PORT of BRISBANE

Here for the future

Environmental Management Plan

TSHD Brisbane

Port of Brisbane Pty Ltd

November 2016

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Appendices

1 Introduction

The Port of Brisbane Pty Ltd (PBPL) is responsible for maintaining the navigable depths in channels and berths within the Port of Brisbane port area. Shipping channels and berths become silted as a result of the natural ingress of sediments from the Brisbane River catchment and Moreton Bay, and require regular dredging to ensure their declared depths are maintained at all times. PBPL also undertakes capital dredging to develop new channels and berths within the port area.

PBPL maintains an Integrated Management System that includes an ISO 14001 accredited Environmental Management System (EMS), to systematically manage the company's operations and activities. A specific Environmental Management Plan (EMP) for each dredger within the Company's fleet has been developed to detail the field based practices required for its operation to meet the objectives of the EMS. The development of these EMPs consider the Environmental Aspects and Impacts (as defined under the EMS), to ensure that all impacting processes are addressed through clearly defined performance indicators.

This EMPs provides the field based practices required for the activities of the *TSHD Brisbane* during operations within the Port of Brisbane port area.

2 Description of Dredging Plant

The *TSHD Brisbane* is a twin-arm Trailer Suction Hopper Dredge (TSHD) commissioned by the Port of Brisbane Corporation in November 2000. The vessel is 84m long with a displacement tonnage of approximately 3,500t. During operations, it has a crew of 13, operating in two fortnightly shifts for 24 hours per day.

Dredging activities are determined by comparing required depths or design depths of a site with pre-dredging hydrographic survey. Specialised vessels independent of the dredge undertake all survey work.

The hydrographic survey information is digitally uploaded to the *TSHD Brisbane's* on-board computer system allowing the Dredging Manager to display the depth information for a site with dredge target areas clearly highlighted.

The vessel can operate dredging operations in either manual mode or automatic mode, where onboard computers control vessel dredge systems. The onboard computers also assist the positioning of the vessel by displaying a differentially corrected GPS position of the vessel track against intended dredge areas. A Dredge Pipe Operator and the Dredging Manager are present on the bridge during all operations regardless of dredging mode, and all vessel movements are directed by the Dredging Manager.

The vessel extracts material by lowering two suction heads (one on either side of the vessel) to the seafloor whilst steaming slowly (1-3 knots) ahead. Large pumps onboard then draw water through the heads entraining sediments from the seafloor in a similar method to a household vacuum cleaner, depositing a mixture of water and sediments into the vessel's central hopper.

The dredge heads are not fitted with any mechanical agitation equipment and rely solely on the suction pressure provided by the onboard pumps. Whilst the vessel has the ability to pump high-pressure water to the dredge head to agitate sediments, this is generally not required unless operating in compacted sands.

The concentration of sediments delivered to the hopper is dependant on a number of factors, such as sediment type and dredging conditions, but is generally in the order of 10-30% solids. That is, 70-90% of the material pumped to the hopper is water and must be discharged to achieve effective loading.

The *TSHD Brisbane* has been constructed with a central column weir to control water discharge. This weir consists of six rings stacked vertically. The position of the rings and hence the depth at which water in the hopper overflows to discharge, is controlled automatically by the draft of the vessel. This controls the residence time[1] of the water in the hopper, providing maximum time for suspended material to settle and reducing the concentration of suspended sediment at discharge.

Discharge from the weir is through the bottom of the vessels hull below the keel on the centreline. As such, discharge of waters during dredging is 4-6m below the water's surface, depositing sediments near the bed and reducing settlement time.

The effective capacity of the hopper is dependant upon the type of material being dredged. While the volume of the hopper is 2,900m^3, effective capacities are limited by maximum draft and range from 2,100 m^3 for sands to 2,900 m^3 for fine silts.

This variation in effective hopper capacity is due to both the maximum load carrying capacity of the vessel and the differences in settling time for the material dredged. Material with a high silt content (<0.075mm) takes a relatively long time to settle from suspension in the water. As the residence time[1] in the hopper is reduced, less suspended material settles in the hopper per cubic metre dredged and makes the works less economically viable.

Once the hopper has reached optimum capacity for the type of material being dredged, the vessel steams to the relocation site. The material may be bottom dumped (as is generally undertaken for placement at sea) by opening large valves in the floor of the hopper to allow the material to fall out though the hull.

Alternately, the material can be pumped out via a bow discharge pipe (generally used for on-shore placement). A floating pipeline is connected to the bow coupling and material within the hopper agitated with high-pressure water jets to achieve the correct consistency for pumping. Material is then delivered via the pipeline to detention basins on-shore.

[1] Hopper residence time is the time taken for water pumped to the hopper to flow out the discharge weir. As the hopper fills with sediment the residence time decreases and hence the potential for settling of suspended sediment decreases. A compensation point is reached as a load curve (a plot of sediment load vs total dredging time) asymptotes. That is, the amount of material retained in the hopper decreases per unit of increasing dredging time.

3 Location of Operations

This EMP covers the operation of the *TSHD Brisbane* for works within the Port of Brisbane port area. The term port area, of a port entity other than a port authority, is defined under Section 267AA of the *Transport Infrastructure Act 1994*.

Port area, of a port entity other than a port authority, means each of the following—

(*i) the area of Brisbane core port land;*
(ii) the area of its port facilities;
(iii) the area within its port limits;
(iv)another area prescribed by regulation.

Section 267A of this legislation provides further details on the meaning of ***port facilities*** in the above definition.

From an operational dredging perspective the Port of Brisbane port facilities within the port area includes the approved channels, berth pockets and swing basins within Port of Brisbane Port Limits, that are owned, controlled, constructed, managed, provided or maintained by the PBPL. Refer to Appendix 1 for a plan showing the Brisbane Port limits, and the location of the approved channels under the control of the PBPL. A detailed description of the boundary of the Brisbane Port limits is provided in Section 3.1.

Material dredged from these works is returned to the approved Port of Brisbane reclamation area for use in port development works (primarily as reclamation material) or placed at the Mud Island Dredged Material Placement Area (MIDMPA).

Dredging works to be undertaken by the *TSHD Brisbane* are restricted to only those areas for which valid permits and approvals apply.

The *TSHD Brisbane* and associated dredge plant are required to maintain contact with the Brisbane Harbour Master and vessels operating within the navigable areas via VHF radio.

From time to time the *TSHD Brisbane* may operate outside these areas. In these instances, works would be undertaken under a licence, and a job specific EMP would be prepared.

3.1 Port Limits

The Brisbane Port Limits are contained largely within the Moreton Bay Marine Park, and are defined as:

The Port of Brisbane Port Limits are defined in Schedule 1 of the Transport Infrastructure (Ports) Regulation 2005, and are defined as:

1. The Port of Brisbane consists of the area covered by waters, including tidal waters, of the sea or waters connecting with the sea within the following boundary—
   - from the high-water mark at the northern extremity of Point Cartwright at approximately latitude 26°40.765' south, longitude 153° 08.341' east
   - then generally north-easterly to latitude 26°38.327' south, longitude 153° 15.830' east

- then south to latitude 26° 49.000' south, longitude 153° 15.830' east
- then generally south-westerly to latitude 26° 50.383' south, longitude 153° 11.261' east
- then generally south-easterly to latitude 27° 07.221' south, longitude 153° 21.670' east
- then generally southerly to latitude 27° 14.557'south, longitude 153° 21.160' east
- then generally south-easterly to latitude 27° 15.547' south, longitude 153° 22.642' east
- then generally south-south-westerly to latitude 27° 20.486' south, longitude 153° 20.816' east
- then generally west-south-westerly to the mangroves on the eastern side of Fisherman Islands at latitude 27° 22.826' south, longitude 153° 10.977' east
- then generally south-westerly passing through mangrove islands to the east of Fisherman Islands to latitude 27° 23.980' south, longitude 153° 10.171' east
- then generally easterly to latitude 27° 23.914' south, longitude 153° 10.568' east
- then generally south-easterly to latitude 27° 25.012' south, longitude 153° 11.442' east
- then generally southerly to latitude 27° 25.172' south, longitude 153° 11.488' east
- then generally west-south-westerly to the high-water mark at approximately latitude 27° 25.543' south, longitude 153° 10.069' east on the mainland near Lytton
- then generally northerly and then westerly along the high-water mark of the southern bank of the Brisbane River to the north-western extremity of Bulimba Point at approximately latitude 27° 26.615' south, longitude 153° 03.064' east
- then generally north-westerly across the Brisbane River to the high-water mark of the Brisbane River at the eastern extremity of Newstead Park at
- approximately latitude 27° 26.539' south, longitude 153° 02.855' east
- then generally easterly along the high-water mark of the northern bank of the Brisbane River to approximately latitude 27° 23.675' south, longitude 153° 08.848' east on the south bank of Boggy Creek
- then generally north-westerly across Boggy Creek to the high-water mark on the north bank of Boggy Creek at approximately latitude 27° 23.497' south,
- longitude 153° 08.571' east
- then generally north-easterly along the high-water mark to approximately latitude 27° 22.681' south, longitude 153° 09.611' east at the eastern extremity
- of Luggage Point
- then generally north-easterly to latitude 27° 22.484' south, longitude 153° 09.765' east
- then generally northerly to latitude 27° 11.659' south, longitude 153° 10.808' east
- then generally east-north-easterly to latitude 27° 09.690' south, longitude 153° 18.706' east
- then generally north-north-westerly to latitude 26° 51.833' south, longitude 153° 08.631' east
- then generally northerly to latitude 26° 49.485' south, longitude 153° 08.227' east
- then generally north-easterly to latitude 26° 48.232' south, longitude 153° 09.849' east off Caloundra Head
- then generally northerly to latitude 26° 44.957' south, longitude 153° 09.844' east

- then generally westerly to the high-water mark on the mainland at approximately latitude 26° 44.816' south, longitude 153° 08.173' east
- then generally northerly along the high-water mark on the mainland to the northern extremity of Point Cartwright at approximately latitude 26° 40.765' south, longitude 153° 08.341' east; and
- excludes the area covered by waters of navigable rivers and creeks flowing directly or indirectly into waters within the boundary.

2. However, at the mouth of a waterway the bank of which at the high-water mark forms part of that boundary, the boundary runs in a direct line between the heads at the mouth.

Refer to Appendix 1 for a plan showing the boundary of the Brisbane Port Limits.

4 Environmental Values within Port Area

The port area covered by this EMP includes a significant area of the lower Brisbane River, approximately downstream from the mouth of Breakfast Creek, and parts of central and northern Moreton Bay.

The downstream reaches of the Brisbane River have been highly modified by urban, port and industrial development. This historic and ongoing development, combined with impacts generated from throughout the Brisbane River catchment (e.g. sediment laden run-off, construction of water storages etc), have combined to substantially alter the original instream and adjacent terrestrial values of this area. The highly modified and operational nature of the lower reaches of the River is broadly recognised and has resulted in this area being afforded a lower level of statutory environmental protection (e.g. the River is not within the Marine Park or within a declared Fish Habitat Area) than those habitats within Moreton Bay. While the environmental values of the River significantly lower than those of Moreton Bay, the River habitats do support aquatic flora and fauna communities, recreational and commercial fisheries, and are directly connected to Moreton Bay.

In contrast, Moreton Bay is an area of high ecological value, recognised at local, regional and national levels for its environmental significance. The habitats found in the marine park include open ocean, sandy beaches, coral reefs, rocky shores, seagrass and sponge beds, mangrove forests, mudflats and sandbanks. These habitats support a diversity of marine fauna and flora including; more than 1000 species of fish, migratory shorebirds, marine turtles, whales, sharks and dugong. The Bay also supports a wide range of recreational and commercial activities and some areas have significant aboriginal and European cultural heritage values. In recognition of these values a substantial portion of Moreton Bay was declared as a marine park in 1993. The marine park was extended in 1997 and is the subject of regular management reviews.

The Moreton Bay Marine Park is a ‘multiple use’ marine protected area allowing for a range of recreational and commercial activities while also setting aside some areas for higher protection. The Queensland Parks and Wildlife Service (QPWS) is primarily responsible for the care and management of the marine park.

QPWS, with public input, has developed a zoning plan over the marine park. The marine park has four zones. Each zone has objectives and specific entry and use provisions that are detailed in the zoning plan. The general use zone is the least restrictive of the four zones and allows for range of activities, including shipping operations. Management restrictions progressively increase through the habitat protection and conservation park zones, with the marine national park zone providing the most stringent level of management. While most of the area within Port of Brisbane Port Limits is within the general use zone, the Port Limits do contain some areas zoned as habitat protection and marine national park. It is important to note that the shipping channels that traverse the Bay are entirely contained within the General Use Zone.

5 Description of Activity

Typically, the dredging work that is undertaken with the *TSHD Brisbane* is for maintenance purposes to re-establish designated depths within defined navigation channels. The Brisbane River channels predominantly contain silts transported downstream from the upper reaches of the catchment, while material dredged from the Moreton Bay channels is generally sand resuspended from adjacent areas. In some instances, the *TSHD Brisbane* will undertake development dredging in locations where it has been identified that shipping efficiency or safety can be improved by deepening or widening channels or berth pockets.

Works are undertaken 24 hours per day, seven days per week. It is expected that the *TSHD Brisbane* will undertake the majority of its 2016-17 Brisbane dredging campaign between early November 2016 and mid February 2017, before undergoing an in-water refit. This work will include both capital and maintenance dredging.

Section 2 outlines the general dredging operations of the *TSHD Brisbane*.

6 Environmental Legislation

PBPL has a statutory obligation under the *Transport Infrastructure Act 1994* to maintain channels, berths and navigational areas within the Port of Brisbane. Whilst the *Transport Infrastructure Act 1994* provides the primary regulatory framework for port dredging operations, supporting legislation such as the *Environmental Protection Act 1994*, *Coastal Protection and Management Act 1995*, *Sustainable Planning Act 2009 etc,* provide supporting regulatory processes to ensure dredging works are undertaken in an appropriate manner. This legislation generally has a strong environmental focus. A capital or maintenance dredging project within the Port Area may require some, or all, of the following approvals, depending on its location and the location of spoil disposal:

- Allocation of Quarry Material;
- Tidal Works approval;
- ERA 16 approval for extractive and screening activities;
- Marine Park permit;
- Marine Plant disturbance approval.

The legislative basis for the above approvals is briefly discussed below. It should be noted that this legislation can be complex; therefore any specific queries regarding its interpretation should be discussed with the PBPL Environment Team.

Environmental Protection Act 1994

The objective of the *Environmental Protection Act 1994* is to protect Queensland's environment while allowing for development that improves the total quality of life, both now and in the future, in a way that maintains the ecological processes on which life depends consistent with "ecologically sustainable development".

The protection of Queensland's environment is to be achieved by an integrated management program that is consistent with ecologically sustainable development.

The program is cyclical and involves the following phases –

- Establishing the state of the environment and defining environmental objectives;
- Developing effective environmental strategies;
- Implementing environmental strategies and integrating them into efficient resource management; and
- Ensuring accountability of environmental strategies.

Until a recent amendment to the EP Act, dredging works undertaken within Port Limits by a Port Authority were exempt from requiring an Environmentally Relevant Activity (ERA) approval.

The 2008 amendments to the Act and subordinate legislation now specify that dredging (extractive and screening activities) requires an ERA 16 as follows:

"*Extractive and screening activities (the relevant activity) consists of any of the following-*

a) *dredging of a total of 1000t or more of material from the bed of naturally occurring surface waters, in a year;*
b) *extracting, other than by dredging, material from a wild river area;*
c) *extracting, other than by dredging, a total of 5000t or more of material, in a year, from an area other than a wild river area;*
d) *screening 5000t or more of material in a year.*

PBPL also has a general responsibility under the Act to ensure that no environmental harm (serious or material) or environmental nuisance occurs as a result of its activities. This EMP has been prepared to encompass the components of the works to be undertaken by PBPL, and will be enacted by the company's staff as the working document.

Coastal Protection and Management Act 1995

The objective of the *Coastal Protection and Management Act 1995* (CPM Act) is "*to -*

(a) provide for the protection, conservation, rehabilitation and management of the coast, including its resources and biological diversity; and
(b) have regard to the goal, core objectives and guiding principles of the National Strategy for Ecologically Sustainable Development in the use of the coastal zone; and
(c) provide, in conjunction with other legislation, a coordinated and integrated management and administrative framework for the ecologically sustainable development of the coastal zone; and
(d) encourage the enhancement of knowledge of coastal resources and the effect of human activities on the coastal zone."

The CPM Act requires that a person obtains:

- An 'allocation notice' in order to remove quarry material from land under tidal water; and
- A tidal works approval for work in, on or above land under tidal water, or land that will or may be under tidal water because of development on or near the land. A tidal works approval essentially approves the engineering design and location of structures (e.g. channels, swing basins, wharves etc). Prior to the CPM Act, tidal works approvals were referred to as approvals under Section 86 of the Harbours Act 1955.

Tidal works approvals are issued into perpetuity, whereas an allocation notice is issued for a period of time and for a specific volume of material.

The 'allocation notice' replaces the requirements of the *Marine Land Dredging By-law (1987*), however, is not required unless the quarry material is being removed from land under tidal waters and is sold, placed on land above the high water mark, or is used as fill for reclamation.

As an alternative to an 'allocation notice', Section 89 of the CPM Act, provides that a Dredge Management Plan (DMP) may be:

*"(a) prepared by a person proposing to remove quarry material below high water mark or place spoil derived from the removal (the **"proposed activity**"); and*

(b) used to manage the removal or the placement."

PBPL does not an approved DMP under the provisions of the Act, preferring to hold appropriate allocation notices when these are required.

Fisheries Act 1994

The main purpose of the *Fisheries Act 1994* is to provide for the use, conservation and enhancement of the community's fisheries resources and fish habitats in a way that seeks to-

(a) apply and balance the principles of ecologically sustainable development; and

(b) promote ecologically sustainable development.

The principal potential for this Act to influence the proposed works is by the declaration of a declared Fish Habitat Area or by disturbance/removal of marine plants, which are protected under the Act.

Proposed works would have to be assessed on a case by case basis to determine whether the *Fisheries Act* 1994 applies however, in most situations the dredge areas would not be within or immediately adjacent to a declared Fish Habitat Area or contain marine plants.

Marine Parks Act 2004 - Marine Parks Moreton Bay Zoning Plan 2008

The marine park management aims to ensure that Moreton Bay remains a diverse, resilient and productive ecological system that can be enjoyed and accessed in a sustainable way. The *Moreton Bay Zoning Plan 2008* is the primary tool used to manage the Moreton Bay Marine Park. The Plan partitions the marine park into four zones to manage different activities, separate potentially conflicting uses and maintain the parks unique biodiversity.

Proposed works are assessed on a case by case basis to determine whether an approval or notification under the *Marine Parks Act 2004* is required. If required, a permit or notification approval must be granted prior to the commencement of dredging.

6.1 Approvals Relevant to this EMP

Location	Tidal Works	Allocation of Quarry Material	ERA16 / Environmental Authority	Marine Park	Marine Plants
Maintenance Dredging of Navigational Channels within Port of Brisbane Port Limits – Hamilton Reach to NW Fairway	CSTW00145003 CSTW00094202 CSTW00188603 BNE6711 BNE6352 (57) BNE 6352 (35) CSTW00188703 STH491 (16) STH491 (22) SPCC00294810	ENAQ00867710	EPPR00604113	**Dredging** Annual Notification under Marine Park Zoning Plan.	Not Required
Capital Dredging of Spitfire Channel Realignment	QS2012/CVL1201	ENAQ00394912	EPPR00604313	QS2006b/CVL1201	2005DB0216
Mud Island Dredged Material Disposal Area (disposal of maintenance dredge material to MIDMPA)	D.000.16 (Dec 10 1987)	Not Required	Not Required	MPW2013/MBMP0036	Not Required

Copies of all current approvals will be onboard the vessel at all times.

7 Roles and Responsibilities

The following table provides an outline of the roles and responsibilities of key employees associated with the *TSHD Brisbane*. This also provides an outline of the Chain of Command and links between parties involved in the project.

Table 6.1: Roles and Responsibilities of key employees associated with the *THSD Brisbane*.

Position	Contact Numbers	Responsibility	Reporting to	Contact Numbers
Onboard THSD Brisbane				
Vessel Master (Manager Dredging *TSHD Brisbane*)	Vessel Master 0417 003 264	Responsible for all aspects of vessel shipboard management	Manager Dredging Operations	Peter Rumball 3258 4613 0419 659 272
Chief Engineer (Manager Engineering TSHD Brisbane)	Chief Engineer 0407 691 602	Responsible for operation and maintenance of onboard machinery	Vessel Master	Chief Engineer 0407 691 602
On-Shore				
Marine Operations Manager	Peter Rumball 3258 4613 0419 659 272	Management of day-to-day operations and scheduling of dredging activity.	General Manager Marine	Peter Nella 3258 4761 0419 742 485
Environment Manager	Craig Wilson 3258 4848 0467 768 899	Responsible for undertaking monitoring of EMP implementation	General Manager Infrastructure and Environment	Robert Nave 3258 4763 0417 616 775
General Manager Marine	Peter Nella 3258 4761 0419 742 485	Responsible for overall management of the Company's dredging activities	Chief Executive Officer	Roy Cummins 3258 4682

Should any of the above staff be unavailable on the listed telephone numbers, the PBPL reception (ph. 3258 4888) should be contacted. Reception staff will provide alternative contacts to assist with the enquiry.

8 Environmental Management Plan

The purpose of the Environmental Management Plan (EMP) is to:

- Identify the potential hazards associated with undertaking the dredging and material relocation works;
- Identify the appropriate mitigation measures for each potential environmental hazard; and
- Indicate the corrective actions to be undertaken if an undesirable impact or unforseen level of impact occurs.

Typically prior to the commencement of dredging works the contamination status of the sediment to be dredged would be assessed. The contamination status is compared to the *National Assessment Guidelines for Dredging (2009)* and other relevant guidelines.

Within several of the following Management Plans various performance criteria are listed in relation to dredging operations. These performance criteria (monitoring results) are monitored by PBPL (or consultants acting on behalf of PBPL) to ensure performance criteria are met. Details of this monitoring are held by the Company, and are available upon request by the relevant agency.

Each of the following Management Plans follows the structure outlined in Table 7.1.

Table 7.1: Management Plan Structure and Components

Item	Content
Element	Aspect that requires management.
Objective	What is intended to be achieved.
Actions	Tasks that will be undertaken to ensure Objective is met.
Performance Indicators	Qualitative or quantitative measurement to gauge objective.
Monitoring	Details of measurement of performance indicators.
Reporting	Nature, timing and responsibility for reporting results.
Corrective Action	Action to be taken if monitoring indicates objective is not being met.
Term	Active term of management plan.
Responsibility	Delegation/nomination of responsibilities for overseeing management plan operation.

The following elements have been identified as issues requiring specific management to avoid unacceptable environmental impacts, and management plans have been developed accordingly.

Waste - The general categories of waste have been defined as follows:

- General and recycling waste – including general waste (refuse generated from crew) co-mingled recycled waste (paper, plastics, metals and glass) and recycled paper waste (paper and cardboard);
- Sewage Waste - including both black and grey waters; and
- Hazardous waste - oily water, oil wastes and other hazardous or regulated wastes such as greases, paints and chemicals.

Noise - The generation of noise during vessel operation and potential impacts on sensitive receptors forms the basis of this management plan. Issues of workplace noise are controlled and managed under existing occupational health and safety protocols within vessels safety management system.

Turbidity – Whilst this management plan aims to limit the generation of plumes as much as practicable, the principal management response will be to ensure that dredging and material placement operations are only undertaken within approved areas, thus limiting impacts to areas that are outside the designated dredging areas.

Protected Marine Fauna – This management plan addresses the potential for the *TSHD Brisbane* to directly impact on protected marine fauna, especially marine turtles, during dredging (capture in dredge head), transit (collision) or material relocation operations. Overarching issues of secondary impacts such as habitat disturbance are beyond the scope of this document and will be addressed as part of the development approval process requiring dredging works.

Cultural Heritage – This management plan is generally in the scope of maintaining a watch on dredged material for unanticipated items of cultural significance.

Ballast Water – The *TSHD Brisbane* has relatively small ballast water tanks which are only discharged in special circumstances (e.g. light draft required for shallow water (<3m) work). However, to avoid the risk of translocation of exotic organisms between areas of operation, a management plan has been adopted.

Queensland currently has no specific ballast water management requirements for ballast water taken up within Australia's territorial sea and domestic ports. While there are no current requirements, an earlier guideline titled, Australian Coastal Voyage Ballast Water Management Guidelines, was produced and provided recommendations in relation to domestic ballast water management. The *TSHD Brisbane* ballast water management plan is based on those earlier guidelines with the highest level of treatment being adopted as standard to completely minimise translocation risks. To further minimise the risk of translocation of exotic organisms, whenever possible fresh water is used to fill the ballast tanks.

Vessel Washdown – This management plan is applicable to areas where wash waters may flow directly overboard, such as the deck and dredge head. The

washdown of vessels are only undertaken at an approved dredge site, thereby limiting the impact to areas outside of the designated area.

Hopper washing – The *TSHD Brisbane* hopper shall be washed to minimise the risk of translocation of marine organisms prior to leaving the Port of Brisbane for other ports. Hopper washing activities shall only be conducted at the Mud Island Dredge Material Placement Area and contained within the boundaries of this designated area by giving consideration to weather and current conditions. To minimise the discharge of materials from the hopper, washing will only be conducted subsequent to pump out at the approved Port of Brisbane reclamation paddocks.

Bunkering of Fuel – Refuelling the *TSHD Brisbane* occurs by vessel-to-shore connection. There is the potential for fuel spill/leaks to enter the waterways however, this risk is controlled by operating procedures and use of licensed contractors to perform the fuel transfer.

8.1 Waste Management

8.1.1 General and recycling waste

The *TSHD Brisbane* is fitted with one 3m^3 general waste bin, a 1.5m^3 paper waste bin and 4 x 240L co-mingled recycling bins for the collection of on-board wastes. These are fitted with secured lids to prevent material being blown overboard during either storage or handling. An approved contractor collects the bins fortnightly when the vessel is alongside port reception facilities during reprovisioning/crew-change operations.

Further details are contained within the Waste Management Plan (section A20 of the TSHD Brisbane Operational and Administration Procedures Manual).

Element	**Waste Management – General and recycling waste**
Objective/Target	To ensure that general and recycling waste generated on-board the *TSHD Brisbane* is collected, retained and transferred to an appropriate facility without unintentional material loss.
Actions	During at-sea operations: • Supply of appropriate collection bins in areas such as galley, crew quarters and mess. • Transfer of bins as required to large bins on-deck. • All on-deck bins secured in position to prevent movement whilst at sea. • Material placed in bin to be compacted to reduce space requirements. • Wastes shall be appropriately separated in the recycling bins available onboard. • Bin lids to be chained down to prevent wind blown material loss at all times. • All collection points to be emptied to on-deck bin on fortnightly basis. • Visual checks to ensure that on-deck bins have sufficient capacity to retain general waste until next scheduled on-shore transfer. During transfer: • Licensed collector to be used to collect general and recycling waste bins for transfer to an approved facility. • Bin lids to be chained in position during transfer to prevent material loss.
Performance In	No loss of general or recycling waste over-board during collection or transfer.
Monitoring	Visual assessments of collection points. Visual inspections of on-deck bins.
Reporting	Reporting of material loss over-board to Vessel Master.
Corrective Action	If practicable, retrieve material that was lost. Review procedure causing material loss and rectify immediately.
Term	During all operations.
Responsibility	Vessel Master.

8.1.2 Sewage Treatment

The *TSHD Brisbane* is fitted with a modular sewage treatment system, which treats all onboard blackwater and greywater. Although this system is IMO approved and designed to meet the requirements of the Queensland *Transport Operations (Marine Pollution) Regulation (2008)* for Grade A treated sewage, current monitoring indicates that the system is not treating the effluent to the standard required to enable its discharge as 'treated sewerage'. The system is designed to either discharge treated effluent automatically, or divert the effluent to a holding tank for later discharge. Until such time as the effectiveness of the sewerage treatment system can be improved and is proven to meet the required treatment standards, all effluent produced by the system is to be considered as 'untreated', diverted to the holding tank and only discharged in a location that is designated for untreated sewerage discharge.

Further sewerage treatment details are contained within the following documentation:

- Waste Management Plan (section A20 of the TSHD Brisbane Operational and Administration Procedures Manual) and AMSA waste logbook;
- Sewage Log Book (Includes effluent discharge locations, effluent discharge log, in-house sludge assessments and discharge log and independent effluent assessment); and
- Aquamar Bio-Unit type MSP I Sewage Treatment Plant - Complete Manual.

Element	Waste Management – Sewage Treatment
Objective/Target	To ensure sewage generated on-board is treated and discharged in appropriate locations.
Actions	During at-sea operations: • All sewage effluent (including greywaters and blackwater) generated onboard shall be directed to the onboard treatment system. • Treated effluent shall be diverted to onboard holding tanks • Effluent from the treatment system and holding tank is to be discharged as untreated sewage in appropriate locations to ensure compliance with relevant legislation (see Appendix 2 - Untreated sewage discharge, which includes a plan of discharge areas within Moreton Bay) or pumped out by a licenced operator. • Sludge tank to be pumped out as required by Chief Engineer after testing (Imhoff sampler). • Pump-out of sludge tank to be managed as for untreated sewage discharges and, by way of appropriately licensed contractors where required. Service records: • The sewage treatment system is to be managed and maintained as described in the sewage treatment manual (sections 3 and 4), operational procedures manual, sewage log book and MP2.

Element	Waste Management – Sewage Treatment
	• Details of the independent testing entity (name, address) and the date and results of the annual assessment of the treatment system are described in the sewage log book.
Performance Indicators	No sewage discharge within an area that prohibits the discharge of untreated sewerage. Ongoing improvement in the quality of effluent discharge from the sewerage treatment system.
Monitoring	Vessel Master to monitor vessel location during sewerage discharge events to ensure vessel is not within an area that the discharge of untreated sewage is prohibited. Annual testing and analysis of sewage discharge quality by accredited laboratory.
Reporting	Reporting of sewerage discharge location in Sewage Log Book. Reporting of monitoring results against legislative requirements to the PBPL's Environment Team.
Corrective Action	Review procedure resulting in sewerage discharge in prohibited location and rectify immediately. Review sewage storage system inputs and operation. Modify procedures, to improve discharge quality
Term	During all operations.
Responsibility	Management and operation of on-board system is by the Vessel's Chief Engineer. Ensuring sewerage discharge is not within a prohibited location is by the Vessel's Master. Sampling results review and corrective action is by Environment Team in conjunction with Chief Engineer.

8.1.3 Hazardous and Regulated Waste

Hazardous waste includes waste oils, oily water, oil sludges, chemicals and paints. Oily water is contained within the bilge water holding tank and is discharged onshore by a licensed contractor. Oils are recycled through the engine until the waste oil forms a sludge which is transferred to a holding tank for onshore pump out by a licensed contractor. Any minor amounts of hazardous waste materials are contained and stored in bunded areas until discharge onshore. Further details are contained within the Waste Management Plan (section A20 of the TSHD Brisbane Operational and Administration Procedures Manual).

Element	**Waste Management – Hazardous and Regulated Waste**
Objective/Target	To ensure hazardous waste generated on-board is appropriately managed.
Actions	During at-sea operations: • All hazardous waste to be stored in appropriate manner (eg. bunded and roofed area) and clearly marked in accordance with legislative requirements. During Transfer: • If necessary, hazardous waste shall be transferred to appropriate containers and transported to an approved facility (such as the bilge water treatment system at the Port of Brisbane Operations Base). • Other designated hazardous waste to be collected by licensed contractor only, for disposal at an approved facility. • All procedures to minimise spills during transfer of hazardous waste to contractor shall be followed. Spill response equipment shall be easily identifiable and conveniently located. • A waste transfer certificate must be obtained, a copy kept on file and appropriate communication to DEHP (details found on certificate).
Performance Indicators	No inappropriate storage or disposal of hazardous wastes.
Monitoring	Visual checks by all crew members to ensure all hazardous waste is stored correctly and no spills have occurred.
Reporting	Exception reports directly to Vessel Master.
Corrective Action	Vessel Master to review procedure breakdown and correct if required. This may include staff training.
Term	During all operations
Responsibility	Management and operation of on-board system is by the Vessel Master, with input from the Environment Team as required.

8.2 Noise

The *TSHD Brisbane* is fitted with modern and fully maintained noise reduction devices to limit the noise generated during works as much as possible. Further, the nature of the works is such that the potential for disruptive noise to sensitive places (e.g. residential areas) is generally limited by distance.

<table>
<tr><td>Element</td><td>Noise Management</td></tr>
<tr><td>Objective/Target</td><td>To ensure noise generated by the operation of the TSHD Brisbane does not unduly impact adjacent areas.</td></tr>
<tr><td>Actions</td><td>

All noise reduction equipment to be maintained as per manufactures' specifications.
Where the vessel is operating in an especially noise sensitive environment (e.g. close proximity to residential areas), crew are to be informed to minimise noise where possible.
All noise from activities must not exceed the acoustic quality objectives specified in the Environmental Protection Noise Policy 2008. Noise levels for selected receptors identified in the Environmental Protection Noise Policy are in the table below:

<table>
<tr><td rowspan="2">Sensitive receptor</td><td rowspan="2">Time of Day</td><td colspan="3">Noise Level (measured at receptors) dB(A)</td></tr>
<tr><td>$L_{Aeq,adj,1hr}$ (Equivalent continuous sound pressure level)</td><td>$L_{A10,adj,1hr}$ (Noise level exceed 10% of time)</td><td>$L_{A1,adj,1hr}$ (Noise level exceed 1% of time)</td></tr>
<tr><td>Dwelling (outdoors)</td><td>Daytime and evening</td><td>50</td><td>55</td><td>65</td></tr>
<tr><td rowspan="2">Dwelling (indoors)</td><td>Daytime and evening</td><td>35</td><td>40</td><td>45</td></tr>
<tr><td>Night time</td><td>30</td><td>35</td><td>40</td></tr>
<tr><td>Commercial and retail activity (indoors)</td><td>When the activity is open for business</td><td>45</td><td></td><td></td></tr>
<tr><td>Marine park under the Marine Parks Act 2004</td><td>Anytime</td><td colspan="3">The level of noise that preserves the amenity of the existing marine park</td></tr>
</table>
</td></tr>
<tr><td>Performance Indicators</td><td>No noise based complaints regarding the operation of the vessel.</td></tr>
<tr><td>Monitoring</td><td>All complaints shall be recorded in an appropriate system and forwarded to Vessel Master and Environment Team as soon as possible. If necessary noise shall be monitored to determine the level of impact.
Method of measurement of noise levels must comply with the latest edition of the Department of Environment and Resource Management Noise Measurement Manual.</td></tr>
<tr><td>Reporting</td><td>Reporting of all noise based complaints to Vessel Master and Environment Team.
Annual review of all complaints received and follow-up action undertaken.</td></tr>
<tr><td>Corrective Action</td><td>Vessel Master to investigate source of complaint. If this relates to inappropriate work practices, inform crew of necessary changes and ensure these</td></tr>
</table>

Element	Noise Management
	are undertaken. If complaints relate to plant operation an investigation into the effectiveness of noise reduction equipment and review/replace as required.
Term	During all operations.
Responsibility	Management and operation of on-board systems is by the Vessel Master, with input from Environment Team as required.

8.3 Turbidity Control

The *TSHD Brisbane* is fitted with all required equipment to meet environmental performance standards as detailed in the dredging ERA approvals.

Element	**Turbidity Management**
Objective/Target	To ensure turbid plumes generated by the operation of the *TSHD Brisbane* are minimised.
Actions	• Ensure dredging and material relocation is undertaken within the approved areas only, by reference to electronic navigation aids and visual marks as required. • Within the practicalities of the vessel, minimise the generation of plumes by control of the discharge system.
Performance Indicators	Plumes of turbid waters are to be contained, as far as possible, within the boundaries of the approved dredging and material disposal areas. No plumes of turbid waters extending into areas containing known identified sensitive receptors (i.e. Marine National Park, Conservation Park and Habitat Protection Zones of the Moreton Bay Marine Park).
Monitoring	Review of vessel dredging and placement tracks against approved dredging and material disposal area boundaries. Triennial performance testing by independent consultants to characterise extent of turbidity plume generated by dredging within representative locations within Port Limits.
Reporting	Reporting of exceptions to Vessel Master and Environment Team. Reporting of triennial test results to Environment Team.
Corrective Action	Vessel Master to investigate reason for exception and take appropriate action.
Term	During all operations.
Responsibility	Management and operation of on-board systems is by the Vessel Master.

8.4 Protected Marine Fauna

The following procedure outlines the management practices to be put in place to minimise the risk of harming turtles, dugongs and cetaceans during dredging operations.

Element	**Protected Marine Fauna**
Objective/Target	To ensure the minimisation of the capture of protected marine fauna during dredging and material relocation process.
Actions	• Dredging and material placement only in approved areas. • Turtle excluders will be fitted where possible during all operations where turtles may reasonably be encountered. • Load to be inspected on an opportunistic basis for marine fauna remains. • Procedure for minimising turtle capture as set out in section A13 of the *TSHD Brisbane – Operational and Administration Procedures Manual* to be followed. • All site specific management procedures to be followed as established in necessary approvals (e.g. dredging windows).
Performance Indicators	No dredging or placement of material outside approved areas. No capture of protected marine fauna.
Monitoring	Review of vessel dredging and placement tracks against approved area boundaries.
Reporting	Reporting of exceptions immediately to Vessel Master and Environment Team. In the event a turtle is captured the **Protected Marine Fauna Incident Response Procedure** found in **Appendix 3** is to be followed.
Corrective Action	Vessel Master to investigate reason for exception and take appropriate action.
Term	During all operations.
Responsibility	Management and operation of on-board system is by the Vessel Master.

8.5 Cultural Heritage

Cultural heritage refers to both European and Indigenous heritage issues.

Element	Cultural Heritage
Objective/Target	To ensure dredging operations do not disturb/destroy items of cultural significance.
Actions	• Ensure dredging and material relocation is undertaken within the approved areas only by reference to electronic navigation aids and visual marks as required. • Undertake opportunistic visual inspection of drag heads, reporting any items of suspected cultural significance. If items are found, retain and report to relevant authorities through Vessel Master/Environment Team. • Observe all site-specific requirements, which may influence dredge operations.
Performance Indicators	No disturbance of items of cultural significance.
Monitoring	Opportunistic inspection of the drag heads.
Reporting	Reporting of exceptions to Vessel Master and Environment Team.
Corrective Action	Vessel Master to investigate reason for exception and take appropriate action.
Term	During all operations.
Responsibility	Management and operation of on-board systems is by the Vessel Master, with input from Environment Team as required.

8.6 Ballast Water Management

Given all dredging will occur within Port of Brisbane port area there is a low risk associated with the ballast water. However, if the *TSHD Brisbane* is leaving the Port of Brisbane port area or returning from a dredging campaign at another location, the following shall be followed.

Element	**Ballast Water Management**
Objective/Target	To ensure the risk of translocation of organisms in ballast water by the *TSHD Brisbane* is minimised.
Actions	Finalising operations within Port of Brisbane port area: • Before leaving port area, undertake a thorough hopper wash at the Mud Island Dredge Material Placement Area only. • If discharge pipes have been utilised during operations, undertake a thorough flush of these systems. • Inspect hopper and dredge gear (esp. heads) to ensure that no material which may transport organisms (such as sediments, organic material or waters) is retained. During transit between areas of operation: • Any ballast tanks holding seawaters will be exchanged with a minimum 150% of design volume with seawaters at a location as distant from the coastline or other shallow (<100m) areas as possible, but not less than 5nm. • Ballast tanks filled with freshwaters will be retained without treatment. • Waters held within the hopper during transit will be treated as for other ballast waters. During operations at dredge area: • Release of ballast waters will be minimised at all times; • A record will be kept of volumes, location and times of ballasting operations.
Performance Indicators	No release of high risk ballast water during operations.
Monitoring	Review of log of ballast/de-ballasting operations.
Reporting	Vessel Master to maintain record of operations and review for non-conformances.
Corrective Action	Review procedure causing release and rectify immediately.
Term	During all operations.
Responsibility	Vessel Master

8.7 Vessel Washdown

This management plan relates to the washing of the dredge head or the deck of the *TSHD Brisbane*. Preference shall be given to sweeping the deck and/or equipment. If washing is required, it shall be performed in accordance with Council's water restrictions. Degreasers shall only be used where necessary, will be applied sparingly and mopped-up prior to washing. Only 'quick-break' degreasers shall be used.

Element	**Vessel Washdown**
Objective/Target	To minimise the release of potential contaminants to the environment.
Actions	• Washdown of the deck and or dredge head shall only occur within the designated dredge or disposal area. • Washing only to be used if sweeping of the deck/equipment is not effective. • If degreasing is required, only quick break degreasers/detergents are used and all residues are to be mopped–up and appropriately disposed of, prior to washing of the decks
Performance Indicators	No inappropriate use of degreasers or washdown in undesignated areas.
Monitoring	Reporting by crew of any observations of contamination to the waterway whilst washing the deck/equipment.
Reporting	Exception reports directly to Vessel Master.
Corrective Action	Vessel Master to review procedure breakdown and correct if required. This may include staff training.
Term	During all operations.
Responsibility	Management and operation of on-board system is by the Vessel Master, with input from Environment Team as required.

8.8 Hopper Washing

This management plan relates to the washing of the dredge hopper of the *TSHD Brisbane*. The *TSHD Brisbane* hopper shall be washed to minimise the translocation of marine organisms prior to leaving the Port of Brisbane for other ports. Hopper washing activities shall only be conducted at the Mud Island Dredge Material Placement Area and contained within this designated area by giving consideration to weather and current conditions. To minimise the discharge of materials from the hopper, washing will only be conducted subsequent to pump out at the approved Port of Brisbane reclamation area.

Element	**Hopper Washing**
Objective/Target	To minimise the release potential contaminants including the translocation of marine organisms to the environment. To perform hopper washing activities in an approved area and in such a way that the material be contained within the area.
Actions	• Washdown of hopper from time to time and when *TSHD Brisbane* leaves the Port of Brisbane port area for other destinations. • Washdown of the hopper within the designated area (ie. Mud Island Dredge Material Placement Area). • Washdown of the hopper subsequent to discharge of material to approved Port of Brisbane reclamation area. • Consideration of weather and current conditions prior to discharge in Mud Island Dredge Material Placement Area. • During discharge the *TSHD Brisbane* will move in such a way that the dislodging of material is assisted by the vessel movement.
Performance Indicators	No discharge of materials outside the designated hopper washing area (ie, Mud Island Placement Area and reclamation area). No translocation of marine organisms to other Ports.
Monitoring	Reporting by crew of any observations of visual turbidity plumes outside the designated area. Reporting and/or observations of marine organisms foreign to the area of the current dredge location.
Reporting	Exception reports directly to Vessel Master.
Corrective Action	Vessel Master to review procedure for discharging hopper washing and correct if required. This may include staff training.
Term	During all operations.
Responsibility	Management and washing operations is by the Vessel Master, with input from Environment Team as required.

8.9 Bunkering of Fuel

The *TSHD Brisbane* regularly re-fuels by the use of a licensed contractor, typically on crew change.

Element	Bunkering of Fuel
Objective/Target	To ensure bunkering of fuel to the *TSHD Brisbane* is appropriately transferred and spillage is prevented.
Actions	During land transfer: • Licensed contractor is used to transfer fuels and levels shall be monitored. • Bunkering procedure as detailed in Section E1 A13 of the *TSHD Brisbane – Operational and Administration Procedures Manual* to be followed and monitored by Chief Engineer.
Performance Indicators	No spills or leaks during fuel transfer.
Monitoring	Visual inspections of fuel-dispensing equipment and surrounding waters (where applicable) during and after fuel transfer.
Reporting	Reporting of spill/leak to Vessel Master in the first instance, Manager Dredging Operations and Environment Team.
Corrective Action	In the event of a minor spill, it may be cleaned up with spill equipment and in accordance with the vessel's Pollution Emergency Plan. In the event of a major spill, call Emergency Spill First Strike Response team for corrective action. Vessel Master to investigate source and cause of spill or inappropriate work practices. Operating procedures will be changed if required and the crew will be informed.
Term	During all operations.
Responsibility	Management and operation of bunkering of fuel is by the Vessel Master.

8.9 Ship energy efficiency management plan

Ship Energy Efficiency Management Plan (SEEMP) is mandatory for ships over 400 GT from the 1st of January 2013 as required by IMO regulations.

Element	Ship energy efficiency		
Objective/Target	To reduce carbon emissions by identifying and implementing energy saving measures where there is business case to do so.		
Actions already completed/undertaken	Voyage planning, communication with next port to adjust speed, appropriate adjustment of trim and ballast for job, installation of new propellers (2010), optimised hull and propeller maintenance schedule, installation of a modern autopilot system (2010), replacement of onboard stove, propeller nozzle assessment (2013), voyage planning information update (2013), propeller nozzles installed (2014), cost benefit analysis of engine replacement (2015) replacement of engines (2015). 1/ Assess and (if appropriate) install trial LED lighting (2016)		
Assessed but no business case	Weather routing (2010), low resistance paint (2010), electronic fuel injectors (2010), solar panels (2013)		
Improvements	Action: continue progressive roll out of LED lighting after successful trial in 2016.	Person responsible	Due date
	Action: implement formal QPA-endorsed risk assessment process in conjunction with northern ports to ensure dredging is scheduled in such a way as to ensure maximum efficiency and minimised fuel usage.	Nadene Perry	December 2017
Performance Indicators	Diesel (litres) / Operational Hours will be reviewed on an annual basis following Weipa (appears to be the most consistent campaign)		
Monitoring	Annual review of ship energy efficiency management plan. Annual review of ship energy efficiency KPI.		
Reporting	Senior Environment Advisor to report to Marine Operations Manager on KPI and delivery of the plan		
Corrective Action	In the event KPI indicates the ship is becoming less energy efficient, the reasons will be investigated, documented and appropriate action taken		
Term	During all operations		
Responsibility	Senior Environment Advisor / Marine Operations Manager		

9 Emergency Procedures

The *TSHD Brisbane* maintains a *Shipboard Oil Pollution Emergency Plan* which outlines the role, responsibilities and actions to be followed should an uncontrolled release of oils/fuels occur. A spill kit is kept onboard to contain and clean up minor spills.

The vessel is part of the PBPL's work site, which is accredited to AS4801 Safety Management System. As part of this system, all onboard procedures are available to all crew in a written format in the Ship Management Manual which is regularly reviewed and updated by the Vessel Master.

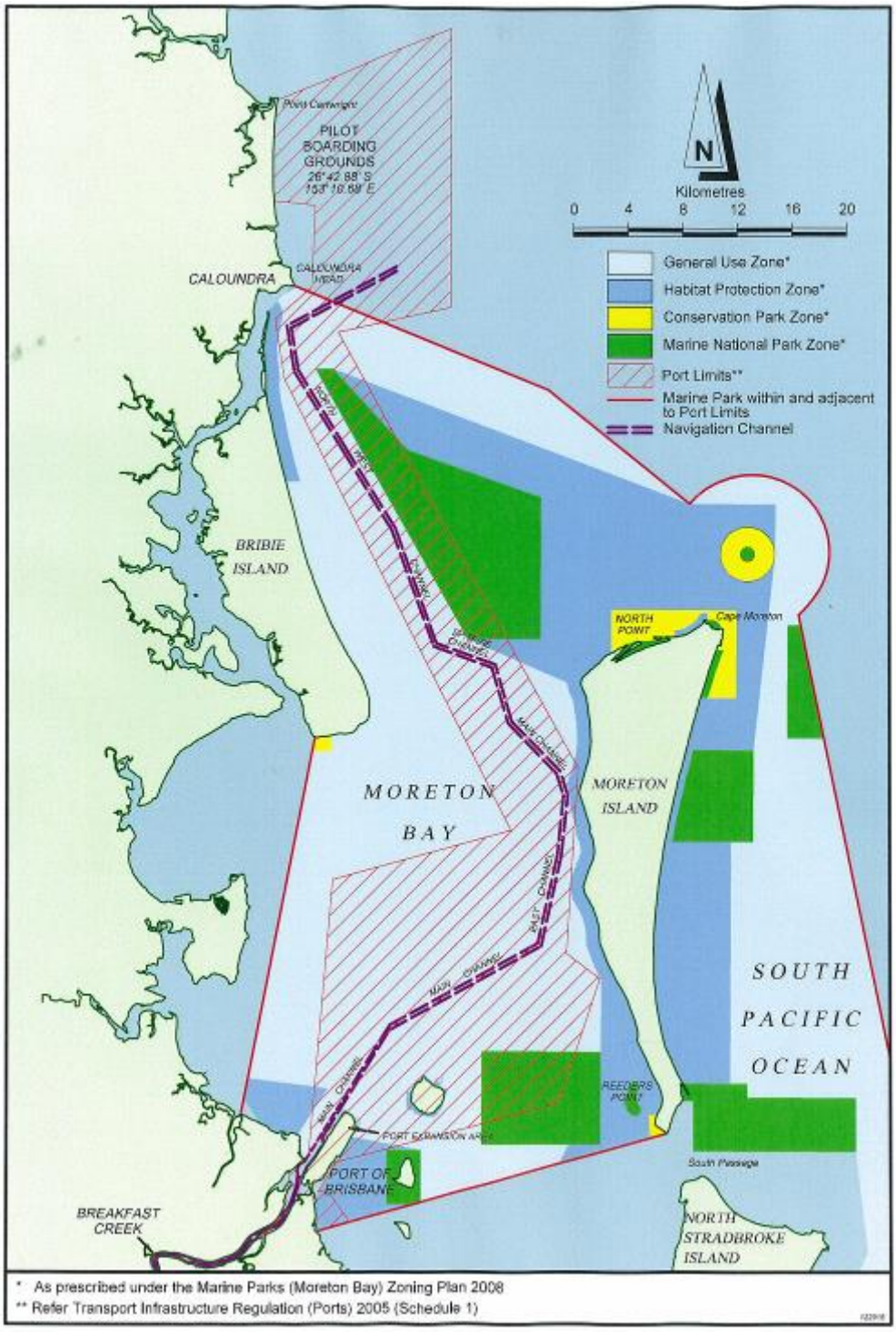
The vessel has several lines of communication available at all times, including VHF radio, Satellite, GMDSS equipment and mobile phones. Contact is maintained with the Port of Brisbane Vessel Traffic System Officer (VTSO). In the event of an emergency all necessary measures will be taken to ensure no damage will be done to other plant or equipment. When necessary the *THSD Brisbane* will issue required notices as part of standard operating procedures. Contact will also be maintained with the Duty Harbour Master.

10 Audit and Verification

As part of the Integrated Management System (IMS), PBPL maintains an Environmental Management System (EMS) externally audited to ISO14001 level. PBPL has maintained this certification since May 2000. This plan will be reviewed on an annual basis. Audit of the plan will occur as scheduled by the ISO14001 environmental management system.

Monitoring of performance criteria also forms part of our EMS. In relation to the operation of the *TSHD Brisbane*, this may include the testing of sediments prior to dredging operations and the monitoring of turbidity levels against set criteria. This information is compiled by PBPL and held within our files. This information can also be externally audited as part of the EMS and is available upon request of the relevant regulatory agency.

Appendix 1 – Port of Brisbane Port Limits



Appendix 2

Untreated Sewage Discharge
Within Brisbane Port limits

The discharge of untreated sewage, is required to comply with s47 of Transport Operations (Marine Pollution) Act 1995 (TOMPA), Schedule 4 of Transport Operations (Marine Pollution) Regulation 2008 (TOMPR) as prescribed below.

Transport Operations (Marine Pollution) Act 1995 (TOMPA)
Section 47
Discharge of untreated sewage into nil discharge waters for untreated sewage prohibited
(1) If untreated sewage is discharged from a ship into nil discharge waters for untreated sewage, each culpable person for the discharge commits an offence. Maximum penalty—850 penalty units.
(2) The nil discharge waters for untreated sewage are the coastal waters prescribed under a regulation for this section.

Transport Operations (Marine Pollution) Regulation 2008 (TOMPR)
Section 44
Nil discharge waters for untreated sewage
For section 47 of the Act, the nil discharge waters for untreated sewage are—
(a) on and from 1 September 2008 to 31 December 2009—the coastal waters stated in schedule 4, part 1; and
(b) on and from 1 January 2010—the coastal waters stated in schedule 4, part 2.

Schedule 4; Part 2
Nil discharge waters for untreated sewage
(On and from 1 January 2010)

5 Prohibited discharge waters.
6 Smooth waters.
7 If a ship has 16 or more persons on board – Hervey Bay waters, Northern Moreton Bay waters and open waters.
8 Hervey Bay waters and northern Moreton Bay waters, within1852m of any of the following—
(a) aquaculture fisheries resources;
(b) a reef;
(c) the mean low water mark of the mainland;
9 Open waters—
(a) within 926m of a wharf or jetty other than a jetty that is a marina; or
(b) within 1852m any of aquaculture fisheries resources; or
© if a ship has 7 – 15 persons on board – within 1852m of any of the following—
(i) a reef;
(ii) the mean low water mark of an island or the mainland.

Definitions:
prohibited discharge waters means waters of any of the following—
(a) a boat harbour;
(b) a canal;
(c) a marina;
(d) a designated area.

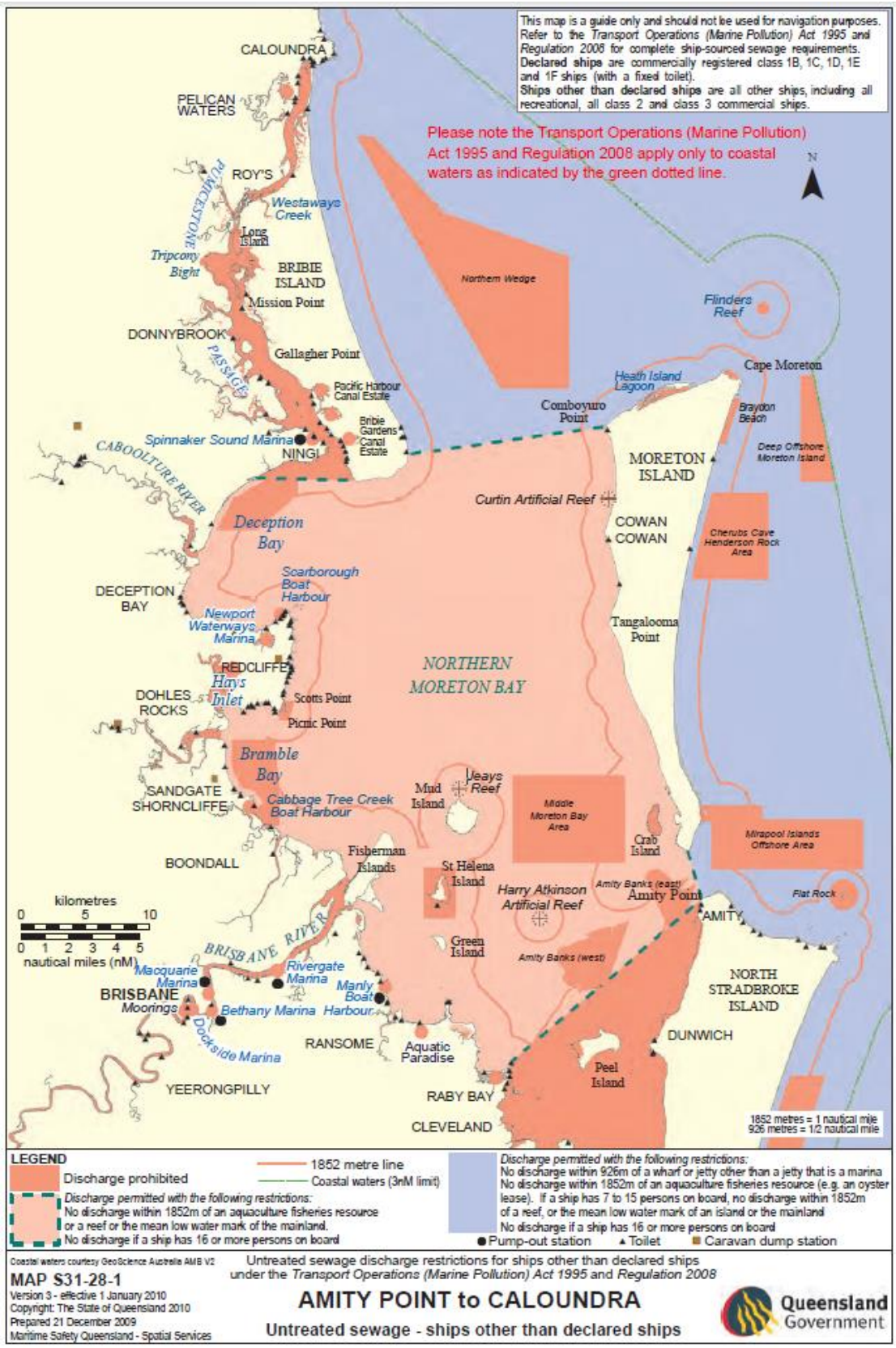
> ***a designated area*** means each of the following areas—
> (a) the marine national park zone under the *Marine Parks (Moreton Bay) Zoning Plan 2008*;
> (b) the Noosa River;
> (c) the marine national park zone, under the *Marine Parks (Great Sandy) Zoning Plan 2006*, located near Burkitt's Reef, Hoffman's Rocks or Barolin Rock, adjacent to the Woongarra Coast;
> (d) an area within the Great Barrier Reef Coast Marine Park mentioned in schedule 8.

smooth waters means the waters defined as smooth waters under the Transport Operations (Marine Safety) Regulation 2004, schedule 15, but not including—
(a) the waters described in schedule 12 of that regulation that are within 0.5n miles from land; and
(b) prohibited discharge waters.

Hervey Bay waters means the waters of Hervey Bay, other than prohibited discharge waters, within a boundary drawn—
• from Burrum Point on the mainland to the Fairway Beacon, Hervey Bay
• to Rooney Point, Fraser Island
• along the western shore of Fraser Island to latitude 25º22.90' south
• to latitude 25º24.90' south, longitude 152º58.06' east
• due west to the mainland at latitude 25º24.90' south.

northern Moreton Bay waters means the waters of Moreton Bay, other than prohibited discharge waters, within a boundary drawn—
• from latitude 27°06' south on the mainland to South Point, Bribie Island
• along the southern shore of Bribie Island to Skirmish Point
• to Comboyuro Point, Moreton Island
• along the western shore of Moreton Island to Reeders Point
• to Amity Point, North Stradbroke Island
• to Cleveland Point on the mainland.

open waters means coastal waters, other than Hervey Bay waters, northern Moreton Bay waters, prohibited discharge waters and smooth waters.


This map is a guide only and should not be used for navigation purposes. Refer to the Transport Operations (Marine Pollution) Act 1995 and Regulation 2008 for complete ship-sourced sewage requirements.
Declared ships are commercially registered class 1B, 1C, 1D, 1E and 1F ships (with a fixed toilet).
Ships other than declared ships are all other ships, including all recreational, all class 2 and class 3 commercial ships.
Please note the Transport Operations (Marine Pollution) Act 1995 and Regulation 2008 apply only to coastal waters as indicated by the green dotted line.
N
CALOUNDRA
PELICAN WATERS
ROY'S
PINCESTONE PASSAGE
Westaways Creek
Long Island
Tripcony Bight
BRIBIE ISLAND
Mission Point
DONNYBROOK PASSAGE
Gallagher Point
Pacific Harbour Canal Estate
Bribie Gardens Canal Estate
Spinnaker Sound Marina
NINGI
CABOOLTURE RIVER
Deception Bay
DECEPTION BAY
Scarborough Boat Harbour
Newport Waterways Marina
REDCLIFFE
Hays Inlet
DOHLES ROCKS
Scotts Point
Picnic Point
Bramble Bay
SANDGATE SHORNCLIFFE
Cabbage Tree Creek Boat Harbour
BOONDALL
Fisherman Islands
Northern Wedge
Flinders Reef
Cape Moreton
Heath Island Lagoon
Comboyuro Point
Braydon Beach
Deep Offshore Moreton Island
MORETON ISLAND
Curtin Artificial Reef
COWAN COWAN
Cherubs Cave Henderson Rock Area
Tangalooma Point
NORTHERN MORETON BAY
Mud Island
Yeays Reef
Middle Moreton Bay Area
Crab Island
Mirapool Islands Offshore Area
St Helena Island
Harry Atkinson Artificial Reef
Amity Banks (east)
Amity Point
Flat Rock
AMITY
Green Island
Amity Banks (west)
NORTH STRADBROKE ISLAND
DUNWICH
Peel Island
RABY BAY
CLEVELAND
RANSOME
Aquatic Paradise
YEERONGPILLY
BRISBANE RIVER
Macquarie Marina
BRISBANE Moorings
Rivergate Marina
Manly Boat Harbour
Bethany Marina
Dockside Marina
kilometres
0 5 10
0 1 2 3 4 5
nautical miles (nM)
1852 metres = 1 nautical mile
926 metres = 1/2 nautical mile
LEGEND
Discharge prohibited
Discharge permitted with the following restrictions:
No discharge within 1852m of an aquaculture fisheries resource or a reef or the mean low water mark of the mainland.
No discharge if a ship has 16 or more persons on board
1852 metre line
Coastal waters (3nM limit)
Discharge permitted with the following restrictions:
No discharge within 926m of a wharf or jetty other than a jetty that is a marina
No discharge within 1852m of an aquaculture fisheries resource (e.g. an oyster lease). If a ship has 7 to 15 persons on board, no discharge within 1852m of a reef, or the mean low water mark of an island or the mainland
No discharge if a ship has 16 or more persons on board
Pump-out station
Toilet
Caravan dump station
Coastal waters courtesy GeoScience Australia AMB V2
MAP S31-28-1
Version 3 - effective 1 January 2010
Copyright: The State of Queensland 2010
Prepared 21 December 2009
Maritime Safety Queensland - Spatial Services
Untreated sewage discharge restrictions for ships other than declared ships under the Transport Operations (Marine Pollution) Act 1995 and Regulation 2008
AMITY POINT to CALOUNDRA
Untreated sewage - ships other than declared ships
Queensland Government

Appendix 3

Protected Marine Fauna Incident Response Procedure

Appendix 4

Tidal Works Approvals

Appendix 5

Allocation of Quarry Material

Appendix 6

ERA16 Approvals

Appendix 7

Marine Park Permits

Appendix 8

Disturbance to Marine Plant Permit