



TOWNSVILLE PORT EXPANSION PROJECT

Additional Information to the
Environmental Impact Statement



TOWNSVILLE
PORT EXPANSION
PROJECT

SECTION 28

Environment Management Strategies



28.0 Environmental Management Strategies

28.1 Introduction

Part C1 of the Environmental Impact Statement (EIS) provides an overview of the environmental management framework to manage the risks and impacts of the Port Expansion Project (PEP) on the environment and maritime operations. Where possible and practicable, unacceptable environmental risks and effects have been mitigated through design considerations; including most notably the design refinement process following receipt of stakeholder submissions (described in Section 1.0-2.0). Port of Townsville Limited (POTL) will implement a number of plans and controls to manage all stages of the PEP project. Plans to be implemented include the following:

- Construction Environmental Management Plan
- Operational Environmental Management Plan
- Dredge Management Plan
- Maritime Operations Management Plan
- Vessel Traffic Management Plan.

A number of submissions received in response to the EIS related to environmental and operational management of the PEP. The key matters raised in the submission process relating to the respective plans are summarised below and addressed in the following sections. Responses to a number of the key matters identified below are also addressed in other sections of the Additional Information to the Environmental Impact Statement (AEIS). Although nominated under separate management plans, matters relating to both the Construction Environmental Management Plan and the Operational Environmental Management Plans are provided together to avoid repetition in the AEIS. Key matters raised under these plans include the following.

- Dredge Management Plan:
 - limiting dredge overflow, control of dredge plumes and cessation of dredging (Section 28.2.1)
 - expert panel for Reactive Monitoring Program design, implementation and review (Section 28.2.2)
 - dredging time window (Section 28.2.3)
 - marine animal stranding response (Section 28.2.4)
 - marine placement, monitoring and re-suspension processes (Section 28.2.5)
 - tailwater management (Section 28.2.6).
- Construction and Operational Environmental Management Plans:
 - adequacy of weed and animal pest management measures (Section 28.2.7)
 - adequacy of fire hazard management measures (Section 28.2.8)
 - consultation with service providers (Section 28.2.9)
 - adequacy of cyclone management measures (Section 28.2.10)
 - impact to non-PEP vessel movements and interactions (Section 20.2.5 of the AEIS)
 - adequacy of detail on compliance provisions and penalties (Section 28.2.11)
 - adequacy of water and air quality monitoring measures (Section 28.2.12).
- Vessel Traffic Management Plan:
 - adequacy of the Vessel Traffic Management Plan – Construction (Section 28.2.13 and Section 20.2.6 of the AEIS).
- Maritime Operations Management Plan:
 - adequacy of emergency response capabilities for shipping incidents (Section 28.2.14)
 - adequacy of monitoring of benthic impacts from anchorage and waste discharge (Section 28.2.16)
 - adequacy of spill management measures (Section 28.2.15 and Section 20.2.7 of the AEIS)
 - safety hazards for construction workers due to excess wash from vessels (Section 28.2.17).

Amendments to the plans are documented and provided as revised management plans found in Appendix B of the AEIS.

28.2 Response to Submissions

28.2.1 Limiting Dredge Overflow, Control of Dredge Plumes and Cessation of Dredging

A 14 submitters indicated the need for greater environmental controls on dredging; specifically the need for increased overflow reduction during channel dredging to protect adjacent sensitive receptors at Magnetic Island. Related matters that were raised included further definition of the overflow regime that will be adopted for the dredging campaign and greater clarity around the intended dredge operation to reduce plumes (including visual plumes). Items raised are addressed below.

Overflow

The PEP design in the EIS originally included marine placement of dredge material at the Dredge Material Placement Area (DMPA) and dredging using a medium-sized Trailer Suction Hopper Dredge (TSHD). Subsequent to receiving submissions on the EIS, and legislative change, considerable additional assessment work was undertaken to examine how overflow reduction during each Stage of the PEP capital dredging can improve water quality outcomes and subsequent adverse impacts on sensitive receptors. This assessment looked at not only the immediate plumes generated by overflow dredging but also the resuspension of spilled dredged material during and following the dredge campaign that may be mobilised by natural coastal processes.

The revised AEIS design now involves dredging using a backhoe dredger and a small TSHD, with placement of dredge material in the reclamation area instead of the marine DMPA. As a result, the dredge plumes are predicted to be greatly reduced in frequency and magnitude due to the lower production rates of the dredging equipment.

With the revised project design, Section 6.0 (Marine Water Quality) concluded that during the Expected Case scenario there will be no zones of impact in areas of sensitive ecological receptors. During the Worst Case scenario, zones of low impact are predicted to extend from the dredge area to waters adjacent to the north-eastern coast of Magnetic Island, where sensitive ecological receptors are known to occur. It is predicted that these zones of impact can be mitigated through the implementation of a range of standard mitigation measures, along with additional mitigation measures such as:

- undertaking capital dredging of the channel (TSHD during Stage 1 and Stage 3) during the most appropriate environmental window to avoid coral spawning, seagrass recruitment, turtle breeding and extreme weather events
- develop and implement a Reactive Monitoring Program (RMP) with appropriate triggers and corrective actions.

With the refined project design including a revised dredge methodology (predominantly mechanical dredge with some TSHD), the predicted impacts are significantly reduced compared to the EIS. As such, restrictions on overflow are deemed to be no longer warranted with the revised design, however restrictions on overflow may be implemented as a corrective action resulting from exceedance of triggers in the RMP, if deemed appropriate.

Visual Plumes

One submitter requested that consideration be given to corrective actions for visual plumes that could affect the Magnetic Island coast and associated tourism and recreational activities where such plumes are clearly attributed to the dredging activity (e.g. while the dredge is operating).

The ability for an operating dredge to reduce visual plumes is limited noting dredge plumes can be visible over long distances despite low actual concentrations of total suspended solids and turbidity in the water column.

The principal mitigation for visual plumes is the requirement for the contracted dredge vessel to have a 'green valve' which reduces visual plumes at the surface of the water by directing dredge overflow underkeel of the vessel. This commitment is already within the Dredge Management Plan (DMP). Further detail on 'green valves' is provided in Section 6.2.6 of the AEIS.

The revised design using a backhoe mechanical dredger and smaller TSHD will greatly assist in reducing dredge plumes generated during operations particularly in the Sea Channel where dredging operations are closest to the Magnetic Island coast and embayments.

Cessation of Dredging

Submissions noted that the Dredge Management Plan, Figure C.2.1.2 in particular, did not provide for the suspension or cessation of dredging as a corrective action.

The DMP in section (C2.1) 5.5 does identify suspension of the dredging as a corrective action option when other mitigations have been ineffective, for consistency, Figure C.2.1.2 has been amended in the revised DMP to reflect this pre-existing commitment.

28.2.2 Expert panel for Reactive Monitoring Program design, implementation and review

Seven submissions made comment about the Reactive Monitoring Program (RMP) as proposed in the DMP. There was general support in the submissions for the program and the formation of an expert Technical Advisory Committee (TAC) to oversee the RMP design, setting associated trigger levels and to oversee the implementation of the program during dredging.

Several submissions criticised the RMP and in particular Figure C.2.1.2 on the basis that it infers it will allow excessive light reduction to key receptors (such as seagrass and corals) before corrective actions are triggered. This is not the intent of the DMP or diagram in Figure C.2.1.2, noting the overarching performance objective underpinning the RMP is to avoid any mortality and to minimise as far as practicable any sub-lethal impacts (such as coral bleaching).

The text of the DMP in section C2.1 (3.4.2.4) sets out the process for establishing water quality and ecological triggers which has been revised further as part of amended DMP in Appendix B1. 'Interim' triggers have been identified in the revised documentation following the collection of a full 12 months of water quality data from sensitive receptor sites (and subsequent statistical analysis), further coral surveys around Magnetic Island and further seagrass surveys throughout Cleveland Bay all of which have been undertaken following the release of the EIS and to respond to submissions and/or delivery of prior commitments by POTL.

These triggers are expressed as 'interim' only on the basis that they are intended to be reviewed and finalised by the TAC which will be made up of recognised government and non-government scientists from local academic institutions. The TAC process will provide an additional safeguard to ensure the most appropriate and robust values for ecological triggers are used in the RMP including, where required, through the collection of additional data.

The submissions included a range of recommendations for consideration in the design of the RMP and the operation of the TAC. The majority of these recommendations are constructive and will be provided to the TAC for consideration and incorporation as part of the TAC review process if the PEP is approved and implemented. The recommendations include the following.

- Where possible monitoring points should be in the bays rather than at the tip of headlands as close as possible to areas with greater coral cover and where sedimentation rates may be greater.
- The trigger levels need to look at both acute and chronic (longer term) light deprivation to coral species.
- The trigger levels should be transparent including the rationale for how they have been derived.
- Control and impact sites of the RMP need to be carefully selected and all aspects (i.e. all coasts of Magnetic Island) need to be considered noting the tracer study and modelling shows the influence of dredge material can be felt over great distances.
- Further articulation of the process for how 'control' monitoring sites will be compared with 'impact' monitoring sites to determine if impacts are attributable to dredging is needed.
- The control sites need to be sufficiently representative of the impact sites for meaningful comparison.
- The RMP should include the west coast of Magnetic Island and Cackle Bay as important receptors for seagrass and associated green turtles feeding habitat.
- Outcomes of the RMP should be used in an adaptive management framework to inform future stages of dredging for the Project.
- There has to be independent representation on the expert advisory committee.

Further refinement of the governance structure and implementation of the RMP has also been identified in the revised DMP in Appendix B1 which clarifies the role of:

- 1) A regulatory 'Oversight Committee' made up of the key approving agencies for the Project that would review and approve subsequent plans and strategies as well as oversee compliance with the RMP during dredging/construction.
- 2) A 'Technical Advisory Committee' of both government and non-government scientific experts to review and advise on the technical aspects of the RMP including the location of control and impact sites, ecological thresholds, monitoring design and triggers for corrective action as well as oversight of the RMP during operation.
- 3) A 'Dredging Implementation Committee' made up of the proponent, its dredging consultant/contractor and the Regional Harbour Master which will oversee the dredge campaign and interact where necessary with the other committees with respect to operational and logistical issues.

As discussed in the revised DMP in Appendix B1, the Interim RMP design, monitoring locations and trigger values will need to be approved by the Technical Advisory Committee prior to the commencement of dredging.

28.2.3 Dredging Time Window

Four submitters raised the timeframe for dredging activities. The justification behind the dredging time window was articulated in the DMP in Section C2.1 (3.4.1). The preferred window for capital dredging of the channels stated in the EIS (e.g. in winter months between April and October) was based on assessment of the preferred ecological timing for several marine receptors that could be affected including corals, seagrass, marine megafauna and fisheries. It was apparent early on in this assessment that the constraints and opportunities for these receptors do not perfectly align and consideration also was given to ambient water quality and hydrodynamic conditions which vary considerably between seasons. Consultation on a preferred ecological window for dredging was undertaken with regulatory agencies as part of several briefings, with the opportunity to provide alternative views of a more suitable window. Feedback from these processes was incorporated into the eventual commitment.

Notwithstanding this, based on the advice of local scientific experts, three of these submitters have identified that the first coral spawning period for local Magnetic Island coral communities occurs after the full moon in October and on this basis, this month should also be excluded from the time window for dredging by the TSHD. This recommendation is supported and is addressed in the revised Dredge Management Plan contained in Appendix B1.

28.2.4 Marine animal stranding response

The Department of National Parks, Recreation, Sport and Racing (DNPRSR) raised the suitability of the marine animal stranding response process outlined in the DMP element for Marine megafauna.

In particular, the DNPRSR is seeking more measurable performance criteria and targets in the marine megafauna management plan (e.g. no entanglement occurs over the course of the dredging), the need for clearer protocols for response with Queensland Parks and Wildlife Service, corrective actions following an incident and more transparent accountability for actions between the dredge contractor and POTL.

In responding to this submission, it should be recognised that the DMP within the EIS is a framework document that is intended to inform and guide more detailed plans that will be required to be developed for the approval of regulatory agencies if the Project is approved. POTL will continue to work closely with relevant agencies (the Great Barrier Reef Marine Park Authority and Queensland Parks and Wildlife Service in particular) to ensure the operational plans for marine megafauna protection developed for the EIS address the matters raised by the submitter, including a robust response plan for marine strandings.

28.2.5 Marine Placement, Monitoring and Resuspension Process

The Queensland Tourism Industry Council highlighted the marine placement of dredge spoil. As discussed throughout this AEIS, a key component of the design refinement process has been that all of the dredge material that was proposed to be placed at sea under the EIS design will instead be placed in the reclamation area under the revised design. Therefore, there will be no marine placement and subsequent resuspension of dredge material from the DMPA.

28.2.6 Tailwater management

The Department of Environment and Heritage Protection provided some specific comments to include corrective actions for tailwater management. These measures have been incorporated into the revised Dredge Management Plan.

28.2.7 Adequacy of weed and animal pest management measures

The Queensland Health submission recommended strategies for pest and vermin monitoring and prevention be included in the relevant Environmental Management Plans and a commitment made ensuring the provisions of the *Public Health Act 2005* and Division 3 of the *Public Health Regulation 2005* are adhered to. The management of weeds and animal pests in common areas within the Port is the responsibility of POTL. Tenants are responsible for the implementation of these measures within their leased areas in accordance with POTL requirements. The Construction Environmental Management Plan (refer Appendix B2 of the AEIS) and Operational Environmental Management Plan (refer Appendix B3 of the AEIS) have been revised to extend the weed and pest animal management measures proposed in the EIS to include monitoring and the application of control to manage risks to public safety (refer Section 9.2.4 of the AEIS; Appendix B2 (Section 1.8.6); Appendix B3 (Section 5.5)).

28.2.8 Adequacy of fire hazard management measures

The Queensland Fire and Rescue Service submission recommended actions for fire management during construction and operation of the PEP. Changes to current emergency plans and response strategies to deal with relevant incidents will be distributed to relevant stakeholders through the POTL Emergency Management Committee and Local Disaster Management Group (refer Section 24.0 of the AEIS) prior to construction.

All hazardous materials will be used, handled, stored on site and disposed of in accordance with regulatory requirements (refer Section 14.2.2 of the AEIS).

28.2.9 Consultation with service providers

The Powerlink submission recommending consultation where construction and operational works associated with the PEP have the potential to impact upon nearby services infrastructure. POTL will consult Powerlink in the event PEP works will impact or have the potential to impact upon adjacent services infrastructure in accordance with the Management of Easement Co-Use Guideline (Powerlink, 2014) and relevant existing POTL Procedures.

28.2.10 Adequacy of cyclone management measures

The DNPRSR and Maritime Safety Queensland (MSQ) submissions requested additional information on cyclone mooring requirements during construction works. The DNPRSR also requested information on cyclone mooring requirements with respect to the Great Barrier Reef Marine Park. Management of safety and environmental risks associated with shipping and vessel activity within the Great Barrier Reef Marine Park are the responsibility of individual vessel masters (refer Section 20.2.2 of the AEIS for further information on the vessel management responsibilities). Mooring requirements and contingencies for cyclones will be developed by individual construction contractors and implemented through their own Vessel Traffic Management Plan. Vessel Traffic Management Plans will be prepared in accordance with the Port Procedures, Maritime Safety Queensland and regulatory requirements to ensure the safety of vessels and personnel.

Chapter C.2.3 of the EIS provides a template for the Vessel Traffic Management Plan for contractors to use in the development of their own Vessel Traffic Management Plans. Vessel Traffic Management Plans will be developed specific to contractor operations and will be submitted to POTL and the Regional Harbour Master for approval.

28.2.11 Adequacy of detail on compliance provisions and penalties

The North Queensland Dry Tropics submission proposed the need for compliance penalties associated with non-performance to be built into Environmental Management Plans, as well as the need for accounting for changes in environmental protection requirements over the duration of the project.

The environmental management plans developed as part of the PEP make provision for adaptive management over the duration of the Project construction and will account for changes in environmental protection requirements.

A performance based approach to environmental management is proposed as it allows flexibility to adopt new or improved technologies as they become available over the duration of the project, as well as allowing incorporation of current conditions.

The environmental performance during the construction phase will be overseen by a transparent governance structure which will include State and Commonwealth agencies, and independent scientific specialists to support and guide the Project environmental performance. These aspects are documented in the updated Dredge Management Plan (Appendix B1) and the Construction Environmental Management Plan (Appendix B2). The compliance with environmental management plans is also usually a condition enforceable by State and Commonwealth agencies.

28.2.12 Adequacy of water and air quality monitoring measures

Two submissions requested further information on the adequacy of air and water quality monitoring associated with the PEP. Air and water quality management is addressed in Section 11.0 and 6.0 of the AEIS. Air and water quality monitoring will be undertaken as part of the PEP in accordance with regulatory requirements. Monitoring and other mitigation measures to manage air and water quality associated with the PEP will be implemented through the Construction Environmental Management Plan and Operational Environmental Management Plans (included as Appendices B2 and B3 of the AEIS, respectively).

28.2.13 Adequacy of the Vessel Traffic Management Plan - Construction

Two submissions were received regarding the adequacy of the Vessel Traffic Management Plan - Construction. A Vessel Traffic Management Plan - Construction is provided in Part C, Section C2.3 of the EIS. This plan will act as a template for individual contractors to develop their own Vessel Traffic Management Plans specific to their operations. All Vessel Traffic Management Plans will be developed in accordance with the *Port Procedures, Information for Shipping* and the draft *Standard for Marine Construction Activities* (if made publically available by MSQ). The Vessel Traffic Management Plan will be required to be submitted to POTL and the Regional Harbour Master for approval three months prior to commencement of work. Vessel Traffic Management Plans will outline performance objectives as well as navigation hazard management and reporting requirements. The following sections of the AEIS address related submissions:

- adequacy of cyclone management measures (refer Section 28.2.10)
- requirements of the Vessel Traffic Management Plan (refer Section 20.2.6)
- impact to non-PEP vessel movements and interactions (refer Section 20.2.5).

28.2.14 Adequacy of emergency response capabilities for shipping incidents

Two submissions raised the adequacy of available resources to respond to shipping incidents within or that have the potential to impact upon the Great Barrier Reef in regards to the Maritime Operations Management Plan (refer Section C2.4 of the EIS). POTL is responsible for the management of operational shipping activities under their control and shipping activities that utilise their facilities. The management of safety and environmental risks associated shipping and vessel activity within the Great Barrier Reef Management Park are the responsibility of individual vessel masters. However POTL would respond to an emergency in the area if required.

Currently a POTL Oil Spill Contingency Plan, Queensland Coastal Contingency Action Plan and National Plan is in place to guide oil spill response. In addition emergency response measures have been identified and are to be implemented through the Maritime Operations Management Plan (Part C of the EIS). This plan has been developed and will be updated prior to commencement of operations. This plan has been developed in accordance with regulatory requirements and is to be implemented upon approval by Maritime Safety Queensland. POTL is considered to be capable of adequately responding to shipping incidents involving their facilities and / operational shipping activities under their control through the implementation of this plan.

POTL will develop a Vessel Traffic Management Plan for each stage of construction in consultation with MSQ. Vessel masters need to comply with these Vessel Traffic Management Plans in accordance with MSQ requirements. These plans will outline measures for vessel interactions and emergency response. With the implementation of these plans, vessels outside of POTL's authority are expected to comply with their obligations for emergency response management relevant to the Great Barrier Reef.

28.2.15 Adequacy of spill management measures

MSQ raised the adequacy of the current spill management measures in the Maritime Operations Management Plan (Section C2.4 of the EIS). Existing POTL spill management measures are considered adequate to manage spills associated with the PEP and will be applied to the construction and operational phases of the Project. Spill management measures will be reviewed and discussed with the Regional Harbour Master prior to Stages B and C where berths are increased to ensure their adequacy.

This includes first strike response measures. First strike response measures will be developed with consideration for the POTL Oil Spill Contingency Plan, Queensland Coastal Contingency Action Plan and National Plan. Any changes or updates to spill management actions and procedures will be appropriately reflected in the revision of the Construction Environmental Management Plan and Operational Environmental Management Plan and the Maritime Operations Management Plan prior to commencement of operations.

28.2.16 Adequacy of monitoring of benthic impacts from anchorage and waste discharge

MSQ raised the adequacy of monitoring of benthic impacts from anchoring and discharge of pollutants and / or waste materials. The discharge of pollutants and / or waste materials is heavily regulated and all vessels within Australia, Queensland and the Great Barrier Reef Marine Park are required to comply. The Australian Maritime Safety Authority, Great Barrier Reef Marine Park Authority and Maritime Safety Queensland are responsible for compliance monitoring and penalty enforcement relevant to waste management and discharge.

The PEP proposes to utilise the existing anchorage area for the Port of Townsville and as such, no additional benthic sampling has been undertaken. Measures to manage ship anchorage under POTL's control are outlined in Part C2.4 of the EIS (Maritime Operations Management Plan). Measures to manage ship anchorage outside of POTL control will be developed in accordance with Maritime Safety Queensland by individual vessel masters as part of their Vessel Traffic Management Plans.

MSQ suggested that managing the number of ships at anchor could be used as a performance criterion. The number of ships at anchor is outside the control of POTL and is dependent on trade demand. It is therefore not considered an accurate criterion for monitoring impacts to the benthic environment. In this instance, ongoing water quality monitoring is considered more appropriate to assess the potential impact to the benthic environment. Water quality monitoring in the vicinity of the Port will continue to be undertaken and relevant indicators used as performance criteria for assessing the impact of port operations on the marine environment.

28.2.17 Safety hazards for construction workers due to excess wash from vessels

MSQ enquired if excess wash from vessel movement during construction of the outer harbour would be expected to create safety hazards for construction workers, with reference to this being a potential risk during previous construction works in the inner harbour. The PEP (including the new outer harbour) is a new expansion to the port, and as a result most of the vessel movement during Stage 1, with the exception of Berth 11, will be related to construction. Operational vessel movements will increase incrementally as new berths are developed during Stages 2 and 3. The consecutive berths construction starting from Berth 12 to Berth 18 will provide a natural segregation of operation and construction activities. Whilst these factors provide for a lower risk of excess wash from vessel movements compared to works within the active inner harbour, the construction contractors will be responsible for the development of robust Safety Management Plans in compliance with POTL requirements, and these will be required to consider construction safety within an operating port environment.

28.3 Revised Environmental Management Strategies

28.3.1 Overview

Since the preparation of the EIS and subsequent submissions process, the project design has been refined as described in Section 2.0 of the AEIS. The revision focusses on amendments to the extent of dredging and reclamation works and staging of construction works and to that extent, affect the content of the relevant environmental management plans.

Numerous technical investigations have been undertaken based on the revised design and the revised impact assessments documented in Sections 3.0 to 27.0 of the AEIS. Mitigation and management measures identified in the EIS have also been reviewed and revised where appropriate to address identified risks accordingly.

28.3.2 PEP environmental risk management approach

An environmental risk management approach underpins the Project to apply an environmental safety net. This approach ensures that environmental risks are able to be effectively managed throughout the construction and operation of the PEP.

The first Tier of risk management focuses on the impact assessment investigations. This includes collecting relevant baseline data, and configuring and applying a set of numerical or computer models in order to estimate the potential impacts and environmental risks. The risks identified as requiring management became the focus of a set of mitigation (or environmental safety) actions which are documented in the EIS.

A design refinement process was subsequently undertaken in response to submissions and changes to Commonwealth and State policy, and to further reduce the potential environmental risks related to impacts to the Great Barrier Reef Marine Park and World Heritage Area. This resulted in revising the proposed dredge methodology and increasing the proposed reclamation area to capture all dredge material, thereby avoiding placement of capital dredge material at sea.

Further impact assessment studies were undertaken to consider the design refinement, and reconsider Tier 1 mitigation measures. The residual project risks were then assessed by evaluating the potential impacts following the application of these Tier 1 mitigation actions. The scale of residual risks determines the requirement for Commonwealth or State environmental offsets. No significant residual impacts were predicted for Matters of National Environmental Significance, or Matters of State Environmental Significance.

The condition of sensitive ecological receptors in the marine environment generally wax and wane over time primarily as a result of regional and global drivers such as extreme wet seasons, cyclones, and disease outbreaks, or bleaching events. Recognising the long lead-times for implementing large infrastructure projects, knowledge of ecological processes is anticipated to continue to develop over time. Further detailed information will also become available as a result of geotechnical investigation and as the detailed design progresses.

In order to manage the risk posed by changing environmental conditions and stakeholder expectations, a second Tier or environmental risk management measures have been proposed. This involves a re-assessment of the environmental risks immediately prior to major dredging operations, a reactive monitoring program to monitor impacts during the dredging operation, and an oversight governance arrangement, including an Oversight Committee, Technical Advisory Committee, and a Dredging Implementation Committee. These management measures are described in the Dredge Management Plan.

The Construction Environmental Management Plan and Operational Environmental Management Plan similarly manage key environmental risks associated with the non-marine related impacts.

This tiered approach to environmental safety represents current best-practice environmental management and provides a high level of certainty that the environmental risks can continue to be identified and appropriately managed.

28.3.3 Revised management plans

The project design has been revised as described in Section 2.0 of the AEIS. The following management plans have been revised to address matters raised in the submissions on the EIS, changes to Commonwealth and State policy and accommodate the outcome of the design refinement process:

- Dredge Management Plan
- Construction Environmental Management Plan
- Operational Environmental Management Plan.

The Environmental Management Plan (Overview), Vessel Traffic Management Plan Construction and the Maritime Operations Management Plan have not been revised and are provided in Part C of the EIS. Individual vessel masters will be required to develop and implement specific Vessel Traffic Management Plans for the work that they are proposing to undertake.

The revised plans are contained in Appendix B of the AEIS. In assessing the final EIS, these documents replace the previous plans that were presented in the EIS documentation.

28.4 Conclusion

With the application of the proposed environmental risk based approach and implementation of the mitigation measures outlined in the aforementioned management plans, the potential impacts associated with the construction and operation of the PEP will be appropriately managed.