



SECTION 10

Climate Change and Natural Disasters

Risk



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10.0 Climate Change and Natural Disasters Risk

10.1 Introduction

Impacts of climate change and natural disasters on the Port Expansion Project (PEP) are described in [Chapter B.8](#) (Climate Change and Natural Disaster Risk) of the Environmental Impact Statement (EIS). Impacts from the PEP on climate change are described in [Chapter B.11](#) (Greenhouse Gas) of the EIS and [Section 13.0](#) of the Additional Information to the Environmental Impact Statement (AEIS).

This section provides information to address submissions received in response to the PEP EIS relevant to climate change and natural disaster risks on the Project. Key matters raised from the submission process include:

- consideration of climate change when assessing the environmental impacts of the Project
- climate change impacts on project design and operation.

10.2 Response to Submissions

10.2.1 Consideration of climate change when assessing the environmental impacts of the Project

Four submissions requested further consideration of climate change when assessing the environmental impacts of the Project. The submissions specifically referred to impacts on the regions ecology and erosion at The Strand.

The revised cumulative impact assessment in [Section 25.0](#) of the AEIS has been updated to address the role of climate change directly influencing the condition of the Great Barrier Reef. The revised cumulative impact assessment discusses potential climate change impacts and projected impacts from the Project in light of the other stressors.

One submission further questioned whether the PEP will exacerbate erosion impacts to The Strand under a future climate. This matter is addressed in [Section 5.0](#) and [Appendix A2](#) of the AEIS. [Section 5.2.7](#) of the AEIS addresses potential beach erosion impacts. It is concluded that any change to beaches (such as The Strand) caused by the construction of breakwaters and reclamation will be minor. Monitoring of vulnerable locations is proposed and if necessary minor local dune strengthening will be undertaken to mitigate impacts. The coastal processes assessment also predicts that there will be a slight reduction in wave energy reaching The Strand due to the protection afforded by the reclamation. This is anticipated to reduce the likelihood and severity of major storm erosion, thereby providing a positive benefit to The Strand.

10.2.2 Climate change impacts on project design and operations

Four submissions questioned whether the potential impacts of climate change were adequately considered in planning the design and operational capacity of the PEP, specifically in terms of flood levels and management of natural disasters.

One submission further questioned the adequacy of the flood study in quantifying flood impacts on surrounding properties. The submission also requested potential variations in flood levels, flow and inundation as a result of the Project be identified. A Flood Impact Study was carried out in accordance with the Terms of Reference and is included in [Appendix G](#) of the EIS. The study was confirmed to be adequate for the purposes of the EIS by the Department of Environment and Heritage Protection on 28 August 2013.

The flood model has been revised in response to the design refinement process and future development of the Townsville State Development Area. The study adheres to the same methodology as the EIS and confirmed that the PEP will not result in any significant change in the extent and / or severity of catchment flooding given the Project is effectively located offshore from the mouth of the Ross River and Ross Creek. The revised design includes widening and shortening of the channel and expansion of the land reclamation area. Flood impacts and management measures were updated as a result of this revision and are summarised in [Section 4.0](#). There is no change in impact of flooding extent or duration as a result of the revised design or future development of the Townsville State Development Area as presented in the [Chapter B.2](#) (Water Resources) of the EIS and [Section 4.0](#) of the AEIS.

One submission further raised that the Townsville City Council Coastal Hazard Adaptation Strategy was not considered in the assessment of potential impacts associated with sea level rise and cyclonic storm surge. Impacts and management of sea level rise and cyclonic storm surge on the PEP are addressed in [Chapter B.8](#) (Climate Change and Natural Disaster Risk) of the EIS. The Coastal Hazard Adaptation Strategy was omitted from this assessment following advice from Townsville City Council and the Department of Environment and Heritage Protection, on the basis that as strategic port land is governed under the jurisdiction of the Port of Townsville (POTL) and not Townsville City Council, and the Coastal Hazard Adaptation Strategy was a pilot project. The strategy includes climate adaptation recommendations from a number of industrial facilities. Furthermore, many of the inundation projections from the strategy are inconsistent with mandated Townsville City Council flood maps and hence are not endorsed by Townsville City Council.

Notwithstanding this, the PEP design has considered all relevant legislation, policies and design guidelines relating to climate change and natural disaster. Climate change resilience will continue to form a key design consideration during the

detailed design. The Port of Townsville has successfully operated for over 150 years and is experienced in managing construction and operation of a port in tropical North Queensland.

It is noted that the one in one hundred storm water levels used in developing the EIS have now been updated by Townsville City Council and these updated levels will be used in detailed design.

10.3 Revised Environmental Impact Assessment

10.3.1 Legislation and policy

The Queensland Coastal Management Plan has been revised since the release of the EIS. The present Queensland Coastal Management Plan was gazetted in March 2014. The Plan is administered under the *Coastal Protection and Management Act 1995*. The Plan provides non-regulatory policy guidance to coastal land planners and managers. The Plan does not address land-use planning or development regulated under the *Sustainable Planning Act 2009*.

The Queensland Coastal Plan references climate variability but is not intended to provide prescriptive guidance on climate adaptation. The State government is presently developing a climate adaptation plan, but this is not expected to be completed until late 2016.

10.3.2 Design refinement

The project design has been revised as described in [Section 2.0](#) of the AEIS. Revised modelling and assessment of climate and natural disaster risks on the PEP indicates no change to the impact of the PEP, in terms of infrastructure and environmental management requirements.

10.3.3 Supporting studies

Flood modelling was revised as part of the AEIS to assess the flood impacts and risks associated with the increased reclamation footprint. This is discussed in [Section 4.0](#) of the AEIS.

10.3.4 Revised assessment

10.3.4.1 Impact assessment

Whilst the revised design has expanded the reclamation area, the design of the revetments, reclamation area and channel is consistent with the design assumptions and complies with the relevant regulatory requirements and codes associated with the design. Potential climate change and natural disaster impacts on the revised design are considered consistent with the impacts presented in [Chapter B.8](#) (Climate Change and Natural Disaster) of the EIS.

10.3.4.2 Mitigation measures

Climate change and natural disaster management measures for the PEP are outlined in the Construction Environmental Management Plan ([Appendix B2](#)) and Operational Environmental Management Plan ([Appendix B3](#)) which will be updated, if necessary, prior to each stage of construction.

10.3.5 Summary

[Section B.8.4](#) of the EIS considers the risks of potential climate change and natural disaster impacts on the PEP. As the design assumptions have not changed, the impacts of climate change and natural disaster risk on the PEP are consistent with that identified in [Section B.8.4](#) of the EIS.

10.4 Conclusion

The PEP design has considered all relevant legislation, policies and design guidelines relating to climate change and natural disaster. Through continued consideration of climate change and natural disaster risks during the PEP detailed design phase and by implementing mitigation measures and contingency plans, the PEP is expected to be able to achieve and maintain an appropriate level of climate change protection and resilience.