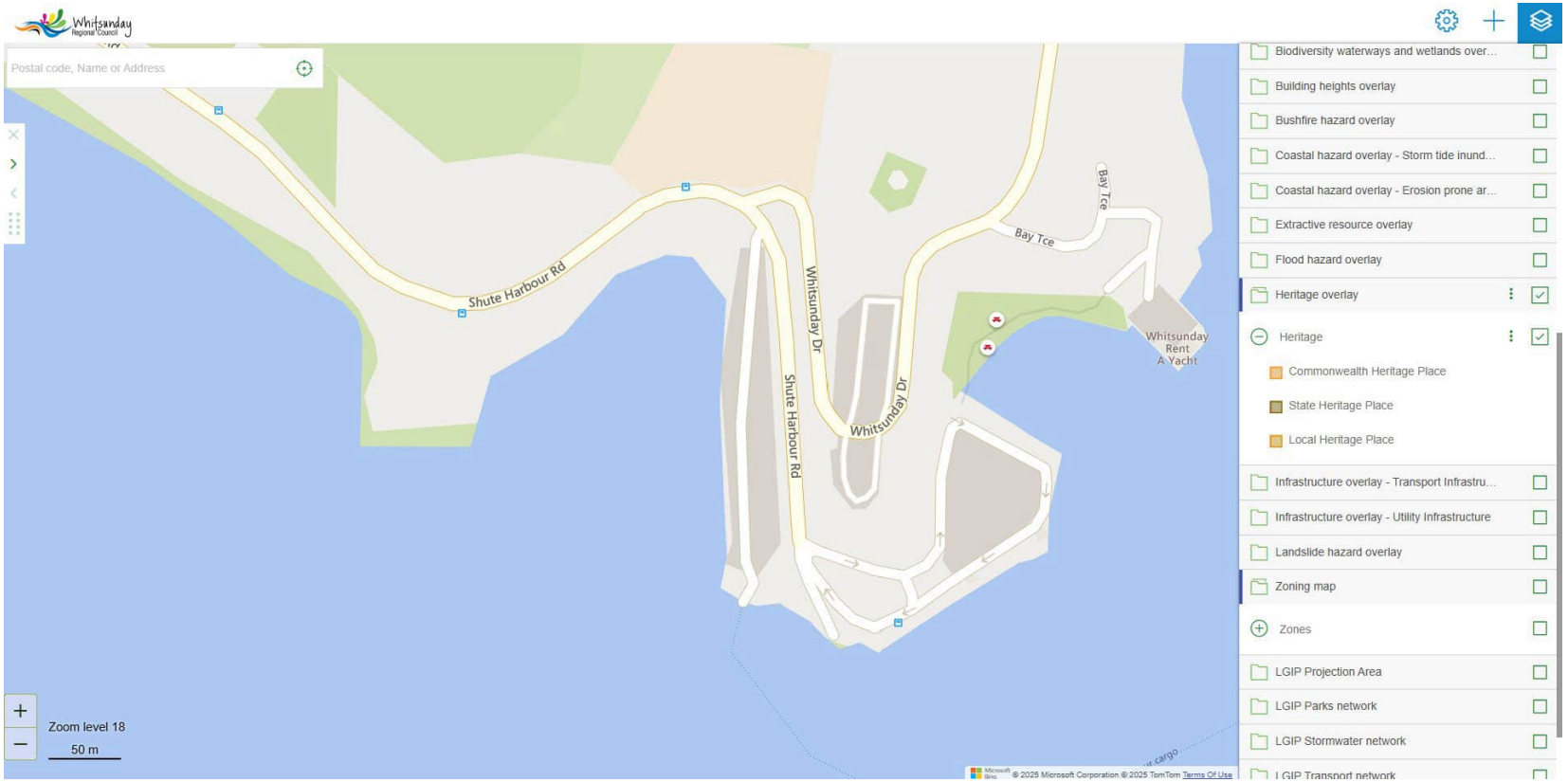


Figure 1: Project area (bold yellow line) and 100m assessment buffer (broken red line).

Historical Cultural Heritage Assessment

Table 1: Historical Heritage Assessment

Question 1: Are there any historical cultural heritage places/values inside or within 100 metres of the proposed works area based on the following searches and site inspections?	**Yes**	**No**
a. Australasian Underwater Cultural Heritage Database Comment: There are no sites registered on this database that are inside of, or within 100 m of the project area. Refer to Appendix B1. Australasian Underwater Cultural Heritage Database.	☐	☒
b. Australian Heritage Database Comment: There are two sites registered on this database that are inside of the project area: Conway Range - Mount Dryander Area (Register of the National Estate – Non Statutory) & Great Barrier Reef Region (Register of the National Estate – Non Statutory; National Heritage List; World Heritage List). Refer to Appendix B2. Australian Heritage Database and Appendix H. *Note*: No relevant results appear when using search terms: “Shute Harbour” or “Whitsunday”.	☒	☐
c. Queensland Heritage Register Comment: There are no sites registered on this database that are inside of, or within 100 m of the project area. Refer to Appendix B3. Queensland Heritage Register.	☐	☒
d. Queensland National Trust Heritage Register Comment: There is one site registered on this database that are inside of the project area: Conway Range, Mt Dryander area. Refer to Appendix B4. Queensland National Trust Heritage Register.	☒	☐
e. Queensland World War II Historic Places Comment: There are no sites registered on this database that are inside of, or within 100 m of the project area. Refer to Appendix B5. Queensland World War II Historic Places.	☐	☒
f. Local Heritage Registers Comment: There are no sites registered on this database that are inside of, or within 100 m of the project area.	☐	☒

Question 1: Are there any historical cultural heritage places/values inside or within 100 metres of the proposed works area based on the following searches and site inspections?	Yes	No
 *Figure 2: Whitsunday Regional Council online planning map.*		
g. TMR heritage datasets ECH Map ECHO Local TMR heritage datasets Comment: There are no sites registered on this database that are inside of, or within 100 m of the project area. Refer to Appendix B6. ECH Map search results and B7. ECHO Map search results.	☐	☒

Question 1: Are there any historical cultural heritage places/values inside or within 100 metres of the proposed works area based on the following searches and site inspections?	**Yes**	**No**
h. Site inspections *Note*: a site inspection may not be possible for offshore underwater locations Comment: Inspection not conducted – Project is currently in planning stage. Desktop inspection using Google Street View identified project area is a mix of developed and undeveloped areas. No potential built heritage is identified. A physical site inspection will be required at a later stage to ground-truth the desktop assessment. Refer to Appendix F: Site Inspection.	☐	☒
Question 2: Are the proposed project works within a declared Protected Zone under the UCHA?		
Underwater Heritage Protected Zones Queensland Protected Zones Comment: There are no sites registered on this database that are inside of, or within 100 m of the project area. Refer to Appendix B9. Underwater Heritage Protected Zones.	☐	☒

Aboriginal and Torres Strait Islander Cultural Heritage Assessment

The purpose of this section is to establish whether the project works are 'Low Risk' or 'High Risk' to Aboriginal and Torres Strait Islander cultural heritage. This section approaches the assessment in stages, progressing through the *Aboriginal Cultural Heritage Act 2003 (ACHA 2003)* Duty of Care Guidelines (Guidelines) Categories from low to high risk. If low risk criteria are not met, the assessment proceeds to the high risk categories.

'Low risk' projects are:

Category 1 to 3

- unlikely to cause harm to cultural heritage
- the activity will comply with the Guidelines
- It is reasonable and practicable for the works to proceed without consultation with the Aboriginal and Torres Strait Islander party/ies.

'**High Risk**' projects are:

Category 4 – Activities in areas that have been subject to Significant Ground Disturbance under the Guidelines, but where the following may apply:

- past ground disturbance has not been thorough or extensive across the entire works area
- recorded Cultural Heritage site/s within a TMR asset
- works will traverse or be in the vicinity of landscapes that have higher risk of residual Cultural Heritage being present
- where there are known high risk bioregions/landscapes
- within the vicinity of commonly known Cultural Heritage places
- where cultural material is present within or in very close proximity to the corridor/asset

Category 5 – Activities are those that do not fit under any other category outlined in this process or the Guidelines. Category 5 works are those that pose the highest risk of harming Aboriginal and Torres Strait Islander Cultural Heritage

High Risk projects should not proceed without further Cultural Heritage Assessment and consultation with the Aboriginal and Torres Strait Islander Party/ies.

Stage 1 Aboriginal and Torres Strait Islander Cultural Heritage Assessment

Table 2: Aboriginal and Torres Strait Islander Cultural Heritage Assessment - Preliminary Risk Factors

<table>
<tr><th>Preliminary Risk Factors</th><th>Yes</th><th>No</th></tr>
<tr><td>Question 2: Are there any existing TMR Cultural Heritage Management Agreement/s over any part of the project area? Are there any Cultural Heritage Network Agreements, Cultural Heritage Corridor Agreements, Service Level Agreements or any other deed or agreements between TMR and the Aboriginal or Torres Strait Islander Party/ies over any part of the project area (inc. where ancillary works will occur) that will impact the project?

Comment: There are no existing TMR CH agreements within the project area.

There is one CHMP registered over part of the project area. This is not relevant to this project as TMR is not a signatory to this CHMP.

Cultural Heritage Management Plans (CHMP) for the area:
<table>
<tr><th>Reference No.</th><th>Project</th><th>Sponsor</th><th>Party</th><th>Registration Date</th></tr>
<tr><td>CLH000595</td><td>Approved CHMP - Shute Harbour Development Project</td><td>Shute Harbour Marina Development Pty Ltd</td><td>Gia People C/- Mr David Mailman & Native Title Management Services PO Box 9523 Park Avenue Qld 4701 & The Ngaro/Gia People c/- Mr Eddie Smallwood, Gudjuda reference group Aboriginal Corporation Po Box 255 AYR QLD 4807</td><td>23/04/2008</td></tr>
</table>
</td><td>☐</td><td>☒</td></tr>
<tr><td>Question 3: Are project works proposed in the Torres Strait Islands or in/near remote mainland Aboriginal communities?

Comment: Project is located in Shute Harbour. The Whitsunday region is not listed as an area of remote or discrete communities.</td><td>☐</td><td>☒</td></tr>
<tr><td>Question 4: Are there any political or community issues or concerns in the area to be impacted by the project works?

Comment: None identified relating to cultural heritage.</td><td>☐</td><td>☒</td></tr>
<tr><td>Question 5: Are there any DWATSIPM recorded cultural heritage sites within 100m of the project area?

Note: some Aboriginal & Torres Strait Islander Parties do not register CH sites on DWATSIPM. A lack of DWATSIPM recorded sites does not indicate the absence of Cultural Heritage.

Comment: There are no sites registered on this database that are inside of, or within 100 m of the project area. Refer to Appendix C: DWATSIPM Report.</td><td>☐</td><td>☒</td></tr>
</table>

Preliminary Risk Factors	Yes	No
Question 6: Is it likely that any of the DWATSIPM recorded sites will be impacted by the project works? Comment: There are no registered sites within the project area.	☐	☒
Question 7: Are there any Aboriginal Cultural Heritage sites on TMR heritage datasets within 100m of the project area? ECH Map ECHO Colonial Massacres map G drive Comment: There are no additional sites registered on this database that are inside of, or within 100 m of the project area. Refer to B6. ECH Map search results, B7. ECHO Map search results and B8. Colonial Massacres Map.	☐	☒
Question 8: Are there any Aboriginal Cultural Heritage sites noted during the site inspection? Comment: Inspection not conducted – Project is currently in planning stage. Desktop inspection using Google Street View identified project area is a mix of developed and undeveloped areas. Although, levels of previous surface and ground disturbance is evident, there appears to be some archaeological potential. A physical site inspection will be required at a later stage to ground-truth the desktop assessment. Refer to Appendix F: Site Inspection photographs.	☒	☐

Table 3: Aboriginal and Torres Strait Islander Cultural Heritage Assessment – Category 1 Risk Factors

Category 1 Risk Factors	Yes	No
Question 9: Will ANY project works be undertaken outside the footprint of an existing TMR asset? Comment: Works will take place in Shute Harbour between the easternmost stretch of Proserpine - Shute Harbour Road (851) and the Shute Harbour Boat Ramp (PP21).	☒	☐
Question 10: Do the project works involve Surface Disturbance? Comment: Project requires redevelopment of the bay access and installation of new structures.	☒	☐

Stage 2 Aboriginal and Torres Strait Islander Cultural Heritage Assessment

Table 4: Aboriginal and Torres Strait Islander Cultural Heritage Assessment – Category 2 Risk Factors

Category 2 Risk Factors	Yes	No
Question 11: Will ANY project works cause ground disturbance inconsistent with previous Surface Disturbance? Comment: Project requires reconfiguration of the bay access and installation of new structures. Refer to Appendix D: Historical images from QImagery.	☒	☐
Question 12: Will ANY project works impact native vegetation? Comment: There is no known native or remnant vegetation within the project area. Refer to Appendix G: Remnant Vegetation Mapping.	☐	☒

Table 5: Aboriginal and Torres Strait Islander Cultural Heritage Assessment – Category 3 Risk Factors

Category 3 Risk Factors	Yes	No
Question 13: Are ANY project works outside a Developed Area? Comment: The road corridor and the land or structures directly adjacent the bay is developed. All other parts of the project is not.	☒	☐
Additional Risk Checklist		
Question 14: Are ANY project works in a high-risk landscape or geographic area? High risk areas include but are not limited to: • Areas with registered or known sites • Native vegetation • Caves • Sand hills • Natural Wetlands • Creeks/rivers/waterways • Rock outcrops • Foreshore and coastal dunes • Some hill and mound formations • Permanent and semi-permanent waterholes • Natural springs • Comment: Project is in a coastal location associated with the Whitsunday Islands and part of the Great Barrier Reef Region. Additionally, project will impact coastal foreshore.	☒	☐

Category 3 Risk Factors	Yes	No
Question 15: Are you aware of any places, items, features or objects in the proposed works area that might be of Cultural Heritage value, but which might not have been registered in the past? Comment: None identified from desktop. A site inspection is required for an accurate answer.	☐	☒
Question 16: Are ANY project works in areas that are not previously disturbed? Comment: Although part of the project area is developed (land component) or disturbed (the foreshore), the part of the project area extends out into the bay has not been historically disturbed. Refer to Appendix D: Historical images from QImagery.	☒	☐

Stage 3 Aboriginal and Torres Strait Islander Cultural Heritage Assessment

Table 6: Aboriginal and Torres Strait Islander Cultural Heritage Assessment – Category 4 or 5 Risk Factors

Category 4 or 5 Risk Factors	Yes	No
Question 17: Will any of the project works cause additional Surface Disturbance? Comment: Project requires reconfiguration of the bay access and installation of new structures. This would be considered additional disturbace in the foreshore and bay areas. Refer to Appendix D: Historical images from QImagery.	☒	☐
Question 18: Will any of the project works cause direct disturbance to any high-risk landscapes or features? Example high risk features include: • Ceremonial places • Burials • Fish traps and weirs • Quarries and artefact scatters • Contact sites • Native vegetation • Caves • Sand hills • Natural Wetlands • Natural springs • Scarred or carved trees • Rock Art • Occupation sites • Grinding grooves • Wells • Rock outcrops • Foreshore and coastal dunes • Some hill and mound formations • Permanent and semi-permanent waterholes • Rivers or creeks Comment: Project will impact the coastal foreshore and bay.	☒	☐
Question 19: Will any of the projects works involve contact with the seabed? Comment: Project will require impact to the seabed to install the breakwater and build platform and shoulders of new carpark area.	☒	☐

Management Recommendations

Table 7: Overall Management Recommendations

Location description Section / Chainage / GPS Coordinates / Waterway Name	**Property** Lot on plan (terrestrial based)	**Past use/ground disturbance description**	**Description of Vegetation / Features within works spans**	**Risk / Category**	**Management Recommendations**
STANDARD MANAGEMENT RECOMMENDATIONS • Cultural Heritage Terms and Conditions of MRTS51 apply to all projects. All recommendations from this table are to be included in MRTS51 Contract Annexures. • TMR Find-Stop-Notify-Manage procedure to be included in contract documents and always followed across all project works. • TMR Human Remains procedure to be included in contract documents and always followed across all project works. • TMR Cultural Heritage Induction required for all project staff. • Any change(s) to the scope of works must be assessed by the TMR Cultural Heritage Officer and this risk assessment updated.					
Shute Harbour	Part of: - Lot A on CP849951 - Lot 310 on CP849951 - Lot 252 HR1717 - State controlled road corridor - Local road corridor	Partially mechanically cleared Shute Harbour bay access / mooring area	Shute Bay Great Barrier Reef Region (World Heritage, National Heritage, Commonwealth Heritage (Indicative Place), Register of the National Estate (non-statutory register)) Conway Range - Mount Dryander Area (Register of the National Estate) **Note: both listings are for natural values, not historic. Additional environment considerations may be required.**	**High Risk** Cat 5 **Low Risk** Historic Heritage	Standard management recommendations above apply in addition to the following: - Consultation with the Aboriginal Party is required. Contact the TMR CHO for advice. - Contact the TMR MSQ Environment Officer for advice on EPBC Act requirements.

Sign-off

Report Preparation

I am a Cultural Heritage Officer who is suitably qualified to prepare this report. I have prepared this report based on the best information available at the time. I have considered, to the fullest extent possible, all actual and potential cultural heritage impacts of the project.

Name	Kathy Lai	Signature	
Position	Cultural Heritage Officer (Contractor)	Date	10/11/2025

Report Review

I am a Cultural Heritage Officer who is suitably qualified to review this report.

Name	Alison Reif	Signature	
Position	Manager (Cultural Heritage)	Date	10.11.2025

TMR Project Manager Acceptance

I agree that this report has been prepared based on the project scope at the time, and accept responsibility for ensuring any future changes to the scope are appropriately assessed.

Name:	John Bergin	Signature	
Position:	Project Manager	Date:	17/12/2025

Note

This Cultural Heritage Risk Assessment shall remain current for a period of 12 months. Commencement after that date will require revision to ensure its accuracy/currency. Should any part of the project scope (location or activities) change, this assessment must be revised and updated. The results of the revision shall be documented.

Disclaimer

Unless informed otherwise TMR is acting in good faith that all results and information provided to the Department by relevant stakeholders and authorities is accurate and reliable information for the purposes of this risk assessment.

Appendices

Appendix A: Project Plan/Design

Figure 3: Project Location

Appendix B: Heritage Registers and Database searches

B1. Australasian Underwater Cultural Heritage Database

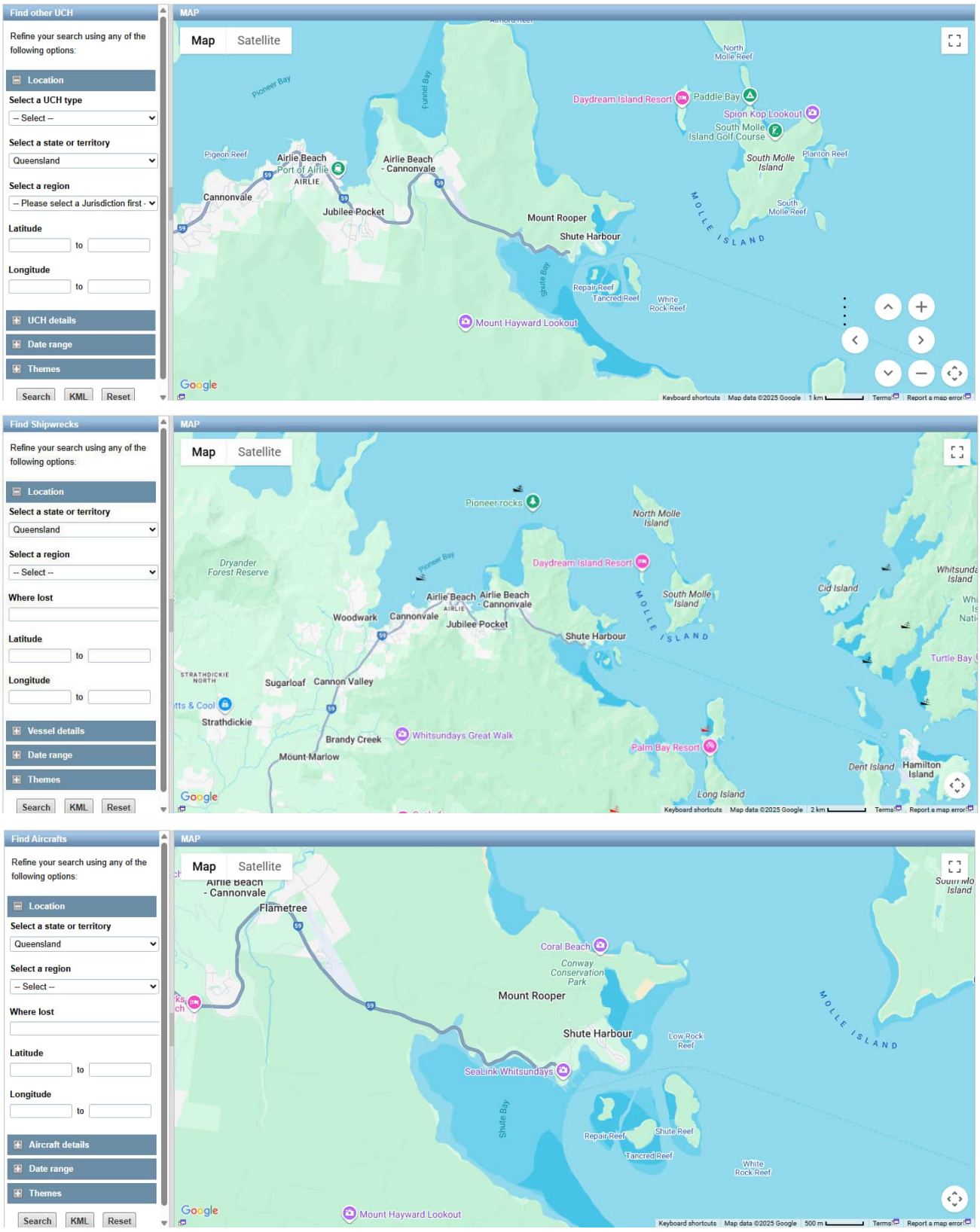


Figure 4: Australasian Underwater Cultural Heritage Database – UCH, Shipwrecks and Aircrafts.

B2. Australian Heritage Database

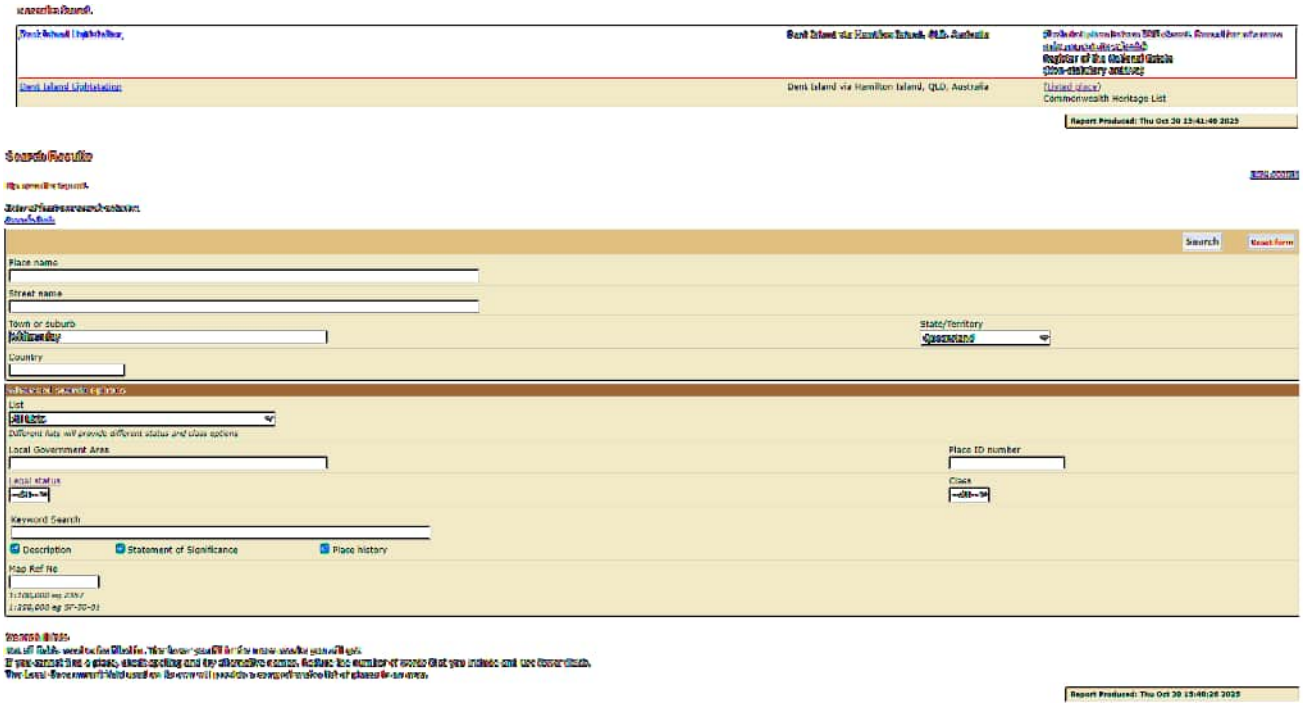


Figure 5: Australian Heritage Database search results for Shute Harbour and Whitsunday.

B3. Queensland Heritage Register

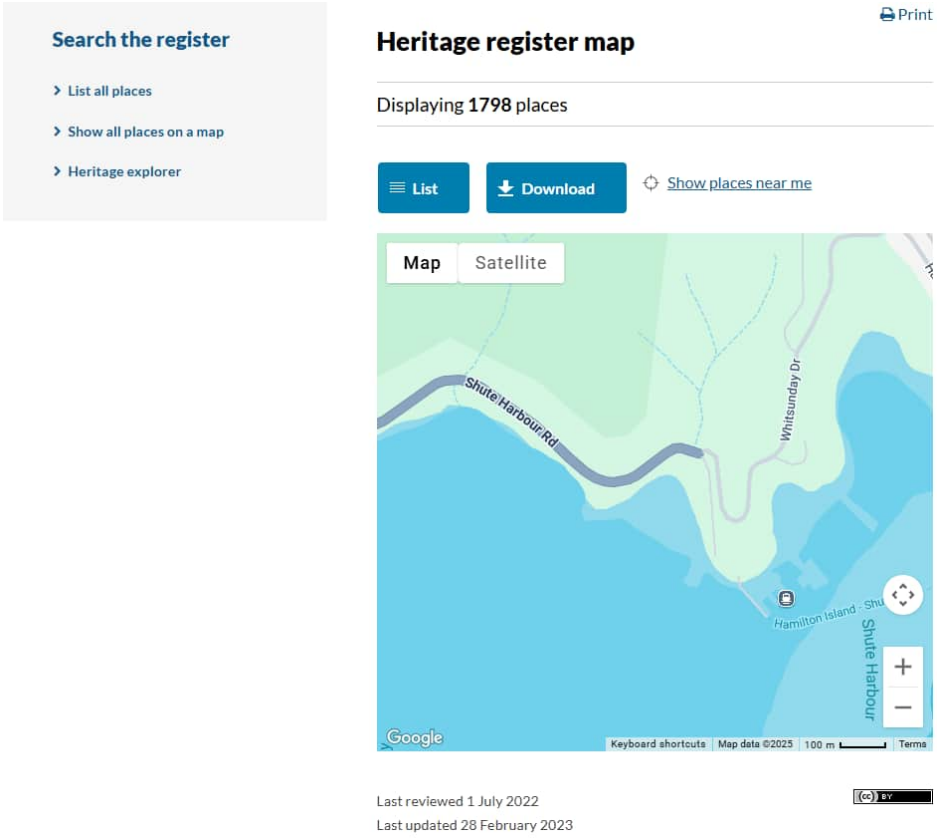


Figure 6: Queensland Heritage Register

B4. Queensland National Trust Heritage Register

LGA	NTAQ FILE NO.	TRUST STATUS	PRESENT NAME	FORMER/OTHER NAMES	ADDRESS	SUBURB/LOCALITY NAME	QHR FILE NUM	EXTERNAL INFORMATION
Whitsunday Regional	BOW 2/12	Registered	Seaward House		11 Thomas Street, Bowen	Bowen		
Whitsunday Regional	BOW 2/10	Registered	Bowen Harbour Board Building	MacDonald Hamilton & Co., Ship Owners	6 Herbert Street, Bowen	Bowen	600041	"QHR Citation"
Whitsunday Regional	BOW 3/3	Registered	Dowen Downs Road (portion of Old)	Dowen Downs Road; Sutter River Causeway	St Anne's Road, Llanarth	Llanarth	601777	"QHR Citation"
Whitsunday Regional	BOW 1/2	Registered	Mt Aberdeen National Park	NP 165	Bowen	Bowen		

Figure 7: Queensland National Trust Heritage Register

B5. Queensland World War II Historic Places

Figure 8: Queensland World War II Historic Places

B6. ECH Map search results

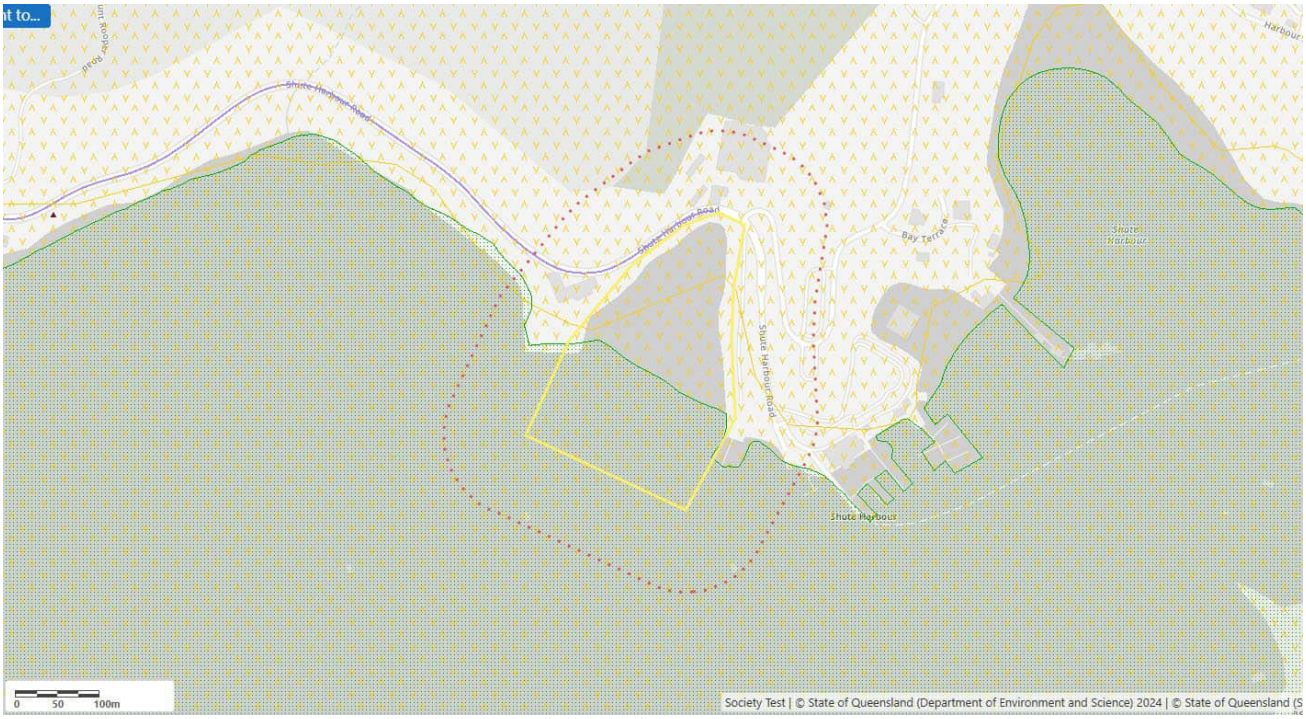


Figure 9: ECH Map search results

B7. ECHO Map search results

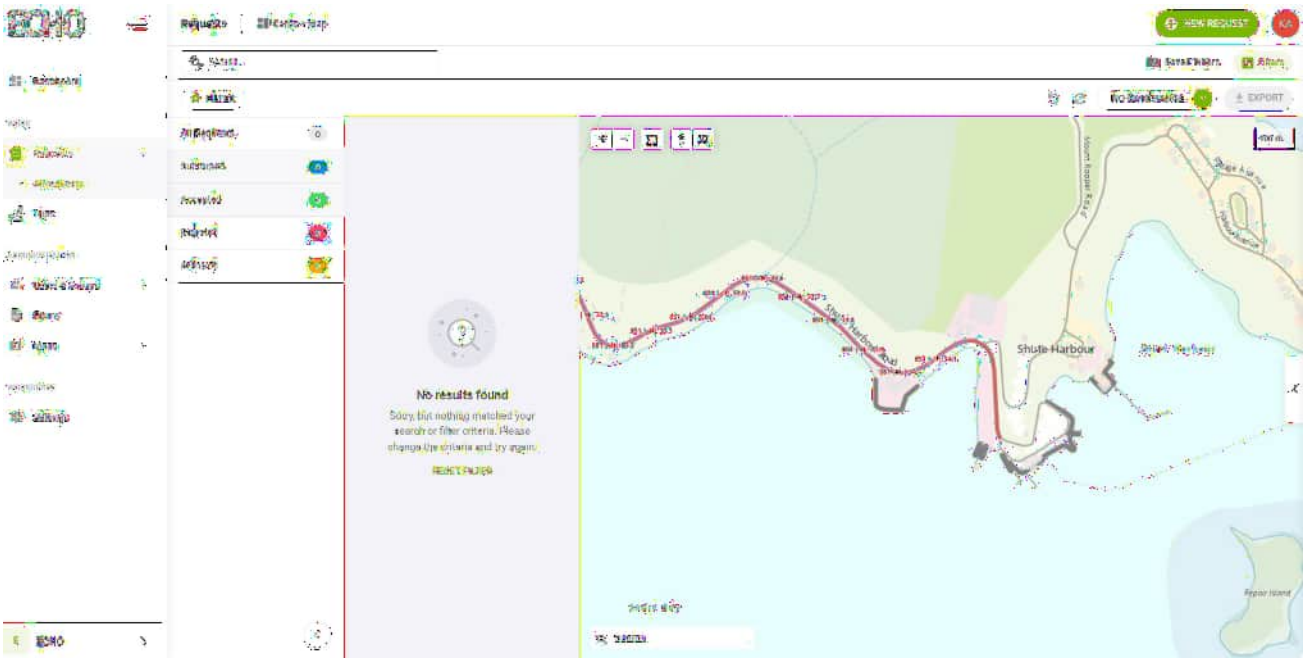


Figure 10: ECHO Map search results

B8. Colonial Massacres Map

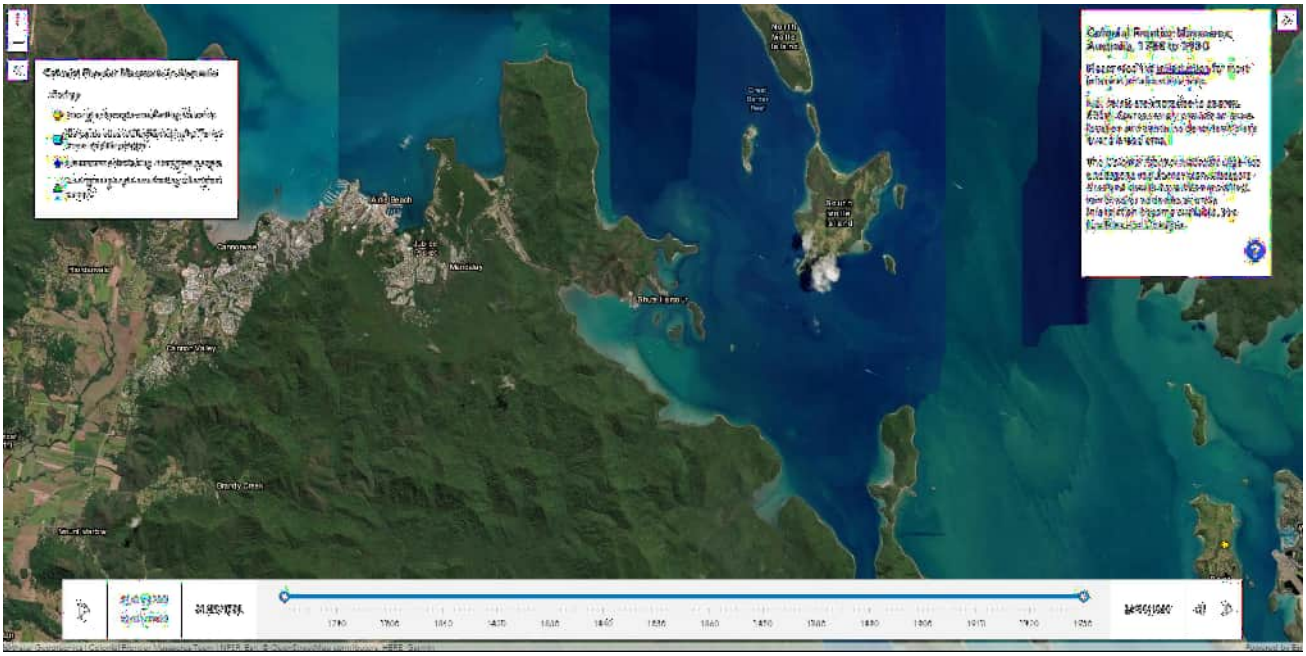


Figure 11: Colonial Massacres Map 1780-1930

B9. Underwater Heritage Protected Zones

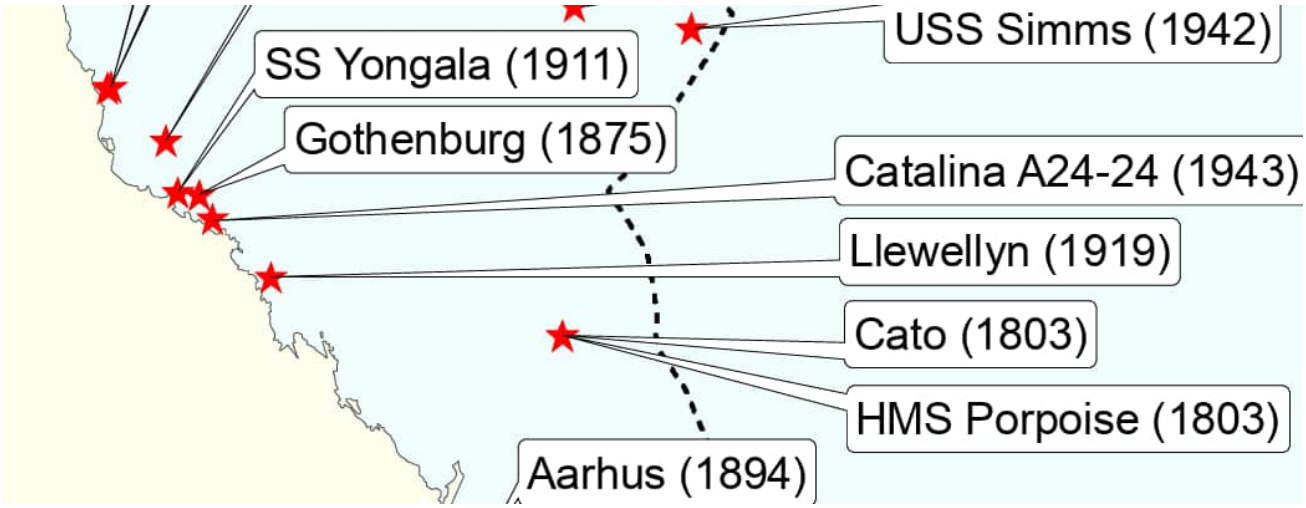


Figure 12: Underwater Heritage Protected Zones – project area is located between the Catalina and the Llewellyn wrecks

Appendix C: DWATSIPM Report

Cultural Heritage Database and Register Search Report

Search report reference number: 200578

The Aboriginal and Torres Strait Islander Cultural Heritage Database (cultural heritage database) and Aboriginal and Torres Strait Islander Cultural Heritage Register (cultural heritage register) have been searched in accordance with the location description provided, and the results are set out in this report.

The cultural heritage database is intended to be a research and planning tool to help Aboriginal and Torres Strait Islander parties, researchers, and other persons in their consideration of the cultural heritage values of particular areas.

The cultural heritage register is intended to be a depository for information for consideration for land use and land use planning, and a research and planning tool to help people in their consideration of the Aboriginal cultural heritage values of particular objects and areas.

Aboriginal or Torres Strait Islander cultural heritage which may exist within the search area is protected under the *Aboriginal Cultural Heritage Act 2003* and the *Torres Strait Islander Cultural Heritage Act 2003* (the Cultural Heritage Acts), even if the department has no records relating to it.

The placing of information on the database is not intended to be conclusive about whether the information is up-to-date, comprehensive or otherwise accurate.

Under the Cultural Heritage Acts, a person carrying out an activity must take all reasonable and practicable measures to ensure the activity does not harm Aboriginal or Torres Strait Islander cultural heritage. This applies whether or not such places are recorded in an official register and whether or not they are located on private land.

Please refer to the department website https://www.qld.gov.au/firstnations/environment-land-use-native-title/cultural-heritage/cultural-heritage-duty-of-care to obtain a copy of the gazetted Cultural Heritage Duty of Care Guidelines, which set out reasonable and practicable measure for meeting the cultural heritage duty of care.

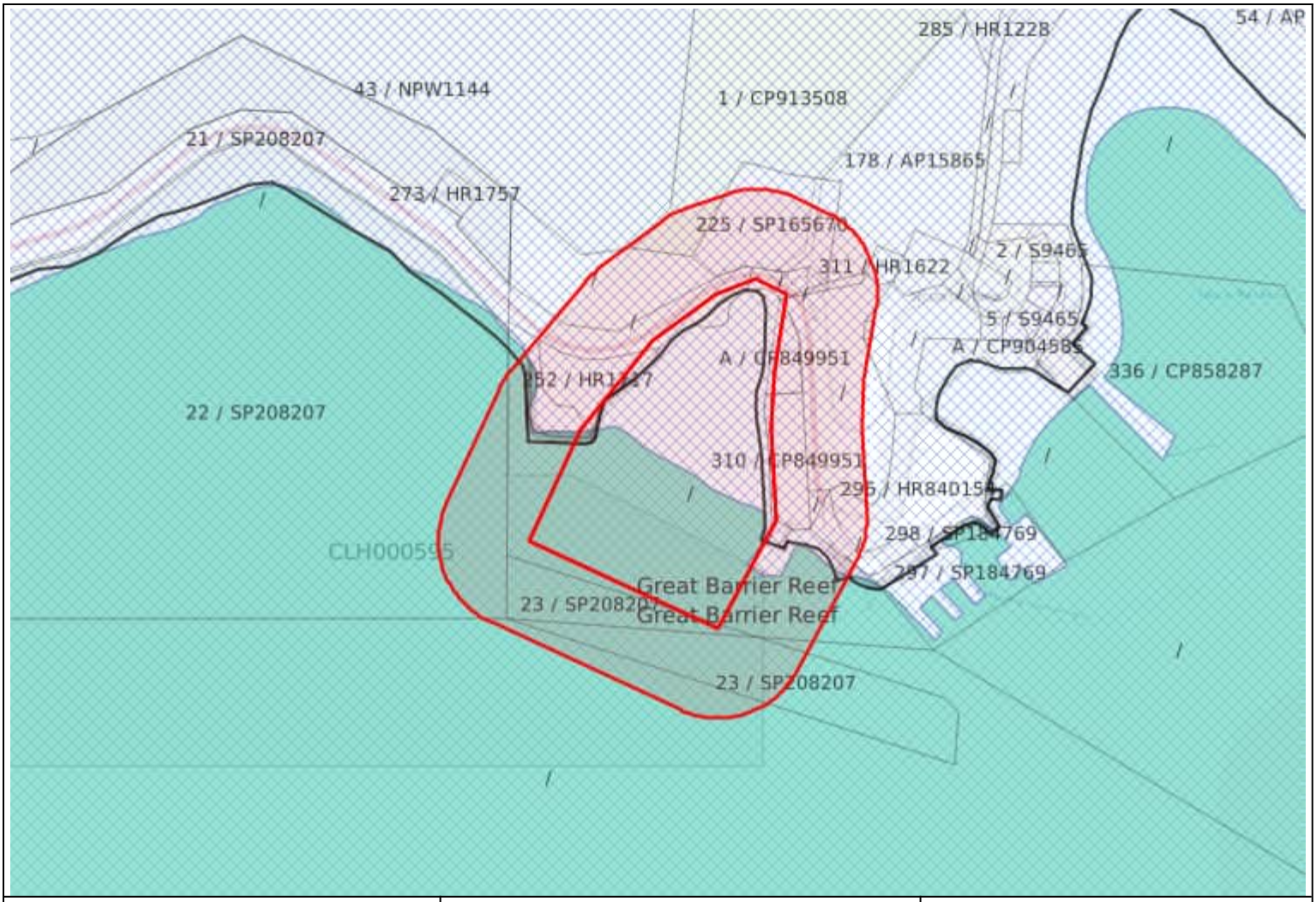
In order to meet your duty of care, any land-use activity within the vicinity of recorded cultural heritage should not proceed without the agreement of the Aboriginal or Torres Strait Islander Party for the area, or by developing a Cultural Heritage Management Plan under Part 7 of the Cultural Heritage Acts.

The extent to which the person has complied with Cultural Heritage Duty of Care Guidelines and the extent the person consulted Aboriginal or Torres Strait Islander Parties about carrying out the activity – and the results of the consultation – are factors a court may consider when determining if a land user has complied with the cultural heritage duty of care.

Should you have any further queries, please do not hesitate to contact the department via email: cultural.heritage@dwatsipm.qld.gov.au or telephone: 1300 378 401.

Queensland Government

Cultural Heritage Database and Register Search Report



LEGEND

- CH Parties
- CH Bodies
- CHMPs
- Study Areas
- DLAs

Reference Number: 200578

Search Type: Polygon

Buffer Distance: 100m

Shire: Whitsunday Regional

Cultural Heritage Sites

- Pre-2015 Point Site
- Post-2015 Point Site
- Mitigated Point Site
- Pre-2015 Area Site
- Post-2015 Area Site
- Mitigated Area Site

Map Projection: Geographic Latitude & Longitude (GDA2020).

The department is the custodian of spatial data provided by various third parties for inclusion in the Aboriginal and Torres Strait Islander cultural heritage online portal. This includes spatial data provided by the National Native Title Tribunal and Aboriginal and Torres Strait Islander parties.

Features shown on this map have been obtained from available sources. It is possible that errors and omissions may exist. The department disclaims any liability for any errors or omissions that appear in this document.

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Map produced by the Cultural Heritage Unit, Brisbane, Queensland, Australia on 30 October 2025.

Queensland Government

1:7,163

Metres 100 200 300

LOCALITY

Search report generated on 30 Oct 2025 19:41

There are no Aboriginal or Torres Strait Islander cultural heritage site points recorded in your specific search area.

There are no Aboriginal or Torres Strait Islander cultural heritage site polygons recorded in your specific search area.

Cultural Heritage Party/ies for the area:

Reference No.	Federal Court No.	Name	Contact Details
QC2024/003	QUD228/2024	Gia and Ngaro Peoples	Ashley Jan North Queensland Land Council Aboriginal Corporation 61 Anderson Street Manunda QLD 4870 Phone: 07 4042 7000

There are no Cultural Heritage Bodies recorded in your specific search area.

Cultural Heritage Management Plans (CHMP) for the area:

Reference No.	Project	Sponsor	Party	Registration Date
CLH000595	Approved CHMP - Shute Harbour Development Project	Shute Harbour Marina Development Pty Ltd	Gia People C/- Mr David Mailman & Native Title Management Services PO Box 9523 Park Avenue Qld 4701 & The Ngaro/Gia People c/- Mr Eddie Smallwood, Gudjuda reference group Aboriginal Corporation Po Box 255 AYR QLD 4807	23/04/2008

There are no Designated Landscape Areas (DLA) recorded in your specific search area.

There are no Registered Cultural Heritage Study Areas recorded in your specific search area.

There are no National Heritage Areas (Indigenous values) recorded in your specific search area.

Heritage Related Areas (QLD Subset) for the area:

Data Source	Name
National Heritage Areas	Great Barrier Reef
World Heritage Areas	Great Barrier Reef

Glossary

Cultural Heritage Body: An entity registered under Part 4 of the Cultural Heritage Acts as an Aboriginal or Torres Strait Islander cultural heritage body for an area. The purpose of a cultural heritage body is to:

- identify the Aboriginal or Torres Strait Islander parties for an area
- serve as the first point of contact for cultural heritage matters.

Cultural Heritage Management Plan (CHMP): An agreement between a land user (sponsor) and Traditional Owners (endorsed party) developed under Part 7 of the Cultural Heritage Acts. The CHMP explains how land use activities can be managed to avoid or minimise harm to Aboriginal or Torres Strait Islander cultural heritage.

Cultural Heritage Party: Refers to a native title party for an area. A native title party is defined as:

- Registered native title holders (where native title has been recognised by the Federal Court of Australia).
- Registered native title claimants (whose native title claims are currently before the Federal Court of Australia).
- Previously registered native title claimants (the 'last claim standing') are native title claims that are no longer active and have been removed from the Register of Native Title Claims administered by the National Native Title Tribunal. Previously registered native title claimants will continue to be the native title party for that area providing:
    - there is no other registered native title claimant for the area; and
    - there is not, and never has been, a registered native title holder for the area.

The native title party maintains this status within the external boundaries of the claim even if native title has been extinguished.

Cultural heritage site points (pre 2015): Aboriginal and Torres Strait Islander cultural heritage sites and places recorded in the database as point data **before** 1 July 2015.

Cultural heritage site points (post 2015): Aboriginal and Torres Strait Islander cultural heritage sites and places recorded in the database as point data **after** 1 July 2015.

Cultural heritage site points (post 2015 mitigated): Aboriginal and Torres Strait Islander cultural heritage sites and places recorded in the database as point data after 1 July 2015 where the recorder has advised the department that the site has been mitigated.

Cultural heritage site polygons: Aboriginal and Torres Strait Islander cultural heritage sites and places recorded in the database as a polygon.

Department: the department responsible for administering the Cultural Heritage Acts.

Designated Landscape Areas (DLA): Under the repealed *Cultural Record (Landscapes Queensland and Queensland Estate) Act 1987*, an area was declared a 'designated landscape area' (DLA) if it was deemed necessary or desirable for it to be preserved or to regulate access.

Indigenous Protected Areas (IPA): Areas of land and sea managed by Indigenous groups as protected areas for biodiversity conservation through voluntary agreements with the Australian Government. For further information about IPAs visit https://www.environment.gov.au/land/indigenous-protected-areas

National Heritage areas: Places listed on the National Heritage List for their outstanding heritage significance to Australia and are protected under the *Environment Protection and Biodiversity Conservation Act 1999*. For further information about the National Heritage List visit https://www.environment.gov.au/heritage/about/national

National Heritage Areas (Indigenous values): Places listed on the National Heritage list (Indigenous values) are

recognised for their outstanding Indigenous cultural heritage significance to Australia and are protected under the *Environment Protection and Biodiversity Conservation Act 1999.* These areas are now included in the cultural heritage register.

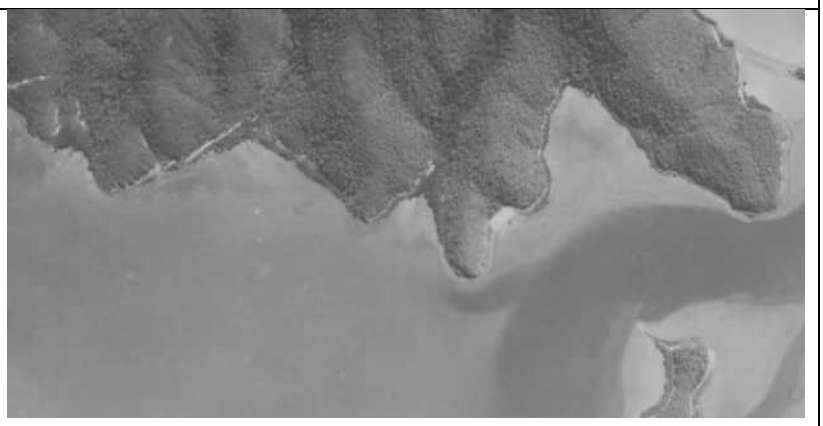
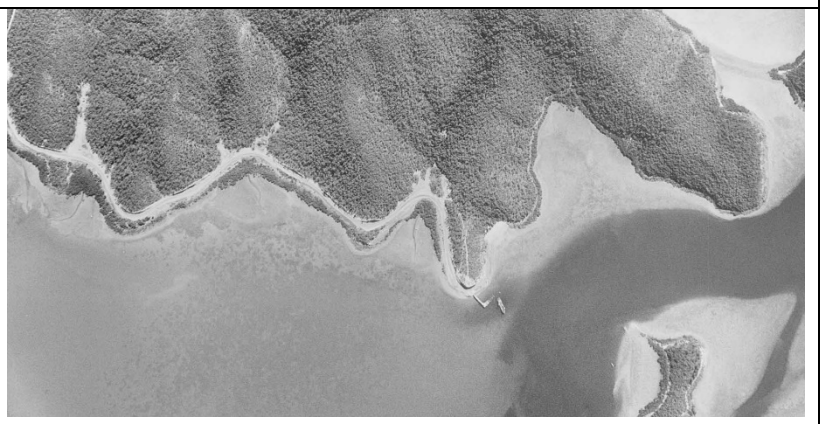
Registered Cultural Heritage Study Areas: Comprehensive studies of Aboriginal and or Torres Strait Islander cultural heritage in an area conducted under Part 6 of the Cultural Heritage Acts for the purpose of recording the findings of the study on the register.

Traditional Use of Marine Resources Agreement (TUMRA): Areas subject to agreement between Great Barrier Reef Traditional Owners and the Australian and Queensland governments on the management of traditional use activities on their sea country. For further information about TUMRAs visit https://www.gbrmpa.gov.au/our-partners/traditional-owners/traditional-use-of-marine-resources-agreements

World Heritage Areas: Places inscribed on the World Heritage List pursuant to the World Heritage Convention adopted by the United Nations Education, Scientific and Cultural Organisation (UNESCO) and are protected under the *Environment Protection and Biodiversity Conservation Act 1999*. For further information about World Heritage places in Queensland visit https://environment.qld.gov.au/management/world-heritage-areas

Disclaimer: *The department is the custodian of spatial data and information provided by various third parties for inclusion in the Aboriginal and Torres Strait Islander cultural heritage online portal. This includes spatial data provided by the National Native Title Tribunal and Aboriginal and Torres Strait Islander parties. The department is not responsible for the accuracy of information provided by third parties or any errors in this search report arising from such information.*

Appendix D: Historical images from QImagery

Year (Source)	Satellite Aerial Imagery
1945 (QImagery MAP0120 5017) Project area is relatively undisturbed. Narrow clearing for Shute Harbour Rd corridor is visible adjacent the project area.	
1960 (QImagery QAP1144 058) Project area is relatively undisturbed. Additional disturbance from widening of Shute Harbour Rd corridor is visible around the project area.	
1972 (QImagery QAP2511 3170) Project area has been impacted by nearby development of and along Shute Harbour Rd.	
1988 (QImagery AQP4795 080) Part of the project area has been impacted by further development within Shute Harbour and along Shute Harbour Rd.	

1993 (QImagery QAP5149 141) Project area partly disturbed due to additional development and bay use.	
2004 (QImagery QAP6111 125) Additional disturbance due to development on the land parts of the project area. Some surface disturbance due to tide movement and bay access and use.	
2023 (QGlobe Past Imagery Layer Whitsundays_2022_2023_20cm_SISP) Recent satellite imagery with project area marked. Part of the project area (land joining Shute Harbour Rd) is considered developed. The majority of the project area is considered disturbed (area of exposed sand), or relatively undisturbed (Shute Bay).	

Appendix E: Queensland Globe – project extent, Aboriginal Party and Local Government

Figure 13 Mapped Aboriginal Party (Gia and Ngaro Peoples) and Local Government (Whitsunday Regional).

Appendix F: Site Inspection

Inspection not conducted – Project is currently in planning stage.

Desktop inspection conducted using images from Google Street View Image Capture (Sept 2024):

Figure 14 View southwest towards project area from Shute Harbour Dr.

Figure 15 View west towards project area from Whitsunday Dr.

Figure 16 View west towards project area from Whitsunday Dr.

Figure 17 View southeast towards project area from Shute Harbour Rd.

Appendix G: Remnant Vegetation Mapping

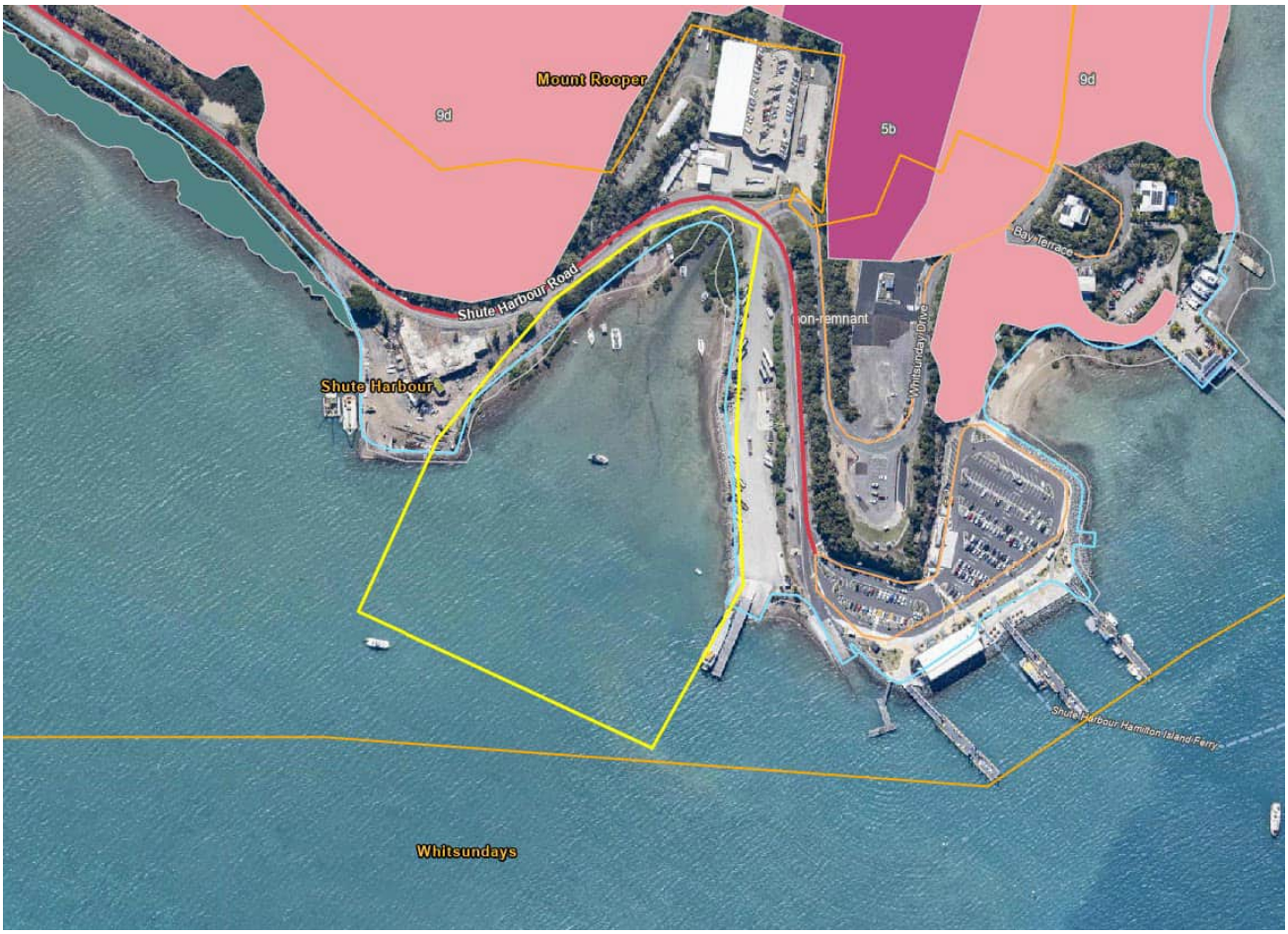


Figure 18 Mapped remnant vegetation and water

Appendix H: Additional Heritage Information / Attachments

Place Details

Send Feedback

Great Barrier Reef Region (Commonwealth), Cairns, QLD, Australia

Photographs	None
List	Commonwealth Heritage List
Class	Natural
Legal Status	Indicative place
Place ID	105573
Place File No	4/00/192/0001

Summary Statement of Significance Not Available

Official Values Not Available

Description

The area includs part of the Great Barrier Reef marine park (which extends for approximately 2,000km along the eastern coast of Queensland and covers approximately 34,870,000ha on the continental shelf). The reef is not a continuous barrier but a broken maze of coral reefs, some with coral islands called cays. The reef comprises some 2,500 individual reefs which range in size from less than 1ha to more than 10,000ha, and in shape from flat platform reefs to elongated ribbon reefs. Most reefs are submerged, with some being exposed at low tide. Individual reefs are composed of accumulated remains of plant and animal skeletal material made of calcium carbonate, supporting a veneer of living plants and animals.
The reef is the worlds largest and most complex expanse of coral reef, encompassing many unique forms of marine life. There are over 1,500 species of fish , exhibiting a variety of size, shape, colour and behaviour. 400 species of coral in sixty genera. Other well represented groups included 4,000 species of mollusc as well as foraminifera, echinoderms, crustaceans, polychaete worms and ascidians. Six species of turtle are found in the area; the green, leatherback, flatback, loggerhead, hawksbill and Pacific Ridley. Areas of the reef are nesting sites of world importance for the green and loggerhead turtles. All turtles are protected species under Commonwealth and Queensland legislation. Whales, dolphins (Mysticeti, Odontoceti) and dugong occur in the area and are all protected. The reef also supports a wide range of fleshy algae and sea grasses which are an important food source for grazing animals.
The cays and continental islands support 242 species of birds. These include forty species of sea birds, twenty one of which have breeding colonies in the area.
About thirty wrecks of historic importance are known to occur in the area. One of the earliest, the wreck of the HMS Pandora dates from 1791 and lies near the reef in the northern sector to which it gave its name. In the central sector is the well-preserved wreck of the SS Yongala which sank with the loss of 122 passengers and crew members in 1911. The hazards of navigation in the reef resulted in the construction of a large number of lighthouses, some of which have historical importance. Exploration of the area possibly began in the fifteenth and sixteenth century with Chinese, Spanish and Portugese visiting the area. In 1770 Captain Cook entered the waters of the Great Barrier Reef, and on 11 June his ship the Endeavour ran aground on the reef. To pull the ship off the reef Cook jettisoned non essential material. In recent years divers have recovered the anchor, a cannon and some of the ballasts jettisoned.
Significant Indigenous values are known to exist in this area. The Commission is currently consulting with relevant Indigenous communities about the amount of information to be placed on public record.

History Not Available

Condition and Integrity Not Available

Location

About 27900000 ha of sea bed, reefs, islands and seas along the Queensland coast between the tip of Cape York and Fraser Island beyond the State Coastal Waters tot he outer limits of the three nautical mile limit and one hundred mile limit (EEZ).

Bibliography

There is a large volume of literature published on the Great Barrier Reef. For an extensive bibliography see:

Frankel, E. 1978, 'Bibliography of the Great Barrier Reef Province', Townsville.

Great Barrier Reef Committee, 1979, 'An Account of the Present Knowledge and Use of the Great Barrier Reef, Lizard Island To Bowen' GBRMPA, Townsville.

Great Barrier Reef Marine Park Authority, 1978, 'Workshop on the Northern Section of the Great Barrier Reef, Papers And Proceedings'GBRMPA, Townsville.

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Place Details

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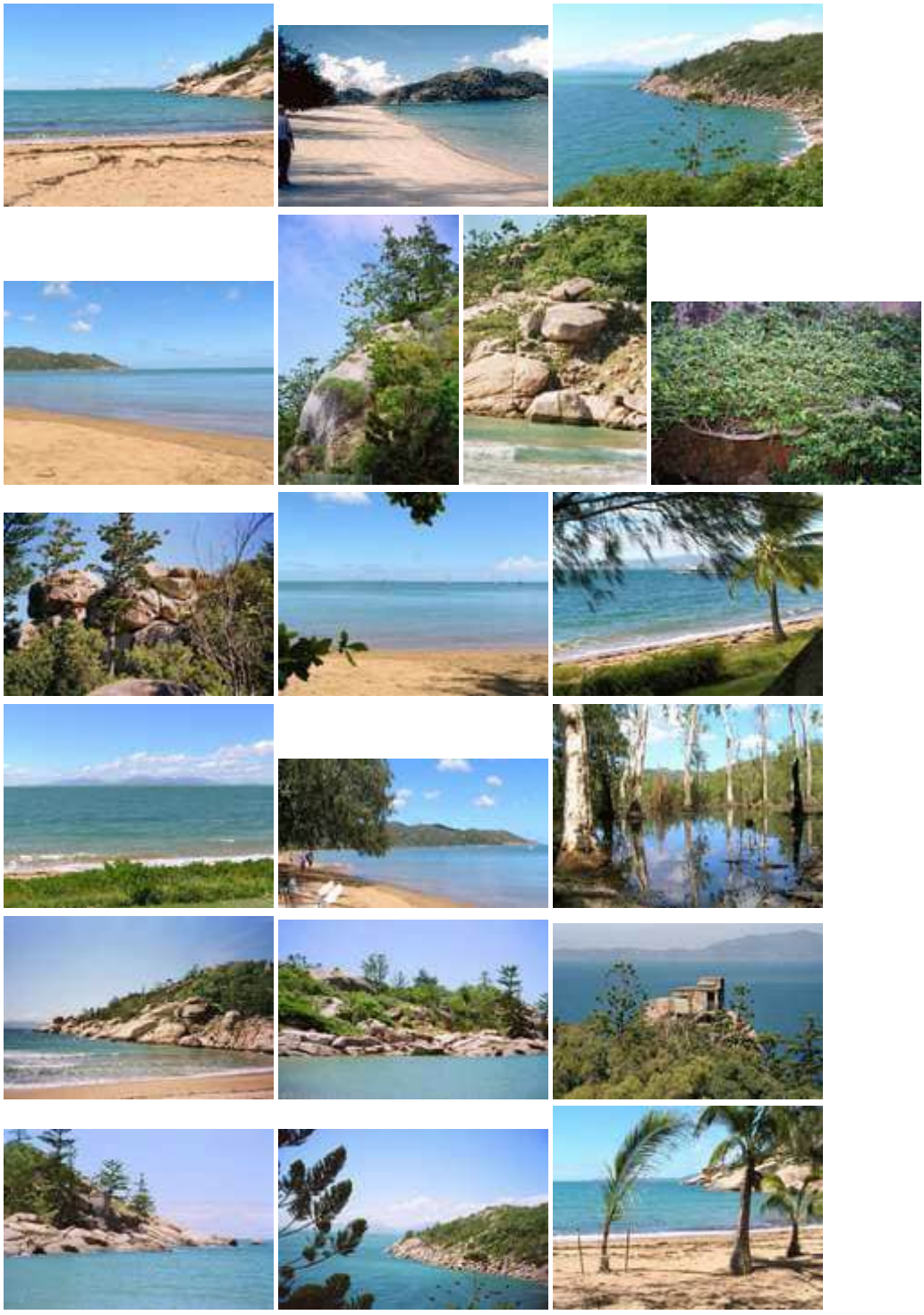

List	National Heritage List
Class	Natural
Legal Status	Listed place (21/05/2007)
Place ID	105709
Place File No	4/00/192/0001

Summary Statement of Significance

The Great Barrier Reef, one of Australia's first World Heritage Areas, was inscribed on the World Heritage List in recognition of its outstanding natural universal values:

- as an outstanding example representing the major stages in the earth's evolutionary history;
- as an outstanding example representing significant ongoing ecological and biological processes;
- as an example of superlative natural phenomena; and
- containing important and significant habitats for in situ conservation of biological diversity.

It is the world's largest World Heritage Area extending 2 000 kilometres and covering an area of 35 million hectares on the north-east continental shelf of Australia. Bigger than the entire area of Italy, it is probably the best known marine protected area in the world. The Great Barrier Reef's great diversity reflects the maturity of the ecosystem, which has evolved over hundreds of thousands of years. It is the world's most extensive coral reef system and is one of the world's richest areas in terms of faunal diversity.

The Great Barrier Reef World Heritage Area contains more than just coral reefs. It also contains extensive areas of seagrass, mangrove, soft bottom communities and island communities. Contrary to popular belief, the reef is not a continuous barrier, but a broken maze of coral reefs and coral cays. It includes some 2 800 individual reefs, of which 760 are fringing reefs. These reefs range in size from less than one hectare to more than 100 000 hectares, and in shape from flat platform reefs to elongated ribbon reefs.

The Great Barrier Reef provides habitats for many diverse forms of marine life. There are an estimated 1 500 species of fish and more than 300 species of hard, reef-building corals. More than 4 000 mollusc species and over 400 species of sponges have been identified.

Other well-represented animal groups include anemones, marine worms, crustaceans (prawns, crabs etc.) and echinoderms (starfish, sea urchins etc.).

The extensive seagrass beds are an important feeding ground for the dugong, a mammal species internationally listed as endangered.

The reef also supports a wide variety of fleshy algae that are heavily grazed by turtles, fish, sea urchins and molluscs.

The reef contains nesting grounds of world significance for the endangered green and loggerhead turtles. It is also a breeding area for humpback whales, which come from the Antarctic to give birth to their young in the warm waters.

The islands and cays support several hundred bird species, many of which have breeding colonies there. Reef herons, osprey, pelicans, frigate birds, sea eagles and shearwaters are among the numerous sea birds that have been recorded.

The World Heritage property is also of cultural importance, containing many middens and other archaeological sites of Aboriginal or Torres Strait Islander origin. Some notable examples occur on Lizard and Hinchinbrook Islands, and on Stanley, Cliff and Clack Islands where there are spectacular galleries of rock paintings.

There are over 30 historic shipwrecks in the area, and on the islands are ruins and operating lighthouses that are of cultural and historical significance.

About 98 per cent of the World Heritage Property is within the Great Barrier Reef Marine Park, the remainder being Queensland waters and islands. The Great Barrier Reef Marine Park was declared in 1975 with the purpose of preserving the area's outstanding biodiversity whilst providing for reasonable use. This has been achieved using a spectrum of zones ranging from General Use Zones to Preservation Zones. In very broad terms, these zones allow ecologically sustainable activities, but all have an overriding conservation objective. Most reasonable activities such as tourism, fishing, boating, diving and research are permitted to occur but are controlled through zoning and management planning to minimise impacts and conflicts with areas of high conservation value and other users.

Today, the great majority of the Marine Park is still relatively pristine when compared with coral reef systems elsewhere in the world. An independent report published in 1997 concluded that the Reef is in good condition and is being managed effectively. These are also the findings of two major workshops to which over 100 scientists and management experts contributed. Both these workshops have now been summarised in the report titled State of the Great Barrier Reef World Heritage Area 1998, released in November 1998.

The Australian Government and State Government have a cooperative and integrated approach to management of the Great Barrier Reef World Heritage Area. The Great Barrier Reef Marine Park Authority (GBRMPA) is the Australian Government agency responsible for overall management, and the Queensland Government, particularly the Queensland Parks and Wildlife Service, provides day-to-day management to the Authority. Integrated management is also assisted by:

- a Commonwealth Act specifically for the Marine Park that, if necessary, provides over-riding powers;
- complementary legislation for most adjoining State waters;
- formal agreements with Queensland, and with various government departments, industry, research institutions and universities; and
- strategic zoning plans and site-specific management plans.

GBRMPA's current work program stems from four issues that have been identified as being critical for achieving adequate protection and management of the Reef in the short to medium term:

- water quality and coastal development;
- fisheries;
- tourism and recreation; and
- conservation, biodiversity and world heritage.

Official Values

Criterion A Events, Processes

This place is taken to meet this National Heritage criterion in accordance with subitem 1A(3) of Schedule 3 of the *Environment and Heritage Legislation Amendment Act (No.1) 2003*, as the World Heritage Committee has determined that this place meets World Heritage criteria (vii), (viii), (ix) and (x).

Criterion B Rarity

This place is taken to meet this National Heritage criterion in accordance with subitem 1A(3) of Schedule 3 of the *Environment and Heritage Legislation Amendment Act (No.1) 2003*, as the World Heritage Committee has determined that this place meets World Heritage criterion (x).

Criterion C Research

This place is taken to meet this National Heritage criterion in accordance with subitem 1A(3) of Schedule 3 of the *Environment and Heritage Legislation Amendment Act (No.1) 2003*, as the World Heritage Committee has determined that this place meets World Heritage criteria (viii), (ix) and (x).

Criterion D Principal characteristics of a class of places

This place is taken to meet this National Heritage criterion in accordance with subitem 1A(3) of Schedule 3 of the *Environment and Heritage Legislation Amendment Act (No.1) 2003*, as the World Heritage Committee has determined that this place meets World Heritage criteria (viii), (ix) and (x).

Criterion E Aesthetic characteristics

This place is taken to meet this National Heritage criterion in accordance with subitem 1A(3) of Schedule 3 of the *Environment and Heritage Legislation Amendment Act (No.1) 2003*, as the World Heritage Committee has determined that this place meets World Heritage criterion (vii).

Description

Includes the world's most extensive stretch of coral reef. The reef system, extending to Papua New Guinea, comprises some 3,400 individual reefs, including 760 fringing reefs, which range in size from under 1ha to over 10,000ha and vary in shape to provide the most spectacular marine scenery on earth. There are approximately 300 coral cays, including 213 unvegetated cays, 43 vegetated cays and 44 low wooded islands. There are also 618 continental islands which were once part of the mainland (GBRMPA, pers. comm., 1995).

The form and structure of the individual reefs show great variety. Two main classes may be defined: platform or patch reefs, resulting from radial growth; and wall reefs, resulting from elongated growth, often in areas of strong water currents. There are also many fringing reefs where the reef growth is established on subtidal rock of the mainland coast or continental islands (Kelleher *et al.*, 1989).

Capricorn-Bunker Group National Park (Queensland State) encompasses a terrestrial section and consists of four islands: Fairfax Island, a coral cay consisting of two small islands on an egg-shaped reef; Hoskyn Island similar to Fairfax, though not a cay; Heron Island, sand and broken coral on coral and rock formation; and Lady Musgrave Island, a cay surrounded by extensive coral reefs.

Water circulation is very complex, governed by properties of the Coral Sea, land run-off, evaporation, the south-east trade winds, forced upwellings due to strong tidal currents in narrow reef passages and coastal waters including mangroves. Tides are generally semi-diurnal with diurnal inequality towards the north, becoming almost diurnal in Torres Strait. The maximum tidal range is about 3m along most of the coast, although increasing to 6 to 9m in the Broad Sound area between 21 degrees and 23 degrees S. Water is vertically well-mixed for most of the year with stratification occurring due to freshwater input during January to April. Freshwater run-off can be very localised and significant physical and biological effects may be expected (Kelleher *et al.*, 1989).

History

The Great Barrier Reef Marine Park Act 1975 provides for the establishment, control, care and development of a Marine Park covering 98.5% of the Great Barrier Reef Region as defined in that Act. Parts of Green Island (1937) and Heron Island (1943) were gazetted as national parks under the State Forests and National Parks Act 1903-1948 (Queensland). Heron-Wistari and Green Island Marine Parks (1974), gazetted under the Forestry Act 1959-1976 (Queensland), were the first Marine Parks on the reef. Areas of the region may be declared as part of the Marine Park and subsequently zoned. In 1976 these powers were transferred to the National Parks and Wildlife Act 1976 and Fisheries Act 1976, respectively. The first section of the Great Barrier Reef Marine Park, the Capricornia Section, was proclaimed in 1979. The Cairns and Cormorant Pass sections were declared as part of the Marine Park in late 1981 and the remainder of the Marine Park in subsequent years. The whole area was inscribed on the World Heritage List in 1981.

Condition and Integrity Not Available

Location

About 34,870,000ha, comprising an area bounded by a line which –

(a) commences at the point that, at low water, is the northernmost extremity of Cape York Peninsula, Queensland,:

(b) runs thence easterly along the geodesic to the intersection of parallel of Latitude 10 degrees 41 minutes South with meridian of Longitude 145 degrees East;

(c) runs thence southerly along that meridian to its intersection by the parallel of Latitude 13 degrees South;

(d) runs thence south-easterly along the geodesic to a point of Latitude 15 degrees South Longitude 146 degrees East;

(e) runs thence south-easterly along the geodesic to a point of Latitude 17 degrees 30 minutes South Longitude 147 degrees East;

(f) runs thence south-easterly along the geodesic to a point of Latitude 21 degrees South Longitude 152 degrees 55 minutes East;

(g) runs thence south-easterly along the geodesic to a point of Latitude 24 degrees 30 minutes South Longitude 154 degrees East;

(h) runs thence westerly along the parallel of Latitude 24 degrees 30 minutes South to its intersection by the coastline of Queensland at low water ; and

(i) runs thence generally northerly along that coastline at low water to the point of commencement.

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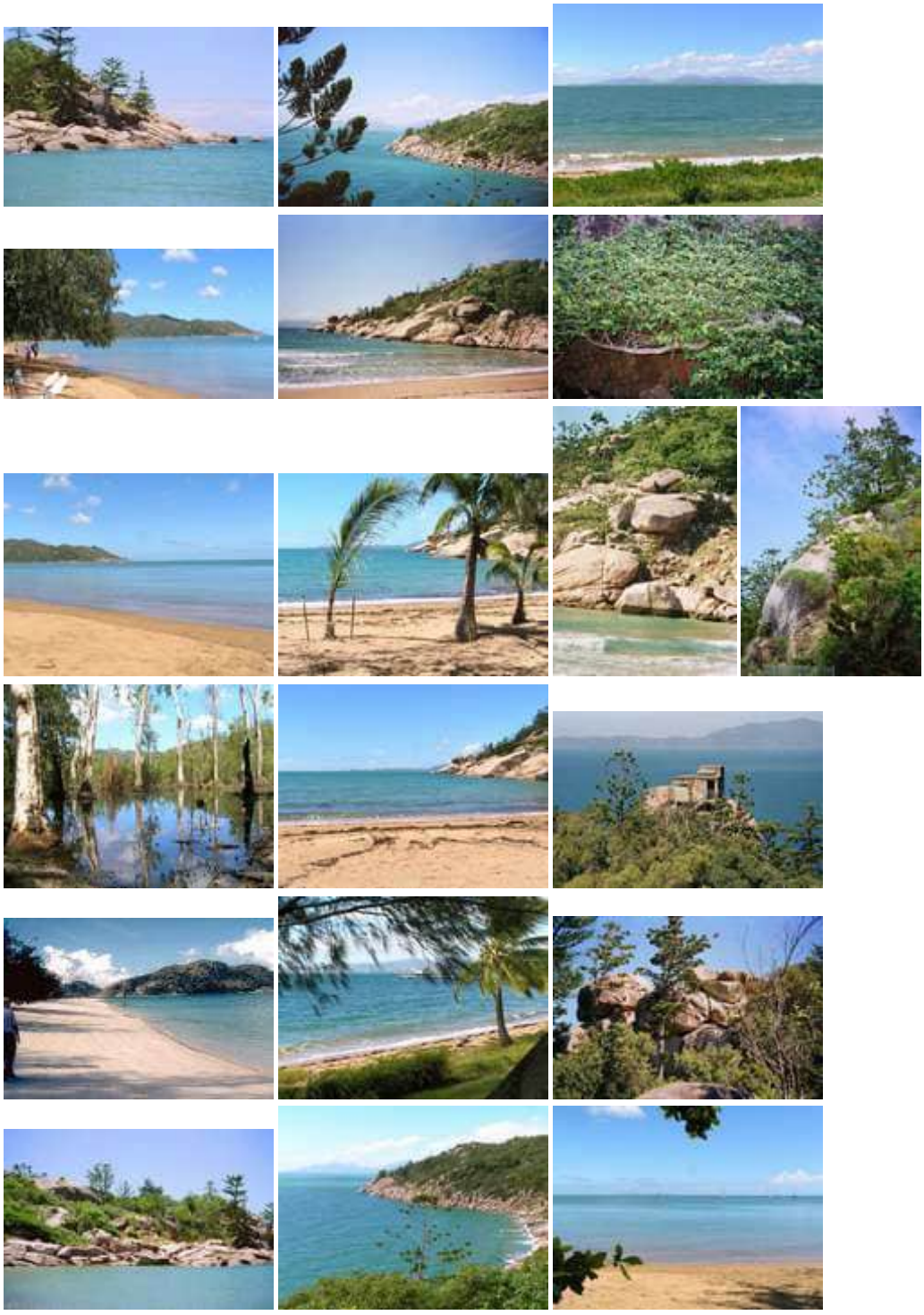
Photographs



List	Register of the National Estate (Non-statutory archive)
Class	Natural
Legal Status	Included place before RNE closed. Record for reference only, no statutory basis (14/05/1991)
Place ID	8320
Place File No	4/00/192/0001

Statement of Significance

The Great Barrier Reef system is an outstanding example of coral reef evolution representing significant geological processes, biological evolution and human interaction with the natural environment. The reef is by far the largest single collection of coral reefs in the world. These reefs represent major stages of the earth's evolutionary history. The Great Barrier Reef is one of the richest and most diverse biological systems in the world. Reflecting the maturity of the ecosystem which has evolved over millions of years.
The reef supports hundreds of species of fish and coral as well as other marine organisms. Hundreds of species of birds frequent the reef with cays providing important breeding grounds for sea birds. The reef is of international significance in the study of natural history. It has been the subject of much research with scientific expeditions from many parts of the world investigating its unique flora and fauna. The Australian institute of marine science has been set up with the specific task of studying the marine organisms of the reef.
The reef is also important to plant biologists studying plant succession on coral cays. The reef provides habitats where many rare and endangered plants and animals survive. Including large populations of dugong (DUGONG DUGON) (listed as endangered by IUCN). It provides nesting grounds of world significance for endangered turtle species, green turtle (CHELONIA MYDAS) and loggerhead turtle (CARETTA CARETTA).
The Great Barrier Reef has signifcant wilderness qualities. It is considered a marine wilderness of international value. The reef is an area of exceptional natural beauty with some of the most spectacular scenery on earth.
The Great Barrier Reef province is also of cultural significance. There are over thirty historic shipwrecks on the reef as well as ruins and operating lighthouses.
The area has historical significance. It was visited by Portugese and Spanish explorers in the fifteenth and sixteenth centuries. In 1770 Captain Cook explored the reef, running aground on Endeavour Reef. The reef was the subject of many subsequent expeditions of survey including those of Matthew Flinders in the Investigator in 1802-03 and Stanley and Huxley in the Rattlesnake in 1847-49.
The Commission has determined that this place has Indigenous values of National Estate significance. The Commission is currently consulting with relevant Indigenous communities about the amount of information to be placed on public record.

Official Values Not Available

Description

The area included in The Great Barrier Reef marine park extends for approximately 2,000km along the eastern coast of Queensland and covers approximately 34,870,000ha on the continental shelf. The reef is not a continuous barrier but a broken maze of coral reefs, some with coral islands called cays. The reef comprises some 2,500 individual reefs which range in size from less than 1ha to more than 10,000ha, and in shape from flat platform reefs to elongated ribbon reefs. Most reefs are submerged, with some being exposed at low tide. Individual reefs are composed of accumulated remains of plant and animal skeletal material made of calcium carbonate, supporting a veneer of living plants and animals.
The reef is the worlds largest and most complex expanse of coral reef, encompassing many unique forms of marine life. There are over 1,500 species of fish , exhibiting a variety of size, shape, colour and behaviour. 400 species of coral in sixty genera. Other well represented groups included 4,000 species of mollusc as well as foraminifera, echinoderms, crustaceans, polychaete worms and ascidians. Six species of turtle are found in the area; the green, leatherback, flatback, loggerhead, hawksbill and Pacific Ridley. Areas of the reef are nesting sites of world importance for the green and loggerhead turtles. All turtles are protected species under Commonwealth and Queensland legislation. Whales, dolphins (Mysticeti, Odontoceti) and dugong occur in the area and are all protected. The reef also supports a wide range of fleshy algae and sea grasses which are an important food source for grazing animals.
The cays and continental islands support 242 species of birds. These include forty species of sea birds, twenty one of which have breeding colonies in the area.
About thirty wrecks of historic importance are known to occur in the area. One of the earliest, the wreck of the HMS Pandora dates from 1791 and lies near the reef in the northern sector to which it gave its name. In the central sector is the well-preserved wreck of the SS Yongala which sank with the loss of 122 passengers and crew members in 1911. The hazards of navigation in the reef resulted in the construction of a large number of lighthouses, some of which have historical importance. Exploration of the area possibly began in the fifteenth and sixteenth century with Chinese, Spanish and Portugese visiting the area. In 1770 Captain Cook entered the waters of the Great Barrier Reef, and on 11 June his ship the Endeavour ran aground on the reef. To pull the ship off the reef Cook jettisoned non essential material. In recent years divers have recovered the anchor, a cannon and some of the ballasts jettisoned.
Significant Indigenous values are known to exist in this area. The Commission is currently consulting with relevant Indigenous communities about the amount of information to be placed on public record.

History Not Available

Condition and Integrity

The area is relatively pristine, however there has been localised over collecting of certain marine species and limited damage due to development. There is potential for pollution due to shipping accidents, coral reef mining and oil exploration etc, and also potential for damage due to inadequate control of tourism.

Location

About 34,870,000ha of sea bed, reefs, islands and seas, along the Queensland coast between the tip of Cape York and Fraser Island, comprising the area entered in the World Heritage List, the boundaries of which are described in the schedule to the Great Barrier Reef Marine Park Act 1975, being the area bounded by a line commencing at the point that, at low water, is the northernmost extremity of Cape York Peninsula, thence easterly along the geodesic to the intersection of Latitude 10deg 41'S, Longitude 145deg 00'E, thence southerly along that meridian to its intersection with Latitude 13deg 00'S, thence south-easterly along the geodesic to a point at Latitude 15deg 00'S Longitude 146deg 00'E, thence south-easterly along the geodesic to a point at Latitude 17deg 30'S Longitude 147deg 00'E, thence south-easterly along the geodesic to a point at Latitude 21deg 00'S Longitude 152deg 55'E, thence south-easterly along the geodesic to a point at Latitude 24deg 30'S Longitude 154deg 00'E, thence westerly along the parallel of Latitude 24deg 30'S to its intersection by the coastline at low water and thence generally northerly along that coastline at low water to the point of commencement.

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Place Details

Send Feedback

Conway Range - Mount Dryander Area, Proserpine Shute Harbour Rd, Proserpine, QLD, Australia

Photographs

List	Register of the National Estate (Non-statutory archive)
Class	Natural
Legal Status	Included place before RNE closed. Record for reference only, no statutory basis (21/10/1980)
Place ID	8909
Place File No	4/04/234/0001

Statement of Significance

The Conway Range/Mount Dryander area is a spectacular rugged range and coastal and is an outstanding scenic feature of the region. It is in one of the most popular coastal recreation areas in Queensland/the Whitsunday Islands. The area contains the largest occurrence of notophyll vine forest at low altitudes south of Cooktown (approximately 20,000ha.) The Conway Range/Mount Dryander area contains significant representations of several vegetation communities on the central Queensland coast, including closed forest, open forest (including small areas of old growth forests), low open forest, grassland and littoral communities. Several rare and threatened plant species are present in the area and several endemic species. There are three rare endemics species: BRACHYCHITON sp Mount Dryander (2RC), AUSTROMYRTUS PUBIFLORA (2RC) and SOLANUM SPORADOTRICHUM (2R). Nationally rare species present include GARDENIA JARDINEI (3RC) and MACROPTERANTHES fitzlanii (3R). There is also one vulneralbe endemic plant species NEISOSPERMA KILNERI (2V). Mount Dryander is the type locality of Chrysophyllum ANTILOGUM. A feature of major scientific interest is the vegetation of the crest and slopes of Mount Dryander itself. Approximately 900ha of the mountain is covered by a vine forest that, at canopy level, consists entirely of a single species of rough barked tree, RISTANTIA WATERHOUSEI (2R), a newly described and rare member of the myrtaceae family. Rare fauna species include the lizard Sphenomorphus AMPLUS which is considered to be a relic species and is found only in Eungella and Conway Ranges. The Proserpine rock wallaby (PETROGALE PERSEPHONE) is known only from three populations, Mount Dryander, Conway Range National Park and Gloucester Island, the last being known only from bones.

Official Values Not Available

Description

The Conway Range is the spine of a prominent Peninsula on the central Queensland coast between Mackay and Bowen. The range rises to more than 550m with Mount Dryander (20km north of Proserpine) over 800m in height. Tropical lowland rainforest is a feature of this rugged range with deep incised valleys dropping sharply to the Whitsunday passage. The range and the Whitsunday Islands (Whitsunday volcanics) were formed by episodes of volcanic action in the lower Permian and lower cretaceous and are characterised by a pronounced drowned coastline both on the islands and the mainland. The drowning was caused by Cainozoic block faulting. The scattered islands of the Cumberland Group represent the peak of the drowned landscape. Geologically the area is situated on the Airlie block which contains the acid to intermediate pyroclastics and flows of the Airlie volcanics and Edgecumbe beds, rhyolite/andesite and minor pyroclastics of the Proserpine volcanics, their waterlaid equivalent the Whitsunday volcanics, and intrusive rocks (quartz diorite and granite). The Airlie block is a horst formed as a result of cretaceous or tertiary earth movements. Most of the area is heavily vegetated with extensive rainforests and other forest types on the ranges and foothills. The area is notable for the presence of several rare and endemic plant species. A low and stunted sclerophyll forest occurs on rhyolite ridges, changing to rainforest wherever the parent rock is an andesite flow. Vegetation communities within the area include closed and open forest communities. Closed forest is composed of complex notophyll vine forest with ARAUCARIA CUNNINGHAMII, araucarian forest and mixed notophyll vine forest. Open forest communities are composed of open forest and low open forest. EUCALYPTUS ACMENOIDES forms open forest, predominant in places with vine forest understorey, E PLATYPHYLLA predominant with E TESSELLARIS, E INTERMEDIA and grassy understorey and various dominants including E ACMENOIDES, LOPHOSTEMON CONFERTUS, E TESSELLARIS form open forest with a vine forest understorey. Low open forest is TIMONIUS TIMON dominant with GLOCHIDION LOBOCARPUM. Grassland species have ARISTIDA RAMOSA, THEMEDA TRIANDRA, CHIONACHNE CYATHOPODA or XANTHORRHOEA JOHNSONII dominant in places. Mangrove swamp forms mid high to tall closed forest with small areas of saltpan.

History Not Available

Condition and Integrity

Large National Park, but subject to possible cyclone damage. Small areas of old growth open forest communities occur in inaccessible areas.

Location

About 40,000ha, Proserpine Shute Harbour Rd, 10km north east of Proserpine, in five separate areas:
1) commencing at Rocky Point, Repulse Bay, generally north-west and north-east along boundaries of State Forest 299 and National Park 227 to Funnel Bay, then via low water mark to the point of commencement;
2) that part of the Peninsula containing Grimston Point, north- east portion of 154 Dryander, to low water;
3) that part of the Peninsula Between Double and Woodwarks Bay north of portion 154 Dryander, to low water mark;
4) commencing at the north-east corner of portion 143 Dryander. South along that portion boundary and the boundary of Timber Reserve 216, then along the south and west boundaries of that reserve to the north-east corner of portion 290, then west along that portion boundary to the Dingo Beach road, then north along that road to AMG point: 8657-Proserpine-594604, then via straight lines joining grid points: 603616 and 608630 to 624637 on the boundary of Timber Reserve 216, then north and east via that boundary to AMG Point: 640662; then north-east via the ridge line to the coast at AMG point: 655694, then via low water to the commencement point;
5) an area, to low water, comprising the catchments of all creeks draining to the coast between AMG points: 650730 and 587776.

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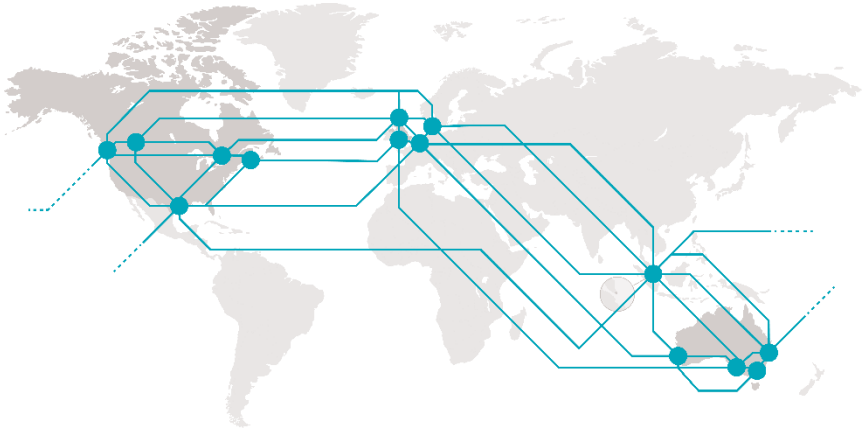

BMT is a leading design, engineering, science and management consultancy with a reputation for engineering excellence. We are driven by a belief that things can always be better, safer, faster and more efficient. BMT is an independent organisation held in trust for its employees.

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