

MANAGING ENVIRONMENTAL RISKS FROM MAINTENANCE DREDGING

SUMMARY

Port maintenance dredging and placement activities are highly regulated activities, with state and commonwealth approvals required for these activities.

All Port dredging operations are managed via a Dredge Management Plan (DMP) detailing the actions to be taken to mitigate any potential environmental risks during the maintenance dredging campaign. These DMPs align with the Port's approvals and Long-Term Maintenance Dredge Management Plan and are tailored to the type of dredge and specifics for the dredge campaign. The Port reviews and confirms the implementation of the controls outlined in the DMP by the dredging contractor during dredging and placement activities.

As part of the Long-Term Maintenance Dredging Management Plan, the Port has undertaken a risk assessment of maintenance dredging and placement activities. All DMPs address standard risks and controls regarding dredge vessel maintenance, waste management and incident and spill prevention. Beyond these, a summary of the key environmental risks and management actions implemented are outlined below.

TURBIDITY GENERATED DURING DREDGING AND MAINTENANCE MATERIAL PLACEMENT IN DMPA

The activity of moving dredge material, largely made up of unconsolidated silts, clays and fine sands, generates turbidity or sediment in the water. Depending on the tidal state, the plume when dredging largely stays within or directly adjacent to the dredging areas in the navigational channel and is within natural variability of sediment in the bay. The Port has previously investigated turbidity generation associated with dredging and observed that it generates a localised (~300m) and short lived (hours) sediment plume.

Key actions taken to minimise turbidity and any impacts from it include:

- Use of leading industry practice dredging equipment, with onboard control systems for dredging equipment and turbidity minimisation systems, such as green valve discharge systems on Trailer Suction Hopper Dredges that releases material from underneath the vessel to limit the formation of surface sediment plumes (called overflow).
- Voluntary restrictions on overflow releases in proximity to sensitive receptors to reduce localised sediment plumes.
- Maintenance dredging campaigns are planned to avoid key times of the year, such as avoiding wet season periods coral spawning (where possible).
- Scientifically established dredge material placement area that is located away from sensitive habitats, is in water deeper than 10m (to minimise re-suspension of the placed material), is large enough that material placement can be distributed across the area, and, based on hydrodynamic modelling outcomes, the material placed in the area largely remains in the DMPA.
- Extensive water quality and sensitive habitat monitoring before, during and after dredging activities and dredge material placement.
 - Marine water quality is monitored in near real time during dredging to inform adaptive dredge management – a structured, evidence-based approach to planning and conducting dredging activities that adjusts operations in response to monitoring results and changing conditions.
 - Sensitive habitat monitoring including annual seagrass surveys, monitoring of corals within Cleveland Bay and periodic monitoring of the benthic infauna recovery at the DMPA (showing recovery within 3 weeks of placement occurring).

MARINE FAUNA INTERACTIONS WITH THE DREDGE VESSEL AND DREDGING EQUIPMENT

With dredging equipment operating in the marine environment, there exists the potential to interact with marine fauna when operating the dredging equipment or movement of the dredging vessel.

Key actions taken to minimise marine fauna impacts include:

- Dredging vessels are normally slow moving and relatively shallow drafted vessels allowing most megafauna to swim away or dive below and avoid the dredge.
- During dredging, vessel transit and placement at the DMPA, the dredge maintains a look out for marine fauna from a vantage point with a clear view of the surrounding ocean and if animals are observed within a certain distance to the dredge, action is taken by the Dredge master to avoid the fauna.
- Most dredge equipment is fitted with relevant fauna diversion devices, including turtle diversion devices on drag heads designed to move turtles away from the path of the dredging equipment.
- Suction and dredging equipment are only activated once on the seafloor and shut off before lifting off the seafloor to minimise potential for interaction with fauna.
- All dredge equipment is maintained in good working order and operating efficiently to minimise underwater noise levels.
- Dredge material placement area is located away from the key fauna habitats and fauna observations, and avoidance strategies are made at the placement area before any dredge material is released.

SEA PLACEMENT OF MAINTENANCE DREDGE MATERIAL

As the DMPA was scientifically assessed when the location was determined, the Port is focused on ensuring that all material placed at the DMPA is suitable for at sea placement. Key actions associated with ensuring suitability of placed materials include:

- The Port periodically completes an evidence-based sediment assessment in line with Government guidelines to identify if the sediments are suitable for placement at the DMPA.
- The DMP for the specific dredging campaign clearly identifies the dredging areas that are suitable for placement at sea, based on the sediment assessment, and is mapped on the vessel's onboard GPS system.
- The dredge vessel has state of the art GPS technology that clearly identifies the boundaries of the dredging areas to ensure dredging only occurs in areas that are suitable for sea placement.

INVASIVE AND INTRODUCED MARINE PESTS

The use of marine vessels from other locations in Australia or internationally can increase the risk of transmission of invasive and introduced marine pest species. While the risk is lower with mobile dredge vessels such as the TSHD Brisbane, the Port implements a number of requirements to minimise the risk of introducing these species:

- All dredge vessels comply with State and Commonwealth Biosecurity requirements, including ballast water management, inspections, and declarations.
- A biosecurity risk assessment is undertaken prior to each dredging campaign specific the dredge vessels to be used and their previous locations. Where required, hull inspections to confirm no invasive species is completed prior to arrival.
- Dredge vessel maintenance including anti-fouling inspections and integrity checks are monitored to ensure they are completed as per requirements.
- The DMPA Benthic recovery monitoring program (2025) did not identify any marine pest species occurring in the DMPA sediment samples.

OVERALL

Maintenance dredging and at sea placement of material is carefully managed to comply with approvals and protect the marine environment in Cleveland Bay. The Port's adaptive management approach to dredging, involving the controls outlined above and dedicated monitoring to provide factual, real-time information, ensuring that maintenance dredging is undertaken in a manner that maintains safe and efficient port operations while protecting the environmental values of the area.