

Risk assessment for scheduling annual maintenance dredging at the Port of Bundaberg

7 November 2023

To ensure the safe passage of vessels through the Port of Bundaberg (PoB), Gladstone Ports Corporation (GPC) conducts annual maintenance dredging using the *Trailing Suction Hopper Dredger (TSHD Brisbane)*.

This risk assessment is to inform the scheduling process for the *TSHD Brisbane* and provides information to:

- determine if there are any PoB specific risks associated with the scheduling of maintenance dredging by the *TSHD Brisbane* with a focus on environmental windows impacting key environmental values;
- identify if any changes in current control measures are required; and
- demonstrate GPC's dredging activities are managed in general accordance with the principles of the Maintenance Dredging Strategy (MDS).

Note: PoB is not a Great Barrier Reef port and this assessment is being undertaken on a voluntary basis.

Under GPC's Environmental Management System (EMS), all environmental risks are assessed and recorded in GPC systems in accordance with GPC's Risk Management Policy and Standard.

The risk assessment in Table 1 is an extract from GPC's risk management system and has adopted Risk ratings as per: Great Barrier Reef Region Strategic Assessment: Strategic assessment report, Great Barrier Reef Marine Park Authority and to provide consistency with GPC's Port of Gladstone maintenance dredging activity. These ratings are provided in Appendix A. This process ensures that there is an annual review of the information used to inform the development of the *TSHD Brisbane's* state wide annual maintenance dredging schedule.

Overview

The risk assessment indicates that all risks associated with maintenance dredging at the PoB in 2024 are **Low** as a result of implementing the identified management controls.

All existing controls for the protection of marine megafauna, and for the mitigation of risks associated with weather events, have been in place for many years and their application and effectiveness is well understood. For other environmental aspects, namely seagrass, GPC has proposed additional long term monitoring, while reef communities are too distant to be impacted by maintenance dredging activities at PoB.

The PoB has a dredging exclusion in regards to loggerhead turtle nesting due to the nearby significant rookery beach of Mon Repos. In accordance with approvals, there is a mandated environmental window from October to February inclusive which restricts maintenance dredging during this period. Apart from this mandated environmental window, there are no other environmental windows that are required for maintenance dredging undertaken by the *TSHD Brisbane* at the PoB. The ecological and environmental timings relevant to the PoB that were considered in this assessment are included in Appendix B. All management controls identified through this process have been documented in GPC's PoB Environmental Management Plan (EMP) for Maintenance Dredging.

Table 1. Scheduling risk assessment for *TSHD Brisbane* maintenance dredging: Port of Bundaberg – 2023

Threat	Description and risk commentary	Inherent risk		Management controls	Residual risk	
		Likelihood and consequence	Risk		Likelihood and consequence	Risk
Seagrass and seagrass recruitment Potentially impacted due to elevated turbidity, reduction in benthic light and/or sedimentation as a result of dredge plumes or dredge material relocation (Includes High Ecological Value area for protection of Turtles)	<p>Seagrass communities occur in deep water adjacent to the PoB.</p> <p>The deep water seagrasses around the spoil ground have been monitored, on a five (5) yearly basis for the past 15 years, showing no impact from dredging and disposal activity.</p> <p>In 2020, seagrass was found at all surveyed sites within and outside the spoil ground. The seagrass found at these locations formed a large, sparse to moderate and low biomass meadow typical of deep water seagrass species found in North Queensland.</p> <p>The study found no evidence that spoil disposal activities are having measurable effects on benthic habitats (seagrass as well as infauna and particle size distribution were in fact sampled) surrounding the spoil ground.</p>	Unlikely/ Insignificant	Low	<p>No adverse impacts from maintenance dredging have been detected. Existing management controls are demonstrably effective. e.g.</p> <p>GPC Controls Management and Monitoring Plans and Procedures which include:</p> <ul style="list-style-type: none"> * Monitoring in alignment with impact assessment, * Adaptive management processes. * Long term monitoring of material relocation area seagrass communities * Long term Port wide monitoring of seagrass (proposed), base line has been conducted. <p>Contractor controls - detailed in <i>TSHD Brisbane</i> EMP</p> <ul style="list-style-type: none"> * Engineering controls on <i>THSD Brisbane</i> e.g. Green valves (anti-turbidity), below keel discharge; * Notification requirements, * Dredging and relocation locations and volumes as per the defined requirements of GPC's approvals. 	Unlikely / Insignificant	Low
Marine megafauna breeding potentially impacted as a result of dredge strike or entrainment	<p>Several marine turtle species have been recorded in the area. The Mon Repos Conservation Park is located approximately 4 km south of Burnett Heads. It is the most significant loggerhead turtle rookery in the southern hemisphere, with small</p>	Possible / Moderate	Medium	<p>Contractor controls - detailed in <i>TSHD Brisbane</i> EMP</p> <ul style="list-style-type: none"> * Ensuring turtle deflectors are fitted to drag heads, * Visual monitoring prior to relocation activities, * Opportunistic monitoring in vessel 	Possible / Minor	Low

Threat	Description and risk commentary	Inherent risk		Management controls	Residual risk	
		Likelihood and consequence	Risk		Likelihood and consequence	Risk
	<p>numbers of flatback and green turtles also nesting there.</p> <p>During the nesting season (October to February), marine turtles will occur in the coastal waters off Burnett Heads within the Port limits, and are known to use the dredged channel as inter-nesting habitat. It is possible that green turtles may occur in the vicinity of the port throughout the year, foraging on seagrass, macroalgae, mangrove propagules and other food sources</p> <p>Turtle strike data provided by PBPL indicates that four (4) marine turtles interactions during maintenance dredging in the PoB since 2011, the last two (2) during dredging in 2019 in the Sea Reach, namely one (1) adult Green and one (1) juvenile Loggerhead. Previous strikes occurred in 2014, and 2013 as single events.</p> <p>GPC Sea Dumping Approval SD2023-4053 has a dredging exclusion from October to February inclusive to aid in the protection of marine megafauna (namely turtles).</p> <p>Humpback whales make their annual migration between April and November.</p>			<p>hopper,</p> <p>Protocols on retrieved megafauna to allow for the Queensland Department of Environment and Science (DES) to retrieve and analyse</p> <ul style="list-style-type: none"> * Protocols for multiple strikes of marine megafauna, which may include halting dredging * Notification requirements for strikes and opportunistic finds of marine megafauna <p>GPC Controls –</p> <ul style="list-style-type: none"> * Dredging approval exclusion (October to February inclusive). * Two (2) additional controls implemented in 2018 line with the Recovery Plan for Marine Turtles in Australia 2017-2027 and gain a better understanding of turtle fatalities in the PoB. * Development of protocols for multiple marine megafauna fatalities to temporarily halt dredging until investigation is complete and corrective actions (where identified) have been applied. * Notification of opportunistic marine megafauna opportunistic finds, where the remains (carcass or parts thereof) will be retrieved and stored appropriately for analyses. <p>These controls have been developed in accordance with specialist advice received from the DES.</p>		
Extreme Weather Potential impacts to	Severe weather events have the potential to significantly increase the	Rare/ Insignificant	Low	GPC have been monitoring water quality for prolonged period of time gathering long	Rare / Insignificant	Low

Threat	Description and risk commentary	Inherent risk		Management controls	Residual risk	
		Likelihood and consequence	Risk		Likelihood and consequence	Risk
environmental resources and water quality may occur as a result of dredging immediately following an extreme weather event.	<p>volume of accumulated material in the shipping channel and berth pocket, which can present additional operational and environmental hazards.</p> <p>Severe weather in Bundaberg usually occurs between December and March and therefore relocating this accumulated material immediately following an event, post dredging restriction window would have negligible to no impact on spawning, breeding or recruitment.</p>			<p>term data sets. Analysis of this data highlighted that WQ is affected by environmental factors such as wind, rain and tides as well as extreme weather events such as floods.</p> <p>GPC Controls Management and Monitoring Plans and Procedures which include: * Emergency management section gives guidance for extreme events that allows for risk assessment jointly between TSHD and GPC to determine what additional controls to employ. The actions could also include halting dredging, and are dependent on the risk to the environment and the vessel.</p>		

Appendix A

Risk ratings as per: *Great Barrier Reef Region Strategic Assessment: Strategic assessment report, GBRMPA, Gladstone (GBRMPA, 2014)*

Consequence description and definition

Consequence	Extent of the impact based on current management	
	Broad scale	Local scale
Catastrophic	Impact is clearly affecting, or would clearly affect, the nature of the value over a wide area. Recovery periods greater than 20 years likely.	
Major	Impact is, or would be, significant at a wider level. Recovery periods of 10 to 20 years likely.	Impact is, or would be, extremely serious and possibly irreversible to the condition of a value. Condition of the affected value possibly irretrievably compromised.
Moderate	Impact is, or would be, present at a wider level. Recovery periods of 5 to 10 years likely.	Impact is, or would be, extremely serious to the condition of a value and possibly irreversible over a small area. Recovery periods of 10 to 20 years likely.
Minor	Impact is, or would be, not discernible at a wider level. Impact would not impair the overall condition of the value, including sensitive populations or communities, over a wider level.	Impact is, or would be, significant to the condition of value at a local level. Recovery periods of 5 to 10 years likely.
Insignificant	No impact or if impact is, or would be, present then only to the extent that it has no discernible effect on the overall condition of the value.	No impact or if impact is, or would be, present then only to the extent that it has no discernible effect on the overall condition of the value.

Note: Recovery periods relate to major capital dredging programs and not maintenance dredging.

Likelihood description and frequency

Likelihood	Expected frequency of a given threat
Almost certain	Expected to occur more or less continuously throughout a year
Likely	Not expected to be continuous but expected to occur one or more times in a year
Possible	Not expected to occur annually but expected to occur within a 10-year period
Unlikely	Not expected to occur in a 10-year period but expected to occur in a 100-year period
Rare	Not expected to occur within the next 100 years

Hazard Risk Grades

Likelihood	Consequence				
	Insignificant	Minor	Moderate	Major	Catastrophic
Almost Certain	Low	Medium	High	Very high	Very high
Likely	Low	Medium	High	High	Very high
Possible	Low	Low	Medium	High	Very high
Unlikely	Low	Low	Low	Medium	High
Rare	Low	Low	Low	Medium	High

Appendix B

Port of Bundaberg Ecological / Environmental Timings

Subject Matter	Event and Time period/s
Seagrass	Peak Growing Season: July to December.
Green turtles	Foraging: all year round in PoB (anecdotal evidence), therefore not included in the graph
Loggerhead turtles	November to February inclusive
Flatback turtles	November to February inclusive
Whales	Migration through GBR region: June to August.
Wet / Cyclone Season	Generally December to March.

