City **Pacific** Limited

TOWNSVILLE OCEAN TERMINAL

ENVIRONMENTAL IMPACT STATEMENT SUBMISSION RESPONSE

RESPONSE TO ENVIRONMENTAL PROTECTION AGENCY

August 2008

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ENVIRONMENTAL PROTECTION AGENCY

Note: This submission response document has been prepared by means of duplicating the individual submission received and inserting response clauses where relevant.

1.1 SECTION: EXECUTIVE SUMMARY

1.1.1 Issue: Executive Summary

The Executive Summary of the EIS states that the project is not within the Coastal Management District (CMD) as provided for under the *Coastal Management and Protection Act 1995* although other sections of the EIS acknowledge that the project is within the CMD. The EPA considers that the project is within the CMD.

Recommendation:

The EIS documents are amended so that it clearly indicates that the project is within the CMD.

RESPONSE

The Proponent acknowledges the confusion in the EIS and acknowledges that the project is within the Coastal Management District (CMD).

1.1.2 Issue: Complaints about port related activities

The Executive Summary of the EIS states that only 3 complaints in eight years have been received about port related activities. The EPA records indicate that about 30 complaints in 2 years have been submitted to the EPA about port related activities. These complaints were made by Townsville residents alleging a direct impact from activities within the Townsville Port. The EPA also understands that complaints concerning activities at the port are received by the Townsville Port Authority, Townsville City Council, individual port users and other government departments.

Recommendation:

The proponent should contact the EPA, Townsville Port Authority, Townsville City Council, individual port users and other government departments to accurately determine the number of complaints made against port related activities. This information should be used in the consideration as to whether the Breakwater Cove precinct is compatible with current and future port activities but at the same time it should be noted that complaints are only an indicator and not a true measure of environmental impacts.

RESPONSE

Data on residential complaints about the Port and its users was assessed in the original Economic Impact Assessment Report. The data considered was sourced from:

- **Townsville Port Authority Annual Report (various years);**
- **Townsville Port Authority correspondence; and**
- **EPA correspondence.**

Requests were issued in March to all State Agencies, Townsville City Council and Townsville Port Authority for any data on complaints. No additional data from Agencies has been provided. Transpac Consulting updated the complaints dataset with the latest information available in the most recent Townsville Port Authority Annual Report (2006-07), which was previously not available.

The data has been re-examined and analysed in detail in the Transpac Consulting Report: *Port Compatibility – Impact of Proposed Townsville Ocean Terminal and Breakwater Cove Residential Precinct on the Future Activities and Expansion of Townsville Port* (Appendix A31 in Volume 2).

Not only are the number of complaints low – with a total of 61 complaints recorded by TPA on dust, noise and vehicles between 2001 and 2007 – where data was available on the origin of complaints, the evidence shows that the majority come from residents of South Townville (rather than to the west of Ross Creek in the vicinity of the proposed Breakwater Cove precinct). The Report concludes that since 2001 there have been 2.38 complaints per 1,000 persons within the nearby population catchment to the Port and 0.54 environmental nuisance complaints per 1,000 persons.

The Report further examined complaint activity in the context of port activity. The analysis found that the patterns of complaint activity did not appear to have any strong relationship with measured port activity (e.g. trade throughput and capital works expenditure), indicating that complaint activity since 2001 did not exert any effect on port performance.

1.2 SECTION 3: DESCRIPTION OF THE PROJECT

1.2.1 Issue: Section 3.5 of the EIS - Breakwater Cove Maintenance Dredge Spoil Disposal

Section 3.5 of the EIS does not adequately address dredge spoil disposal during maintenance dredging of the Breakwater Cove area. The EIS has not addressed the following key requirements of the Terms of Reference.

- Describe arrangements to be put in place for long-term (20 years) dredge material disposal including details of proposed material placement areas.

- If land-based dredge material disposal is proposed, provide an assessment to demonstrate that the quality of the water discharged from dredge material disposal areas will meet standards necessary to achieve water quality objectives and therefore maintain receiving water environmental values. Provide details of the long-term management arrangements of the dredge material disposal site.

A number of options have been proposed in the EIS but none of them have been confirmed or described in adequate detail.

Recommendation:

Provide comprehensive details on dredge spoil disposal options including confirmation on which option will be implemented. This must include:

- Describe arrangements to be put in place for long-term (20 years) dredge material disposal including details of proposed material placement areas.

- If land-based dredge material disposal is proposed, provide an assessment to demonstrate that the quality of the water discharged from the dredge material disposal areas will meet standards necessary to achieve water quality objectives and therefore maintain receiving water environmental values. Provide details of the long-term management arrangements of the dredge material disposal site including dredge spoil from maintenance dredging.

RESPONSE

The comments of EPA on the dredge spoil disposal are acknowledged. This matter is addressed in a revised assessment of the matter in a report by Flanagan Consulting Group at Appendix A12 in Volume 2.

The report canvasses a range of options some of which will require approvals outside of this EIS if they are pursued. The base option of disposal on land is the default option for the purposes of this EIS.

1.2.2 Issue: Section 3.5 of the EIS - Environmentally Relevant Activities

Section 3.5 of the EIS lists the environmentally relevant activities (ERA) associated with the construction and operation of the TOT and Breakwater Cove. However, certain ERA's usually associated with a project of this nature are not listed.

Recommendation:

Section 3.5 and Appendix 2 of the EIS consider whether the following ERA's will be conducted:

- ERA 11 – Crude oil or petroleum product storage.
- ERA 22 – Screening.
- ERA 25 – Metal surface coating.
- ERA 23 – Abrasive blasting.
- ERA 62 – Concrete batching.

RESPONSE

The full suite of ERA's was canvassed in the preparation of the EIS and the list included at Section 3.5 is considered appropriate. If as the construction methodology is further refined other Environmental Authorities are required then the relevant approvals will be sought.

1.3 SECTION 4: ENVIRONMENTAL VALUES AND MANAGEMENT OF IMPACTS

1.3.1 Issue: Section 4.5 of the EIS - Regulated Waste

The EIS does not address how regulated waste such as waste paints, oils, greases cartridges and fuels associated with the construction of the TOT and Breakwater Cove will be managed (storage and disposal).

Recommendation:

The EIS to provide details on how regulated wastes associated with the construction of the TOT and Breakwater Cove will be managed (storage and disposal).

RESPONSE

It is difficult to be specific in this regard at this juncture.

It is proposed that the management of waste will be dealt with in detail in the Construction Environmental Management Plan.

1.3.2 Issue: Section 4.7 of the EIS - State Coastal Management Plan - Policy 2.1.1 areas of State Significance (Social and Economic)

This policy recognises that areas such as ports are of key economic and social importance to Queensland, and that the location of incompatible land uses in adjoining areas may adversely impact on their ongoing functioning. In this context the policy requires that *"the integrity and functioning of*

areas of state significance (social and economic) are maintained and protected from incompatible land uses and activities that may adversely affect the continued use of these areas".

This proposal to locate a large number of residential units in very close proximity to the Townsville Port is not in accordance with this Policy intent. These residential areas are proposed directly down wind (on the prevailing wind direction) from the port maximising the potential for dust, noise, odour and light or other hazards and nuisance issues to be a problem. It is recognised that there are proposed measures to alleviate this potential for environmental harm to be caused. However these may not be adequate and the location of a residential area at this site may create a significant liability to both the State and Townsville Port operations if remedial measures to mitigate adverse environmental impacts are required.

The EIS risk assessment likelihood of occurrence rating for dust and noise issues from the port being "unlikely" and odour issues being "possible", are inaccurate when considered in context of a rational assessment of the proximity of proposed residences to the port, and the demographic that will be purchasing the proposed units. Additionally the proposed risk treatment doesn't stand up to scrutiny, as one of the big attractions for these units will be their physical setting. The idea that residents will be happy to keep their units sealed for the majority of the time is unreasonable. The use of decks and other outdoor living areas, boats, or even just taking advantage of the ocean breezes will mean that future residents will live a lifestyle that will maximise the potential for conflict with the operations of the port. Any impact from the port, regardless if it is real or perceived, will become an issue if residents are located so close and will be difficult to resolve if it can be at all. The ongoing furore around the "black dust" issue more than demonstrates this point.

There is a real risk to human life from the hazards provided by accidents and fire incidents in the port operations (fuel, LNG, acid) loading and storage in such close proximity to a densely populated urban node. Again it is extremely poor planning to increase potential loss by locating the proposed land use without adequate buffers.

Recommendation:

The project should be redesigned to remove the residential component of the development where there is incompatible land use or activities so that it is consistent with policy 2.1.1 of the State Coastal Management Plan and ensure development complies with mandatory buffer distances from hazardous facilities.

RESPONSE

- **The State Coastal Management Plan (Coastal Plan) was developed under the Coastal and Protection and Management Act 1995 (Coastal Act).**
- **The Coastal Plan is a policy and therefore sub-ordinate to the Coastal Act which is made by the legislature. It has in law the same status as a policy under the Integrated Planning Act 1997. The Coastal Plan call up a number of policies.**
- **Policies typically exist to assist delegated decision makers in the exercise of their discretion. Non-compliance with a Policy is not fatal to an administrative process but does suggest that more consideration is required before an approval should be given.**
- **Policy 2.1.1 seeks to ensure that strategic gateway sites are not adversely impacted upon by future neighbouring developments.**
- **The EIS and the Supplementary EIS material makes it clear that the Port of Townsville will not be adversely impacted by the TOT and Breakwater Cove.**

- **It will be broader community expectations and environmental regulations which will ultimately shape the future operation of the Port rather than the residents of Breakwater Cove.**

- **The investigations conducted as part of the EIS and the investigations to compile the Supplementary Material establish that the emissions from the Port are generally within acceptable standards and that only when there are peak exceedances that the residents of Breakwater Cove will need to access the mitigation tools to screen out the Port's emissions.**

- **Buffers or separation distances that are mandatory for hazardous materials have been considered in a dual report by Hyder Consulting and Lloyds Register which is at Appendix A17 in Volume 2.**

  The report initially formed the view that the existing limits created a risk to public safety in terms of AS3846. This was reviewed with the Department of Mines and Energy (DME). DME provided comments on the interpretation of the Australian Standard and the application of risk in establishing the limits which are acknowledged and accepted by the consultants.

  The clarification by the Chief Inspector resolves any overpressure issues for the Townsville Ocean Terminal.

- **The range of Port Protection Measures outlined in the EIS will ensure the operations of the Port are not impacted on by this project.**

- **It is also noted that any Coastal Policy would be subordinate to express legislation such as the BICA. The 1984 BICA legislation put in place administrative support for the development of the Townsville Breakwater including the FDA. The 2006 BICA confirmed the status of the FDA and put in place the process for its development assessment.**

- **In legal terms the relationship between specific and general legal principles is described by the acronym "*specialia generalibus derogant*" or specific words modify general words. The provisions of the BICA would therefore modify any conflicting Coastal Policy. Notwithstanding this, this EIS has included studies to show that residential uses are not incompatible with the continuing operation and expansion of the Port.**

  The studies into noise, dust, odour and explosive and fire hazards in the EIS and Supplementary reports in this Supplementary EIS (refer Appendices A1-A5, A6 and A7 in Volume 2) show that the environmental impacts of the port in relation to these issues is within acceptable limits for the majority of the time. The reports identify a small range of exceptions of noise and odour impacts. It is only for these impacts that the Port Protection Agreement and the related building codes are required. These instances relate to:

  - **loading of scrap metal**
  - **loading of cars**
  - **ships' horns**
  - **loading live cattle**

  The Port Protection Measures mitigate both the impact of these impacts as well as regulate the capability and process of residents' complaints. The measures assume in general that the Port will continue to operate within acceptable environmental limits and in accordance with its ERA permits.

The risk assessment has been undertaken considering the results of the various studies and the likelihood and consequences were determined from these results. In addition it was not considered that the demographic mix of the new resident population would in anyway increase the risk of action or complaint against the Port. Indeed the opposite may be true. From an analysis of the complaints received by the Port and the EPA, it is clear that even though complaints are very low (84 over 7 years relating to noise, dust and odour) the majority of these were from the South Townsville area which has a lower socio economic level to that of the residential precinct at the eastern end of the Strand and around the Breakwater Marina, particularly on the eastern side.

It is clear from the study results that residents will be able to enjoy the North Queensland outdoor lifestyle for the majority of the time with infrequent need, at their discretion, to move indoors at those infrequent occasions when an impact is intolerable. To a degree the climatic conditions in Townsville in the summer months have led to a high incidence of air conditioned living through the hotter months in any event. Breakwater Cove's compatibility with the port in no way however relies on this fact. It is however clear that the proponent is not pushing the concept that for Breakwater Cove to be compatible with the Port, residents will need to be happy sealed for the majority of time in their dwellings. The very opposite is true as the amenity impacts from the Port are according to the studies, not significant and are consistent with comparable urban living conditions.

In addition to this point a large number of the residents are located no nearer than other existing residences and occupants in the area. This issue is also relevant in relation to distances from hazards such as fires and explosives. The closest developments to the Port are the TEC and South Townsville houses.

1.3.3 Issue: Section 4.7 of the EIS - State Coastal Management Plan - Policy 2.19 Reclamation

This policy clearly states that land below HAT is maintained in its natural state and may only be reclaimed under certain stated circumstances. The ocean terminal precinct is a coastal dependent land use as it requires access to deep water for berthing ships. The Breakwater Cove precinct, however, is for residential housing which is not a coastal dependent land use.

Recommendation:

The proponent should specifically address the requirements of this policy and refer to any other sections of the document that may have considered the matters under this policy.

RESPONSE

Policy 2.19 Reclamation

- **Policy 2.19 seeks to ensure that any reclamation is carefully examined and identifies seven (7) criteria for consideration:**

  (a) Is it necessary for erosion control or beach nourishment purposes:

  No.

  (b) Is it necessary for protecting the natural environment and its processes:

  No.

(c) Is it for coastal dependant land uses or other areas of state significance (social and economic) and there is a demonstrated net benefit for the state or region:

Yes. The Ocean Terminal facility is clearly a land use of state significance in that it will be part of the Townsville gateway and there is a clear benefit for the State and region. The project was declared one of State Significance in 2006 by the Coordinator-General.

(d) Is it necessary for the operation of a port or harbor:

No.

(e) Is it necessary for the development of a public or private facility and there is public support and a demonstrated public benefit from the proposal.

Yes. The Ocean Terminal facility is a development with strong public support and a demonstrated benefit.

(f) Is it necessary to reinstate land that has been eroded:

No.

(g) Is it for reclamation within a canal or marina:

Yes. The FDA was created by the construction of the western breakwater for the Port and the northern breakwater and the Casino precinct reclamation.

The Policy then asks if there are any alternative sites for the project available to that do not require reclamation. The answer to this question is clearly NO.

The project is then not inconsistent with the Policy.

1.3.4 Issue: Section 4.7 of the EIS - State Coastal Management Plan - Policy 2.8.1 Areas of State Significance (natural resources)

The proponent needs to demonstrate that the proposal will have a "net benefit for the State". A "net benefit for the state" means there is a net benefit (taking into account all financial, social and environmental impacts) to the State as a whole, as distinct from sectoral, commercial, private or regional gain, and the proposal delivers the greatest net benefit of all viable alternatives. While the EIS has generally considered economic and social issues it has not specifically addressed this important issue by demonstrating that the proposal will have a net benefit for the state as a whole.

Recommendation:

The proponent should specifically address the requirements of this policy and refer to any other sections of the document that may have considered the matters under this policy.

RESPONSE

The original Economic Impact Assessment and Social Impact Assessment Reports identified a range of economic benefits and social benefits as a result of the project. Adverse impacts that were identified were typically short-term in duration, with relevance only during the construction period whereas the benefits would accrue to the region in perpetuity.

The economic benefits include the following:

- **The Ocean Terminal facility is an important piece of tourism infrastructure, which will assist in attracting increased visitations by passenger and naval vessels to Townsville. The proposed facility is consistent with the position outlined in the Queensland Government Cruise Tourism Plan 2003. Such a facility can also catalyse the diversification and expansion of the cruise tourism sector in Townsville. The cruise shipping industry is recognized as a high-growth, high-yield tourism industry. The analysis undertaken in the Economic Impact Assessment estimated that annual impacts of increased cruise tourism could range from $2m to $4.7m in value-add to the regional economy (between ~0.2 and 0.46% of Gross Regional Product). In employment terms, the analysis estimated that between 23 and 53 full-time equivalent jobs would be directly created by the operations of the Ocean Terminal.**

- **The impacts of cruise shipping on economic sectors in the region will flow directly to businesses involved in accommodation, cafés and restaurants, other transport (e.g. taxis), trade and personal and other services. Indirect value-added benefits will be experienced by these and the finance and business services sectors.**

- **In addition, there is significant opportunity for Townsville to capture some of the growing demand emerging from the global superyacht sector, and unmet demand across Queensland for recreational marina berth facilities. There is a 2,000-plus waiting list in Queensland for berths, and the proposed Breakwater Cove precinct will deliver 450 new berths to help meet this demand.**

- **Aside from the economic impacts of the precinct once fully operational, the construction of the cruise terminal and subsequently construction of residential dwellings and other structures will generate significant benefits to the region's construction and building sectors. The construction of the cruise terminal and wharf involves an investment of approximately $209m, and over the three years of construction is forecast to generate $174.8m in value-added impacts on the regional economy and create 1,913 full-time equivalent jobs.**

- **These construction-related benefits are particularly pertinent in an emerging economic climate where construction and building activity is easing. That there is sustained confidence in this project and the North Queensland region/Townsville generally will act as a boost to the local economy and assist it in navigating through the current contraction in the national economy.**

As for social benefits, the following were identified in the original Social Impact Study and confirmed in the Updated Social Impact Report (Appendix A30 in Volume 2):

- **The development can enhance social capital and social coherence in Townsville through its contribution to increasing demographic diversity and encouraging a most cosmopolitan outlook for the City. This impact is consistent with the expectations of the majority of the City's residents, as identified in the community survey undertaken in July 2007.**

- **Social benefits also arise from the fact that the project is expected to create significant employment opportunities as outlined above. A person's quality of life and ability to actively participate in contemporary societies is heavily dependent on their having a sustainable job. This project contributes significantly to the economic foundations of local residents' quality of life and ability to participate in social life. Indirectly, this enhanced social participation capital supports the realisation of social inclusion, which further reinforces the values of Townsville residents.**

- **By creating additional marina facilities, the development will make possible a more active participation from some residents in marine-based recreational activities. This would further reinforce and expand on Townsville's reputation as a relaxed tropical city that values its outdoor lifestyle.**

- **For the broader public, the project includes the provisioning of significant tracts of public open space with high amenity value. This space offers local residents free access to ocean front recreational spaces, complementing the highly successful and popular Strand precinct. The proposed walk along the western perimeter of the FDA effectively achieves a continuation of the Strand from a recreational users' perspective, and provides a legible connectivity between the project and a well-established social and recreational precinct.**

- **Finally, and importantly, the high quality residential opportunities offered by the proposed development not only meets the needs and aspirations of some existing Townsville residents who value the location and the inner-city, waterfront lifestyle offered by the location, but will also be extremely attractive to people currently not living in Townsville. In particular, high quality residential opportunities will enhance Townsville's competitiveness and attractiveness to luring professionals, para-professionals and senior managers to the City. These people and the skills, knowledge and experience that they bring, contribute significantly to the ongoing welfare of local residents. For example, consultations with Queensland Health confirmed that residential opportunities such as those being proposed by Breakwater Cove would assist in making Townsville an attractive living and working destination for medical professionals. To not encourage these kinds of high-value residential opportunities is to undermine the ability of Townsville to compete not only on a national stage but also internationally for the best skills and the best brains.**

- **These reputation and flow-on benefits are difficult to quantity. But taken in their entirety, the project offers significant net social benefits – many of which are intangible, but with important ramifications for the ongoing development of Townsville as a cosmopolitan, globally competitive city.**

Taking these considerations into account, together with a review of the potential net costs of the project to the public (directly or indirectly), an updated project Cost Benefit Assessment has been prepared by Transpac Consulting (Appendix A33 in Volume 2). This assessment concludes that:

- **The project can be expected to deliver significant economic and social benefits (many of which are intertwined); and**

- **The project can be realised without net imposts on taxpayers and ratepayers. Indeed, the assessment reinforces the original Net Present Value and Benefit-Cost evaluation (refer to the Economic Impact Assessment Report), which indicated that the ocean terminal facility in itself was not economically viable but combined with the proposed residential precinct is likely to deliver net financial benefits.**

In short, a narrow economic evaluation would indicate that the State (and therefore the general public) is, through the development agreement with the Proponent, effectively achieving an outcome whereby the private development is effectively funding a significant piece of public infrastructure with flow-on benefits that will be long-lasting into the future. This outcome is a significant win for the community.

1.4 SECTION 5: ENVIRONMENTAL MANAGEMENT PLAN

1.4.1 Issue: Environmental Incident Reporting

The Environmental Management Plan (EM Plan) briefly describes the process of reporting environmental incidents but fails to provide direction to notify the responsible Government Authority.

Recommendation:

Update the EM Plan to require that environmental incidents with the potential to cause environmental harm are reported to the responsible Government Department / Agency or Local Government. The EM Plan is updated to include reporting requirements specified in Section 320 of the *Environmental Protection Act 1994*.

RESPONSE

The EMP has been amended accordingly.

1.4.2 Issue: Environmental Objectives for Noise, Air Quality, Water Quality, Dredging, Stormwater, Acid Sulphate Soils, Waste Minimisation, Capital Dredging, Maintenance Dredging

Environmental objectives stated in the EM Plan should include the requirement to comply with conditions stated within relevant development approvals.

Recommendation:

The EM Plan objectives should be updated to state all activities will comply with conditions stated within relevant development approvals.

RESPONSE

The EMP has been amended accordingly.

1.4.3 Issue: Control Measures

The EM Plan states that the following plans/documents will be produced but does not indicate that the plans will be provided to the responsible Government Authority for consideration/approval:

- Construction Noise Control Plan
- Construction Air Quality Control Plan
- Erosion and Sediment Control Plan
- Construction Waste Control Plan
- Dredging Management Plan

Recommendation:

The EM Plan is amended to clearly state that the plans will be provided to the responsible Government Department / Agency or Local Government prior to implementation or provide the copies of the Plan with the supplementary EIS.

RESPONSE

The EMP has been amended as suggested. The various plans will be developed prior to construction and submitted for approval to the responsible authorities.

1.4.4 Issue: Water and Sediment Quality

The EM Plan does not provide sufficient details to appropriately condition surface and ground water monitoring in sufficient detail. The EM Plan provides performance indicators for surface water and sediment quality but does not specify groundwater performance indicators. The EM Plan does not provide a plan detailing monitoring locations.

Recommendation:

Amend the EM Plan to include a map and description of surface water, groundwater and sediment monitoring locations. Provide performance indicators for groundwater monitoring.

RESPONSE

The EMP has been amended in response to the EPA recommendation.

1.4.5 Issue: Water and Sediment Quality

The EM Plan states that "hay bales" will be used for sediment and erosion control. The EPA advises that the use of hay bales for sediment and erosion control is ineffective.

Recommendation:

Remove all references to the use of hay bales for erosion control from the EM Plan and replace with an appropriate sediment and erosion control structure. Reference should be made to http://www.healthywaterways.org/wbd_project_overview.html" for information on water sensitive urban design which should be incorporated into the development.

RESPONSE

The comments of EPA in relation to sediment and erosion control are acknowledged and the suggested reference included in the EMP.

1.4.6 Issue: Acid Sulfate Soils (ASS)

The EM Plan does not reference the EPA's *Instruction for the Treatment and Management of Acid Sulfate Soils, in dealing with ASS on the site.*

Recommendation:

Amend the EM Plan control measures to state that any disturbed ASS will be treated and managed in compliance with the Queensland EPA's *Instruction for the Treatment and Management of Acid Sulphate Soils, 2001.*

RESPONSE

The EMP has been amended to comply with the EPA standards.

1.4.7 Issue: Dangerous and Hazardous Substances (Including Liquid Waste)

The Construction and Operational sections of the EM Plan do not reference appropriate standards for the storage and handling of hazardous substances. Dangerous and Hazardous substances should be stored in compliance with Australian Standard 1940-2004 *The storage and handling of flammable and combustible liquids.*

Recommendation:

The EM Plan is amended to state that all flammable and combustible materials will be stored in compliance with AS1940-2004.

RESPONSE

The EMP has been amended to comply with the Australian Standard.

1.4.8 Issue: Water Quality (Operational EM Plan)

The EM Plan does not clearly define water quality monitoring protocols, standards and processes.

Recommendation:

The EM Plan is amended to state that all water quality monitoring will be undertaken in accordance with the latest edition of the EPA Water Quality Sampling Manual.

RESPONSE

The EMP has been amended accordingly.

1.4.9 Issue: Maintenance Dredging

The Operational section of the EM Plan objective does not include compliance with an approved dredge management plan.

Recommendation:

Update the Operational EM Plan maintenance dredging objective to include compliance with the approved dredge management plan.

RESPONSE

The EMP has been amended such that the maintenance objective will include compliance with an approved dredging management plan.

1.5 SECTION 7 - APPENDICES

APPENDIX 2: LIST OF POSSIBLE FUTURE DEVELOPMENT APPROVALS

1.5.1 Issue: Coastal Management District

Appendix 2 incorrectly states that the TOT and Breakwater Cove are not within the coastal management district.

Recommendation:

Amend Appendix 2 to acknowledge that the TOT and Breakwater Cove are within the coastal management district. Under the Coastal Management and Protection Act 1995 the Breakwater Cove precinct will require an Allocation of Quarry Material or Dredge Management Plan for both capital and maintenance dredging.

RESPONSE

An amended List of Possible Future Development Approvals is included below. ERA 19 - Dredging was already included. ERA 20 - Quarrying has been added.

Legislation	Jurisdiction	Application
Breakwater Island Casino Agreement Act 1984	**Department of Infrastructure and State Development and Queensland Treasury**	**Specific Transitional Arrangements which provide for the application in respect of the TOT Project Site. Discussed further below.**
State Development and Public Works Organisation Act 1971	**Department of Infrastructure and State Development**	**Controls the EIS process for Projects of state significance. Details of this process are included in Section 1.4 of this EIS.**
Environmental Protection and Biodiversity Conservation Act 1999	**Commonwealth Department of Environment and Heritage.**	**Assessment process for Projects declared to be controlled actions for its impacts on matters of national environmental significance. This process is discussed in Section 1.7 of this EIS.**
Integrated Planning Act 1997	**Department of Local Government, Planning and**	**Application subject to BICA.** **Applies for general process for all future development assessment and approval for the Breakwater Cove Precinct.**
Environmental Protection Act 1994	**Environmental Protection Agency**	**Assessment of all environmentally relevant activities (such as dredging).**
Environmental Protection Policy (Noise)	**Environmental Protection Agency**	**Applies to assessment of noise impacts for proposed development.**

Legislation	Jurisdiction	Application
Coastal Protection and Management Act 1995	**Environmental Protection Agency**	**Assessment Criteria for Operational Works (Tidal Works) Applications pursuant to State Coastal Management Policy must be undertaken.**
Fisheries Act 1994	**Department of Primary Industries and Fisheries**	**Assessment process for approval to remove, destroy or damage marine vegetation (including sea grass/mangroves)**
Great Barrier Reef Marine Park Act 1995	**Great Barrier Reef Marine Park Authority**	**The Project Site is not within the jurisdictional boundaries of the GBR Marine Park.**
Nature Conservation Act 1992	**Environmental Protection Agency**	**Applies to works that may interfere with a protected animal or plant.**

APPENDIX 12: OCEANGRAPHIC STUDIES AND INVESTIGATION OF THE FLUSHING OF THE CANAL ESTATE AND MARINA

1.5.2 Issue: Phosphorus Levels in Sediment

Section 4.2.3 of the Appendix 12 Report found Total Kjeldahl Nitrogen (TKN) and Total Phosphorus (P) levels in sediment that exceeded recommended investigation levels for these contaminants. The report recommended that these pre-existing anomalies require further investigation. The Appendix 12 Report provide a dataset of one single sampling event and recommends a number of further sampling events prior to construction.

Recommendation:

Further investigation prior to construction into elevated nutrient levels within sediments of the development site is recommended along with any necessary control/remedial measures given the potential impact of elevated nutrients on water quality within the canals of the Breakwater Cove Precinct.

RESPONSE

The comments in relation to phosphorus levels are noted. This matter has been addressed in the Hyder Consulting report on Draft Water Quality Monitoring Program at Appendix A13 in Volume 2.

1.5.3 Issue: Phosphorus (P) in Water

Section 4.3.4 of the Appendix 12 Report found very high levels of Total P in water samples in impact and control sites. The report strongly recommends further monitoring investigations, especially temporal sampling to be able to define satisfactory investigation and intervention levels for this development.

Recommendation:

Further investigations into elevated nutrient levels within waters of the development site is recommended along with any necessary control/remedial measures given the potential impact of elevated nutrients on water quality within the canals of the Breakwater Cove Precinct.

RESPONSE

The comments in relation to phosphorus levels are noted. This matter has been addressed in the Hyder Consulting report on Draft Water Quality Monitoring Program at Appendix A13 in Volume 2.

1.5.4 Issue: Monitoring Of Water Quality Parameters

Section 4.3.5 of the Appendix 12 Report indicated that a number of water quality parameters (namely Chlorophyll-a, pH, Dissolved Oxygen, conductivity, salinity, turbidity, organochlorides and pesticide levels) were not directly assessed in the baseline study but instead guideline levels were determined from the literature. The Queensland Water Quality Guidelines (QWQG) is intended to:

- provide guideline values (numbers) that are tailored to Queensland regions and water types; and
- provide a process/framework for deriving and applying local guidelines for waters in Queensland (ie., more specific guidelines than those in the QWQG).

Recommendation:

The proponent should refer to the Queensland Water Quality Guidelines 2006 published by the Queensland EPA to determine appropriate physico-chemical indicators based on the regional guideline values. These water quality parameters (namely Chlorophyll-a, pH, Dissolved Oxygen, conductivity, salinity, turbidity) are easily measured on site and should form the basis of a real-time monitoring program to be able to take immediate action in the case of a trigger level being exceeded. A series of pre-construction samples should be taken to establish ambient conditions of these water quality parameters.

RESPONSE

This matter has been addressed in the Hyder Consulting report on Draft Water Quality Monitoring Program at Appendix A13 in Volume 2.

The report recommends and sets out a course of action to re-establish a full water quality baseline for the project. The report further details that this process has been discussed and agreed with EPA.

1.5.5 Issue: Ammonia in Groundwater

Section 4.4.3 of the Appendix 12 Report found high ammonia levels in the groundwater samples at the project site. The report noted that should the aquifer be breached by excavation of the seabed, unless flushing is adequate, nitrogen based nutrients may build up in the area. The report recommends that during construction of the canals, and excavation of the waterways, every effort must be made to ensure that the shallow aquifer system is not breached.

Recommendation:

The proponent should provide detailed information showing the levels of the existing aquifer across the entire project site in relation to Australian Height Datum (AHD) and demonstrate that the excavation and reclamation process will not interfere with the aquifer.

RESPONSE

This matter has been addressed in the Hyder Consulting report on Draft Water Quality Monitoring Program at Appendix A13 in Volume 2.

Included in the report is a letter from C&R who authored the original EIS report explaining that they believe this report has been misunderstood. In light of the wording used in the original report it was deemed necessary to have C&R unequivocally clarify this matter.

1.5.6 Issue: Dust Impacts on Water Quality

Section 4.5 of the Appendix 12 Report discussed the assumptions of the modelling data for the chemical modelling of stormwater flushing. The chemical composition of the dust is presented as a list of metals with concentrations given as raw values and diluted values. No reference or explanation is given as to where these concentrations were derived. No discussion is entered into regarding how the worst case scenario of possible reactive components in the dust representing 10% of the total mass was derived.

Other data put into the model included specific compositions of marine waters for the area from actual values. Given that no fundamental physico-chemical water quality parameters (name Chlorophyll-a, pH, Dissolved Oxygen, conductivity, salinity, turbidity) were measured in the baseline study, it is not clear which data was used in this analysis.

Recommendation:

The proponent should provide an explanation of how the chemical composition of the dust has been determined and revise how this raw data affects the output of the modelling.

The proponent should provide information on the specific composition of marine waters and discuss how these parameters were derived.

RESPONSE

This matter has been addressed in the Hyder Consulting report on Draft Water Quality Monitoring Program at Appendix A13 in Volume 2.

1.5.7 Issue: Stormwater Modelling

The modelling study in Section 4.5 of the Appendix 12 Report considered a number of inputs into the system including dust and rainwater, however a number of other potential sources of chemicals and pollutants were omitted from the modelling study. Potential components of the runoff from the development into the adjacent marina areas may include:

- Soil material from vehicles
- Fertilisers and pesticides on gardens and lawns
- Oil from vehicles
- Pet excrement

- Cleaning product from households
- Waste oils and cleaning products from shops and restaurants
- Runoff from building sites during the staged housing development

Recommendation:

The proponent considers the stated potential contaminants and how they may need to be incorporated into the modelling of stormwater input to the waters of the development. Consideration should be given to how these contaminants may impact upon water quality in the canal estate. Further, the EIS needs to address how the principles of water sensitive urban design are to be incorporated in the development.

RESPONSE

In regard to the interaction of stormwater runoff from developed areas, including dust contamination and nutrient spikes from landscape activities, the Proponent proposes that the design of stormwater drainage systems within the reclaimed land forms will be based on the principles of interception and treatment of "first flush" runoff using state of the art water quality technology and systems. Design of landforms will be such that runoff from lots will fall towards roadways for capture in primary drainage systems for interception and treatment prior to discharge. Primary drainage systems will be based on minimising catchment size and interception of "first flush" runoff prior to discharge using proprietary interception devices to collect gross pollutants such as trash, litter, organic matter, transported sediments and hydrocarbons. Following treatment in Gross Pollutant Traps, first flush runoff can be diverted to small wetlands in landscape features upstream of primary outlets to remove soluble pollutants such as nutrients from fertilisers, detergents and heavy metals from roadways. Full details of the design strategy for the protection of water quality and minimisation of point source pollutants will be detailed in the Operational Works Submission which will be subject to approval by Townsville City Council

Water Quality impacts during construction of the buildings on the reclaimed land forms will be controlled by requirements for Erosion and Sediment Control plans for each individual building site which will require diversion of uncontaminated flows away from disturbed areas, minimising concentration of flows to prevent erosion and sediment transport, interception of flows to remove gross pollution and sediments and progressive rehabilitation of disturbed areas. The Erosion and Sediment Control strategy will be subject to approval by Townsville City Council as part of the Operational Works Approval process.

In regard to interaction of stormwater flows with existing stormwater drainage from TEC, Casino and SCL, the Proponent proposes the stormwater drainage and water quality systems in the FDA will be independent from and will not interact with existing stormwater drainage systems with the TEC, Casino and SCL areas. Where works within the FDA compromise existing outlets, stormwater systems will be extended and incorporated into the FDA stormwater drainage regime. Consequently, the FDA stormwater quality strategy will be implemented via the installation of gross pollutant traps/inception devices and first flush diversion to wetlands for removal of soluble pollutants.

A comprehensive Stormwater Quality Management Plan will be prepared as part of the Operational Works Approval process which will deal with the stormwater quality management for the FDA and any external catchments/drainage networks which are impacted by the FDA works.

The Proponent envisages a best practice approach to the development which would include discussions with the TCC to incorporate rainwater tanks for all residences as part of the ESD principles.

APPENDIX 14: OCEANOGRAPHIC STUDIES AND INVESTIGATION OF THE FLUSHING OF THE CANAL ESTATE AND MARINA

1.5.8 Issue: Flushing of the Canal Estate and Marina

The modelling results in section 6 of the Appendix 14 report states that the Grid C design option achieves a 90% flushing of all areas of the Townsville Ocean Terminal (TOT) within a spring-neap tidal cycle. There is no explanation or discussion of the data presented in Tables 2 and 3 and how the figure of 90% has been derived. There is no explanation of what an average percentage of flushing means in terms of circulation patterns and residence times of water within the canal system. Without further detail, it is difficult to determine if there is insufficient volumetric flow in all areas of the canal estate to maintain adequate water quality.

The flushing modelling appears to have established that the second design option, Grid C, is preferable to the first, Grid B, but has not adequately explained what the implications are for water quality in the canals and the susceptibility of the waters to algal blooms.

Considerable discussion is provided in the report about the capabilities and wide variety of applications of the PLUME3D model and how it is superior to other 2D ocean models. However, the flushing study has only produced one figure that does not adequately describe the circulation patterns or volumetric water exchange of residence time within the canals in relation to the maintenance of water quality.

Recommendation:

The proponents should provide a clear explanation of the results of the flushing study to describe the circulation patterns around the canals and to estimate the residence time of water within the canals. Any regions of poor flushing should be clearly identified and mapped.

RESPONSE

This matter is covered in the Hyder Consulting report on Draft Water Quality Monitoring Program at Appendix A13 in Volume 2 and also the Flanagan Consulting Group report on Water Quality Management during Construction at Appendix A11 in Volume 2. The flushing study is being reviewed to address these concerns and will be workshopped prior to the lodging of the Operational Works Application.

1.5.9 Issue: Discharge of Water during the Dewatering Process

A key potential environmental impact identified in the EIS is that of the discharge of turbid water from the construction site during the dewatering process. The Appendix 14 report has clearly stated the capabilities of the GCOM3D and PLUME3D models in predicting the behaviour of contaminant release to water. The background conditions of tides, currents and weather conditions in Cleveland Bay have been examined in detail but there is no discussion or prediction of the likely propagation of a plume of turbid water being discharged from the project site during the dewatering process.

Recommendation:

Using predicted volumes, pumping rates and water quality parameters of the discharge, a prediction of the fate of contaminants in discharge water should be provided. This modelling should be coupled with detailed habitat mapping to derive a management plan for the discharge of water to reduce the risk to sensitive habitats. Possible control measures need to be incorporated to minimise the release of contaminates to waters.

RESPONSE

This matter is covered in the FCG report on Water Quality Management during Construction at Appendix A11 in Volume 2. All water released from the site will be treated to ensure that it is of no lesser quality than the water outside.

1.5.10 Issue: Sediment Modelling for the Breakwater Cove Access Channel

The sediment modelling conducted for the Breakwater Cove access channel derived the annual deposition due to standard conditions of waves and currents. The Cleveland Bay area is periodically subjected to severe storms and cyclones. While it is stated that the model did not account for extreme conditions, no discussion was given as to the likely impacts on the deposition of sediment in the channel in the case of such events.

Recommendation:

The proponent should provide some discussion on the worst case scenarios of whether events and how sedimentation in the channel will be affected by such events. Consideration should be given to the requirements for dredging in terms of expected volumes and the capacity of spoil disposal sites to accommodate this material.

RESPONSE

This matter is covered in the Hyder Consulting report on Draft Water Quality Monitoring Program at Appendix A13 in Volume 2 and also the Flanagan Consulting Group report on Dredging at Appendix A12 in Volume 2.

1.5.11 Issue: Dredging Breakwater Cove access channel

The results of the sediment modelling for the Breakwater Cove access channel showed a build up of 2 to 3 cm per month, which is significantly less than the 10cm per month derived by GHD study in 2003 for the Port Outer Harbour. The report states that this result is expected due to the “higher energy environment of the shallower and more exposed Townsville Port outer harbour resulting in significantly more re-suspension and movement of fine sediments”.

The proposed Breakwater Cove access channel (5.5m below AHD) is much shallower than the Port Outer Harbour Departure Channel (approx 11.4m below LAT) however, the two sites are in very close proximity to each other suggesting more similar sedimentation rates.

The proponent has not discussed the need for access to the existing breakwater marina during the construction period when the normal access will be bunded off for dryland excavation. It is not explained whether this work is within the future development area.

Recommendation:

The proponent should obtain historical records from the Townsville Port Authority of dredge volumes removed from the Outer Harbour to verify the modelling produced in the GHD report and therefore to ground truth the modelled sedimentation rates for the Breakwater Cove Access Channel.

Consideration should be given to any potential sources of errors in the model and how a small factor of error could impact on the viability of a long-term dredging and disposal plan.

The proponent to describe location, detail and quantity of dredging required to provide access to the Breakwater Marina in the construction period.

RESPONSE

The matter of dredging to the entry channel to the Breakwater Cove waterways and the temporary access during construction of the FDA is covered in the Flanagan Consulting Group reports at Appendices A11 and A12 in Volume 2.

APPENDIX 15: TOWNSVILLE OCEAN TERMINAL AIR QUALITY ASSESSMENT REPORT

1.5.12 Issue: Heavy Metal Analysis

Page 13, Section 3.5 of the report states that "although some emissions of metals could be expected from Port operations, there is currently limited information available regarding the quantity or type of emissions". As a result consideration of these emissions in the predictive assessment has not been included. However on page 31, the report states that "It should be noted that a single round of project specific deposited dust samples were also analysed for metals. This analysis identified lead in all samples with comparable levels measured at both the Project Site (Breakwater wall) and at the background monitoring position. Given these inconclusive results, it is expected that the additional monitoring currently being undertaken by the EPA will provide further information as to the source and extent of existing concentrations".

The EPA advised that an Agency monitoring program is currently being implemented however as the program has just commenced monitoring data will not be available in time to consider with this EIS.

Recommendation:

That the lead levels referred to on page 31 and an assessment against relevant standards is included in the report along with any other metal results and assessment that there are available.

RESPONSE

A supplementary Metals Emissions Report is included at Appendix A5 in Volume 2.

The Supplementary Report includes the actual results of the deposited dust samples analysed for metals. Unfortunately only two (2) of the five stations yielded a result because of vandalism. The two (2) stations were "Casino Car Park" and "Jezzine Barracks".

In regard to lead levels the results were 0.104 at the Casino Car Par and 0.038 at Jezzine Barracks. This shows, as would be expected, that the lead levels reduce as the distance from the Port increases.

The levels are expressed as mg/m²/day. This is the average amount of lead that was deposited on the ground during the thirty (30) day monitoring period.

Where lead levels are analysed for public health reasons the normal assessment criteria used is not deposited dust but atmospheric dust or Total Suspended Particulates or TSP.

There are then, no particular criteria against which to determine whether deposition dust lead levels can be compared. However, as noted in the Supplementary Report, the World Health Organisation has stated that levels in excess on 0.25mg/m²/day will increase lead in blood levels.

The levels of both samples are under this amount.

The Supplementary Report also notes that the EPA has commenced a monitoring programme at the Coast Guard Car Park on the Townsville Breakwater (South of the Development Site). The results of this programme have not been released.

The Supplementary Report also notes that the Port Authority is monitoring levels at monitoring stations within the Port.

The results of this testing have also not been released. However, discussions with the Port Authority as recently as May 2008, indicate that the testing results are not of concern.

The Supplementary Report also notes that the Port Authority undertook a dust emissions study in 1998 which included metal analysis. This study recorded lead concentration levels in deposited dust of:

- **4.02mg/m²/day at Berth 1;**
- **1.67 mg/m²/day at Berth 2;**
- **0.30 mg/m²/day at the Sugar Terminal; and**
- **0.24 mg/m²/day at the Curtin Brothers Slipway.**

These results also show a reduction in concentrations as the distance from the loading berths increases.

Unfortunately, no recent data us available from any monitoring within the Port at or about the location of lead handling facilities. So the Air Quality Consultants were asked to provide data on a theoretical modelling basis.

The Supplementary Report therefore includes some modelling of theoretical emissions from the BHP lead ore loaded at Berth 11 at the Port based on the maximum possible emissions permitted under the Environmental Authority issued by the EPA in 2000.

This modelling assumes dust emissions are the maximum permitted and that the metal content of the dust is also at the maximum permitted level. For theoretical modelling purposes the loading was assumed to be undertaken 24 hours a day 365 days a year. The results of this modelling were then adjusted for actual berth usage (currently one vessel per month) but increased to 5 vessels per month. This is regarded as the actual maximum loading.

At 5 vessels per month the modelling shows that the actual ground level lead concentrations for a three month period would be 0.24ug/m^3 well under the criteria of 1.5ug/m^3 and for the twelve month period it would be 0.14ug/m^3 - again well under the 0.5ug/m^3.

The metal content of dust emissions from the Port is very topical at present given the recent investigations into lead concentration levels in Mt Isa. The lead concentrations actually recorded or modelled and noted in the Supplementary Report paint quite a different picture with lead concentration levels within the established criteria.

1.5.13 Issues: Port Related Industries

Page 19, section 5 - statement to the effect that "The pollutants considered in the ambient monitoring are as identified by a site audit of existing industrial operations (refer Section 7.3.12) in the area surrounding the Project Site". Section 7.3 is limited to discussion of odour from cattle export. There is no sub-Section or further description of other Port-related industrial activities/emissions.

Recommendation:

That the site audit of existing industrial operations and any related emissions be described in the report. This would provide a more complete response to Terms of Reference dot point 3 on page 8.

RESPONSE

A description of activities at the Port was provided at Section 7.4.12 of the Air Quality Report in the EIS.

1.5.14 Issue: Particulate Monitoring

Page 22, paragraph 2, line 2/3 - states that ".... project specific monitoring has been undertaken for particulates (both nuisance dust)..." The statement suggests that other particulate matter - most likely PM10 - was monitored. Project specific PM10 monitoring results are presented for January to June 2007 in Table 5.4 (page 26).

Recommendation:

That the types of particulate matter monitored be clarified in the report.

RESPONSE

No particulate monitoring was undertaken by the Project Consultant. However as noted in the Supplementary Report on Suspended Particulate Monitoring the TPA and the EPA are doing monitoring and the results of their monitoring are included in the Supplementary Report.

1.5.15 Issue: Wind Direction

Page 24, Table 5.3 - records wind directions for 9am and 3pm, for the continuous gaseous emissions monitoring exercise. Wind direction observations for 9am and 3pm provide only limited information for the period.

Recommendation:

That full wind observation for the period be presented as wind roses in the report.

RESPONSE

The complete wind observations for the period are presented in the Expert Reports at Appendices A1-A5 in Volume 2.

1.5.16 Issue: Dustfall Deposition - Page 27, Table 5.5

Page 27, Table 5.5 (and Figure 11 on page 28) - results for insoluble dustfall deposition suggest spatial and temporal variability. It is difficult to find clear patterns of deposition. Deposition at the Jezzine Army Barracks was generally equal to, or higher than at locations representative of the Project site. Results for June 2007 are confusing as Breakwater Walls 1 and 2 deposition rates are 2-3 times higher than for Berth 10. Unfortunately Breakwater Wall results are not available for the windy dry season.

Page 29, Table 5.7 - the analysis of combustible material as a percentage of total insoluble dust is valuable. Project-specific monitoring for combustible material is not included in the analysis.

Recommendation:

That an analysis of combustible material as a percentage of total insoluble dust is valuable. Project-specific monitoring for combustible material is not included in the analysis.

RESPONSE

The dust samples were not analysed for combustible material.

1.5.17 Issue: Dustfall Deposition - Page 30, Table 5.8

Page 30, Table 5.8 (and Figure 12) - insoluble dustfall deposition at existing complainants' locations are generally much lower than those reported for the Port, and Project-specific monitoring. This indicates that deposition rates far below the 120mg/m2/day guideline causes complaints and in turn suggests that complaints by future residents are likely to be generated by rates measured at the Project site.

The proposed dust fall out criteria of 120mg/m2/day is measured using fall out gauges. Previous operational experience has demonstrated that while the fall out gauges measurement results are a suitable indicator for dust nuisance where there is general elevation of the background dust levels, fall out gauges are not a suitable nuisance indicator for short period dust events. Port activities include a number of operations that have the potential for short term dust events. These include unloading and stockpiling of ores from rail rolling stock, the loading and unloading of ships. These operations may typically occur for periods of 1 to 12 hours compared to the 30 day averaging period used for fall out gauges. The long averaging period of the fall out gauges results in the method having inadequate sensitivity for short period events.

Ambient air quality needs to be monitored using a measurement method capable of recording short term (ie., 15 minutes maximum averaging time) dust impacts (eg., a tapered element oscillating microbalance (TEOM unit) which measures Total Suspended Particulate (TSP). The following draft TSP criteria for determining what constitutes environmental nuisance has been derived based on data it has collected at other port operations such as Gladstone and Hay Point where there has been a history of complaint. Recommended criteria is for Total Suspended Particulate Dust limits for sensitive areas such as residential of 80 micrograms per cubic metre expressed as a 24 hour average carried out in accordance with the latest version of EPA's *Air Quality Sampling Manual.*

Page 38, Section 5.8 - Paragraph 3 recommends an extended period of Project-specific gaseous and particulate monitoring is undertaken, with result present as a supplement at a later date. Metals analysis are not mentioned.

Recommendation:

1) Because of the close proximity of the development site to Port Operations and potential for incompatible land use it is critical that the proponent has a full and complete understanding of the dust impacts that current and future Port operations may have on this development particularly any residential components. To this end TSP measurements as outlined above need to be conducted in addition to any of the other monitoring that has been carried out. Also any monitoring locations must include the development site itself to recognise that all previous data has been collected to the west (landward) of the development site, and the relationship of the site/Port to the prevailing wind (SE monsoons);

2) The results obtained from this monitoring need to be assessed against the TSP limits above and included in the EIS and if there are exeedences of the limits full details of control measures and/or amclioration strategies that will be employed need to be provided; and

3) That additional monitoring undertaken includes analysis of metals in the dust samples taken and consideration/acknowledgement should be given to whether a dust nuisance would occur at depositions below 120mg/m2/day.

RESPONSE

1. **As mentioned earlier the project consultant did not undertake TSP monitoring but concentrated on deposited dust as the issue was the potential for the soiling of surfaces and dust nuisance rather than dust clouds as a transient phenomenon.**

2. **Nevertheless the results of the EPA's TSP monitoring at the Coastguard carpark are a useful comparison and as noted in the Supplementary Report by ANE at Appendices A1-A5 in Volume 2 the results for the period July 2007 to February 2008 show concentration levels well within the target criteria of 80vg/m^3.**

3. **The nuisance dust criteria of 120mg/m^2/day is well established and is referenced in conditions in the Environmental Authorities for a number of uses in the Port. To adopt a lower target criteria of 80mg/m^2/day as suggested in the absence of a uniform change in policy is incongruous. Nevertheless, it is noted from the results of the project monitoring that there were only a few recordings above 80mg/m^2/day. Interestingly this included a reading of 81mg/m^2/day at Jezzine Barracks which is some distance from the Port and the Project Site. The reading of 88mg/m^2/day at Mariners Peninsula in December 2006 is believed to have been impacted by local earthworks happening in the area. It is important to note that the dust deposition testing in the area of the project site was not connected to the black dust issue.**

   With the black dust issue the key factor was not the quantum of dust but that it was easily visible being black and had a greasy composition which was readily carried in on shoes and feet and hands. It is noted that EPA is still investigating the source and content of this black dust.

4. **The testing for dust both by ANE and the testing done by the EPA and also the Port, indicate that the dust levels are well within acceptable standards. The low incidence of complaints on dust other than the highly publicised black dust, demonstrate that dust will not be a significant amenity impact for the future residents.**

5. **Notwithstanding these facts, the Proponent proposes to undertake deposition and TSP monitoring on the site from the time of approvals both through the construction stage and into the operational stage. This latter responsibility will be included as a Body Corporate liability. All testing is proposed to be done working in conjunction with the Port and will form a base to analyse complaints and to warn the Port of exceedances.**

1.5.18 Issue: Wind Speed

Page 47, section 6.3.3 - predicted wind speeds are "noted to be over-predicted by the Calmet modelling for all seasons". Higher wind speeds are likely to result in wider dispersion. The extent to which predicted wind speeds differ from measured observations is not described. As such, it is difficult to assess the effects of over-predicted wind speeds on the modelled ground-level concentrations and impact zones.

Recommendation:

That the extent to which over-predicted wind speeds differ from measured observations be described in the report. This would help address Terms of Reference Dot point 7 on page 8 (the limitations and accuracy of the applied atmospheric dispersion models should be discussed. The air quality modelling results should be discussed in light of the limitations and accuracy of the applied models).

RESPONSE

The wind speeds are over-predicted by the modelling by approximately 1 – 2m/s for up to 5% of the time. It is therefore possible that predicted concentrations at the project could be slightly higher under some wind conditions. However it is noted that the predictions in regard to calm conditions are higher than the actual conditions. The overall predictions are then, likely, to represent a conservative impact of potential impacts of Port activities.

1.5.19 Issue: Figure Numbering

Figure 22 on page 47 is incorrectly labelled.

Recommendation:

Figure 22 should be renumbered to "Figure 23a", and Figure 23 on page 48 should be numbered to "Figure 23b".

RESPONSE

Noted.

1.5.20 Issue: Dust Estimation

Page 55, paragraph 2 - estimate for dust assumes that ".... the entire Project area is exposed to eroding winds" and "This estimate is considered to represent an over-estimate....". An indication of the extent of over-estimation has not been provided.

Recommendation:

That an indication of the extent of over-estimation be provided. This would help address Terms of Reference Dot point 7 on page 8 (the limitations and accuracy of the applied atmospheric dispersion models should be discussed. The air quality modelling results should be discussed in light of the limitations and accuracy of the applied models.)

RESPONSE

The predictive modelling assumes the construction site is exposed to eroding winds. This will not of course be the situation as mitigation measures will be employed during the construction phase to reduce dust emissions. With appropriate management practices the construction site is not expected to be a source of dust nuisance.

1.5.21 Issue: Odour

Page 58 - Table 7.6 - the odour emission rate from the cattle export vessels is based on 2187 head of cattle exported on 1 ship in 2005. Export numbers were higher both preceding and following 2005. No information is provided on the average number of cattle per ship or the average number of cattle ships per year. As such it is not clear whether 2187 cattle per ship is an appropriate assumption for estimating odour.

Recommendation:

It is recommended that the report clarifies the assumption used to estimate odour from cattle export vessels.

RESPONSE

The Supplementary Air Quality Report contains a complete summary of live cattle exports over a 10 year period. 2005 was not a busy year. The figure of 2187 head is well below the 10 year average. Nevertheless the predictive modelling is still useful.

The shipping data reveals that usually the smaller vessels load at Berths 10, 9 and 8 with average shipments at Berth 10 being 1773 head. Berth 10 is the closest berth to the project site.

The large vessels load at Berth 3 with average shipments of 7106 head.

The frequency of larger vessels is less than the smaller vessels. When there are large shipments of cattle the odour concentrations will be much higher than the modelling suggests.

The number of cattle shipments has clearly dropped off in recent years and industry sources suggest this trend is not likely to change with Darwin being the preferred export Port because its location is closer to the Indonesian ports.

Interestingly, and notwithstanding the obvious nuisance level of the odours associated with cattle shipments there is no history of complaints. The odours are detectable across a broad area of the Townsville Coastal Suburbs and the Project Site is not expected to be any more affected.

1.5.22 Issue: Measured Odour Concentrations

Page 59 - Table 7.8 - contains a single odour concentration prediction but the associated text suggests that a number of “predictions” are compared with a number of “measured emission rates” in the table.

Recommendation:

It is recommended that the report clarifies the presentation and analysis of predicted and measured odour concentrations.

RESPONSE

Table 7.8 is a comparison of predicted modelling and actual measurements of vessels loading at Berth 4.

1.5.23 Issue: Nickel Ore

Page 70 - Section 7.4.12.7 - It is clear that open stockpiling and overhead crane bucket loaders at the Queensland Nickel Ltd Pty (QNI) site have the potential to generate fugitive nickel ore emissions. No specific Berth for QNI loading/unloading operations is identified. Table 7.9 on page 65 identifies Berths 2 and 7 as possible sites for nickel ore handling/emissions.

Recommendation:

It is recommended that the report clearly identifies the sites for QNI nickel handling as well as identifying what measurements or analysis this is based on.

RESPONSE

Nickel ore is unloaded at Berth 2 – this has been confirmed by the Port Authority

1.5.24 Issue: Emission Estimates

Page 74 - Section 7.4.13 - of the report states that "... an average emission rate for the existing Port operations has been calculated based on the sum of emissions estimated for each of the uses identified in Section 7.2.13 ...". The report does not contain Section 7.2.13.

This approach appears to assume no change to emissions with Port expansion. As there are existing nuisance dust complaints well beyond the Project site, it is likely that existing dust emissions will result in complaints from the Project site.

Recommendation:

It is recommended that the report clarifies the basis for estimating potential emissions from the expanded Port.

RESPONSE

For the purpose of the assessment there was no information available regarding the types or nature of industries likely to operate within the expanded Port area. Given this it was necessary to estimate future emissions based upon existing Port user activities (as discussed in Section 7.4.12 of the AQA – it is noted that the reference to Section 7.2.13 of the AQA was incorrect and should reference 7.4.12). This process essentially assumes that the expanded Port area will represent more of the same types of activities currently undertaken at the Port.

To achieve this, emissions from the following Townsville Port Industries were estimated using the emission estimation methods contained in the National Pollutant Inventory Emissions Estimation Manuals:

- **Southern Cross Fertilisers;**
- **Queensland Cement Limited;**
- **Queensland Nickel;**
- **Australian Marshalling Service; and**
- **Queensland Sugar Limited.**

Emissions were also estimated from the following facilities based on the emission release limits identified in the Environmental Authorities issued for these facilities by the Queensland Environmental Protection Agency:

- **Shell Company of Australia – Bitumen Facility; and**
- **BHP Minerals**

Emissions from the Smorgon Steel recycling facility were also estimated based on previous monitoring of a similar facility undertaken by Air Noise Environment personnel. It should be noted that emissions from the QNI facility were not included in the estimates as any future Port expansion would be expected to adopt best practice operating methods. Given this it is unlikely that the use of open stockpiling of raw materials and the unmitigated transfer of from vessel via bucket loader would be approved by the Environmental Protection Agency were an application made.

The estimated emissions from all facilities identified above were then summed to provide an estimated emission rate for existing Port of Townsville Operations. These estimated emissions were factored based on the difference in areas between the existing Port operations and the expanded Port facility to provide an estimated emission rate for future expanded Port activities. When added to measured ambient pollutant concentrations from existing Port activities (Section 8.4 of the AQA), this provides an estimate of potential future impacts on the proposed development site.

1.5.25 Issue: Air Emission Modelling - Page 76, Section 8.2

Page 76, Section 8.2 - Tables include "Maximum Predicted Cumulative Concentration" values. The relationship to "Maximum Predicted Ground Level Concentration" is unclear. Does "Cumulative" include the sum of Project site plus emissions from the Townsville Port? Predictions for TSP and PM10 during Construction Phase Years 2 and 3 indicate exceedances of both EPP (Air) and NEPM Ambient Air Quality criteria. Predicted concentrations of 24-hour SO2 and 1-hour NO2 in Construction Year 3 also exceed the stated criteria.

Recommendation:

It is recommended that the report clarifies the relationship between "Maximum Predicted Ground Level Concentration" and "Maximum Predicted Cumulative Concentration".

RESPONSE

The maximum predicted GLCs refer to the maximum predicted impact of the source being considered (eg emissions from the construction activities for the Project). This is then added to the existing ambient concentration to give the maximum predicted cumulative GLC (ie Project emissions + Background = Cumulative).

Both are included as it is not just the emissions from a given source that will impact on the existing or future residents. Rather it is the combination of emissions from the Project/Port plus in the ambient air. ie people will breathe the combined air not just the air containing emissions from the Project Site / Source.

1.5.26 Issue: Air Emission Modelling

The report notes that "... these predictions assume worst case uncontrolled emissions and as such are likely to represent a significant over-prediction compared to a construction operating in accordance with an effective environmental plan".

The report does not include an estimate of the degree to which predictions "... represent a significant over-predication...".

Recommendation:

It is recommended that the report includes an estimate of the degree to which predictions represent a significant over-prediction. An alternative would be to model the construction operated in accordance with an effective Environmental Management Program.

RESPONSE

As mentioned earlier the construction site will be regulated by an EMP which includes dust mitigation measures.

1.5.27 Issue: PM10 Concentrations

The report includes figures for maximum predicted 24-hour average ground level PM10 concentrations. Dispersion appears to occur in a north-easterly direction, suggesting that south-westerly winds dominate. Maximum ground level concentrations (GLC) and cumulative concentration locations are not indicated on the figures.

Recommendation:

It is recommended that the report clarifies the seaward dispersion indicated in the figures. That the locations of GLC and cumulative concentration maxima be indicated on the figures.

RESPONSE

The dispersion modelling has included consideration of the impact of different ground surfaces on the dispersion of emissions from the neighbouring uses and the Project Site. For the purposes of the modelling, the surface roughness is estimated at each grid point based on land use as discussed in Section 6.3.2.5 of the AQA. This results in higher wind speeds over water. Therefore, for dispersion of emissions over water and over land from a source the higher local wind speeds over water will result in the increased dispersion of the pollutants in comparison to the same pollutants dispersing over land.

1.5.28 Issue: PM10 Concentrations - Page 80, Section 8.4

Page 80, Section 8.4 - modelled predictions assume "no change" to emissions from the expanded Port. Maximum predicted GLCs for TSP and PM10 are lower than existing ambient concentrations. The potential for fugitive heavy metal deposition at the Project site has not been assessed.

Recommendation:

It is recommended that:

- The report clarifies the basis for estimating potential emissions from the expanded Port.
- The report clarifies the relationship between "Maximum Predicted Ground Level Concentration" and "Maximum Predicted Cumulative Concentration".
- The report includes an assessment of the potential for heavy metal deposition at the Project Site.

RESPONSE

In the absence of any specific predictions on future activities in the expanded Port a "no change" approach was adopted. However it is highly likely given increased environmental awareness that future activities will have fewer emissions than comparable operations today.

The metals content analysis of the deposited dust has been considered following on the analysis of a single round of investigation of the August 2007 deposition sample. The results for the casino carpark station and Jezzine Barrack show the lead content levels were 0.104 and 0.038 mg/m^2/day respectively. Both were well within the acceptable criteria. Further modelling of metals emission from the BHP lead oxide loading facility show that lead concentrations at the TOT Project and other residential areas close to the Port fall well below the Environmental Protection Air Policy criteria.

A more complete commentary on metal analysis is included in the relevant Supplementary Report at Appendix A5 of Volume 2.

APPENDIX 17: TOWNSVILLE OCEAN TERMINAL NOISE AND VIBRATION ASSESSMENT

1.5.29 Issue: Section 4.1.2 - Construction Noise Emissions Criteria

Reference is made to the Environmental Protection Amendment Regulation (No. 2) 1999 for construction noise levels. The updated reference is the Environmental Protection Regulation 1998.

Recommendation:

The reference should be changed to Part 2 of the *Environmental Protection Regulation* 1998.

RESPONSE

Noted.

1.5.30 Issue: Section 4.2.1 Vibration Impacts

It is stated that existing commercial properties such as Jupiters Casino and Convention Centre would be exposed to higher vibration levels. Also, the levels would be unlikely to exceed the safety limit 15-20 mm/s for commercial/industrial buildings. Since Jupiters Casino contains residential accommodation, the vibration levels at the Casino from construction activities should be compared with the annoyance criteria shown in Figures 4 and 5.

Recommendation:

The EIS should discuss the possible adverse effects of vibration from construction near Jupiter's Casino. Section 61 of the *Environmental Protection Regulation 1998* sets out noise criteria to be achieved.

RESPONSE

The noise criteria in the Regulations have been noted.

It is expected that the Development Application of the reclamation will include a Vibrations Impact Assessment of the construction methodology. This assessment would canvass the impacts on the Casino in particular and is likely to include recommendations to minimise the impact such as hours of operation which would be carried over as permit conditions.

APPENDIX 17: TOWNSVILLE OCEAN TERMINAL SUPPLEMENTARY ACOUTSTIC REPORT

1.5.31 Issue: Section 6.1.1.2 - Predicted Noise Levels at Breakwater Cove Receivers

The descriptor for the calculated noise values is not specified. It is assumed that it is LAeq, or perhaps LAeq, adj to allow for tonality and impulsiveness. Similarly, there is no indication of the presence of low-frequency noise and potential impacts.

Recommendation:

The appropriate noise descriptor should be included and a statement should be made about the presence of low-frequency noise.

RESPONSE

Based on a review of site noise data, typically noise sources that were considered to be steady state noise have been measure at LA_{eq} noise levels. Noise sources identified as short term in duration were measured as L_{Amax} or L_{A10} noise levels to reflect this and were modelled accordingly. There are no unusual results concerning low-frequency noise or tonality.

1.5.32 Issue: Section 6.2.1 – Control of Carrier Noise

The Supplementary Acoustic Report states that the AS 2107 recommendations for sleeping areas lie between 35 and 40 dB(A). This statement is incorrect, the recommended levels being 30 dB(A) (satisfactory) and 35 dB(A) (maximum).

Recommendation:

The AS 2107 levels should be changed to 30 and 35 dB(A) respectively and the noise reduction requirements adjusted accordingly.

RESPONSE

Noted.

APPENDIX 24: HAZARD AND RISK ASSESSMENT

1.5.33 Issue: Port Protection Code

The EPA does not anticipate that the Port Protection Code will be able to provide protection against dust nuisance and any associated heavy metal deposition.

Recommendation:

Appendix 15 – Townsville Ocean Terminal Air Quality Assessment Report should be further considered and updated as per the EPA EIS comments. Once the report is updated further consideration is required to determine if environmental nuisance control measures are adequate and whether the residential component of the development is compatible with existing surrounding land uses.

RESPONSE

The Supplementary Report on Deposition Dust, Particulate Dust and Dust Metal Content considers in more detail the nuisance level of the dust emissions from the Port and conclude that the predicted levels at the development site are within the established criteria.

The various Supplementary Reports explain that the Port Protection Code and the full suite of Port Protection Measures are there as a safety net to handle peek exceedances.

1.5.34 Issue: Industrial Air Emissions from the Port

The Risk Register Section of Hazard and Risk Assessment has identified that the likelihood of air emissions impacts on Breakwater Cove residential development as unlikely. The EPA considers that the likelihood of port emissions impacting on Breakwater Cove is almost certain to be likely for both the original and residual risk. This consideration is based on previous observations and review of existing monitoring data.

Recommendation:

The likelihood of impacts of port air emissions on Breakwater Cove is assessed and the risk re-calculated. The new risk level should then be considered in conjunction with the developments compatibility with the Townsville Port and any requirement for further mitigation measures.

RESPONSE

The Supplementary Air Quality Reports confirm that the likelihood of exposure to emissions from the Port is low. The PPM's nevertheless mitigate the peak exceedances.

1.5.35 Issue: Potential residential complaints about port activities

The Risk Register Section of the Hazard and Risk Assessment has identified that the likelihood of potential Breakwater Cove residents complaining about the port as unlikely. The EPA considers that the likelihood of some complaints from Breakwater Cove residents as almost certain to be likely for both the original and residual risk. This consideration is based on previous observations and community complaints.

Recommendation:

The likelihood of complaints against the port from potential residents is re-assessed and the risk re-calculated. The new risk level should then be considered in conjunction with the development's compatibility with the Townsville Port and any requirement for further mitigation measures.

RESPONSE

The comments of EPA on the risk assessment are noted and have been considered in the revised Hazard and Risk Assessment after reviewing the supplementary inputs of the specialist consultants and the analysis of complaint activity by Transpac.

1.5.36 Issue: Maintenance Dredging

The hazard and risk assessment risk register does not appear to consider dredge spoil disposal as a risk. The EPA considers that risks are associated with maintenance dredge spoil disposal and in particular the risk of securing a long term disposal location.

Recommendation:

Maintenance dredging risks should be considered with specific consideration given locating a permanent dredge spoil disposal site.

RESPONSE

As discussed in the report by Flanagan Consulting Group at Appendix A12 of Volume 2 there are sustainable dredge spoil options. The Proponent will be giving consideration to a permanent dredge spoil disposal site offshore which will be subject to relevant approvals. The base case situation is disposal to a land site and adequate long term capacity exists for land based disposal in Council facilities.

1.5.37 Issue: Potential impact on existing marine users during construction

The hazard and risk assessment risk register had identified that the likelihood of impairment to operations of existing Ross Creek users as rare. The EPA considers that the construction of the temporary bridge over Ross Creek is likely to impact on downstream users. Policy 2.3.1 of the State

Coastal Management Plan requires that there is no net loss of public access to the foreshore or public usability of coastal waters.

Recommendation:

The likelihood of potential impact on existing marine users during construction is re-assessed and the risk re-calculated. Any new risk level should consider any requirement for further mitigation measures.

RESPONSE

The Flanagan Consulting Group report on the Impacts of Maritime Traffic at Appendix A7 in Volume 2 having regard to the revised operating characteristics of the Temporary Bridge makes it clear that the impact will be negligible. Nevertheless, this matter is addressed in the revised Hazard and Risk Register.

As an alternative, a barge option to carry trucks across Ross Creek has been considered by the project Proponent, which would effectively avoid any concerns about the impact of a temporary bridge structure on creek access.

This alternative to the temporary bridge across Ross Creek involves barging the trucks back and forth across the creek to the site. Discussions with the Port and the Regional Harbour Master have confirmed that this option is possible and two barge landing ramp locations have been identified with them and design work has been undertaken to show that the options are viable. The barging option has an advantage over the bridge in that noise on the Strand and Sir Leslie Thiess Drive is minimised.