

Coordinator-General's report

Evaluating the environmental impact statement for the Townsville Ocean Terminal Project

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List of acronyms and abbreviations

AEP	annual exceedence probability
BICA Act	Breakwater Island Casino Agreement Act 1984
CBD	central business district
CPI	consumer price index
DES	Department of Emergency Services
DEWHA	Department of Environment, Water Heritage and the Arts
DMP	disaster management plan
DPIF	Department of Primary Industries and Fisheries
EIS	environmental impact statement
EMP	environmental management plan
EPA	Environmental Protection Agency
EPBC Act	Environment Protection and Biodiversity Conversation Act 1999
FDA	future development area
GBRWHA	Great Barrier Reef World Heritage Area
LPG	liquid petroleum gas
NES	national environmental significance
PIANC	Permanent International Association of Navigation Congresses
QT	Queensland Transport
SDPWO Act	State Development and Public Works Organisation Act 1971
SEIS	supplementary environmental impact statement
SSAN	security sensitive ammonium nitrate
TEC	Townsville Entertainment Centre
TOR	terms of reference
TOT	Townsville Ocean Terminal
TRBOC	Townsville Region Bird Observers Club
WSUD	water sensitive urban design



Synopsis

This report provides an evaluation of the environmental impact statement (EIS) process for the Townsville Ocean Terminal (TOT) project (the project). It has been prepared pursuant to section 35 of Queensland's *State Development and Public Works Organisation Act 1971* (SDPWO Act).

The project comprises the development of approximately 80 hectares of land under tidal water seaward of the existing Townsville Casino and Entertainment Centre, including:

- a dedicated cruise terminal and wharf to receive cruise ships and naval vessels
- reclamation of land under tidal water for a residential canal development
- development of approximately 200 detached and 500 multistorey dwellings
- marina facilities for general recreational vessels and visiting superyachts
- new foreshore public open space areas.

An initial advice statement was lodged with the Coordinator-General on 19 April 2006 and the project was declared to be a 'significant project for which an EIS is required', in line with section 26(1)(a) of the SDPWO Act, on 26 October 2006.

On 16 October 2006, the project was determined to be a controlled action pursuant to section 75 of the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act)—reference number EPBC 2006/3089. Under a bilateral agreement with the Australian Government, the Coordinator-General's report will be used by the Australian Government Minister for the Environment, Heritage and the Arts to make an assessment of the controlled action for the purposes of the EPBC Act.

The proponent of the Townsville Ocean Terminal project is a joint-venture partnership between Tabcorp and City Pacific Limited. Tabcorp's direct involvement will not extend beyond the approvals process. Draft terms of reference (TOR) were advertised for public comment on 18 November 2006. Comments were accepted until close of business on 18 December 2006. A final TOR was issued to the proponent on 24 March 2007.

The EIS was approved for release and advertised publicly on Saturday 1 December 2007 inviting submissions until close of business on Friday 1 February 2008. All submissions were forwarded to the proponent for consideration and, following discussions with the proponent and its technical consultants, the Coordinator-General determined that the preparation of a supplementary report to the EIS (SEIS) was necessary to address substantive issues that were raised.

The key environmental issues raised in submissions were:

- amenity impacts from the Port of Townsville on the proposed residential area and the economic impact this could have on the port operations
- potential disruption to navigation of vessels in Ross Creek
- water-quality impacts in Cleveland Bay
- disturbance of marine fauna in Cleveland Bay
- impacts on road and other infrastructure.

On 19 August 2008, the SEIS addressing the above issues was forwarded to advisory agencies requesting their specific comments or advice for consideration in preparing this report, and to other EIS respondents for their information.



In evaluating the environmental effects, I have considered:

- the EIS, SEIS and detailed environmental management plans (EMPs) prepared by the proponent
- public submissions received on the EIS
- comments on the EIS and other advice provided by state and local government authorities (advisory agencies)
- other relevant information.

The project has been formulated in accordance with the *Breakwater Island Casino Agreement Act 1984* (BICA Act), which sets out the planning and approvals framework for the development. The BICA Act requires the proponent to prepare an EIS for evaluation by the Coordinator-General prior to seeking approval for the project from the Minister (the Treasurer of Queensland). Accordingly, Part 4, Division 7 of the SDPWO Act applies to my evaluation of the project.

Based on the issues generated by the proximity to the Port of Townsville, I have formed an opinion that the current design of the residential component of the Townsville Ocean Terminal project is not suitable. Accordingly, I have included recommendations to the Minister specifying a number of actions that the proponent should carry out before seeking an approval. These are set out in Schedule A1 of this report and include specific requirements to amend the project's master plan to improve the compatibility of the development with the operations of the Port of Townsville. It is my expectation that the proponent will provide further information relating to the amended master plan before July 2009.

As a result of other issues raised during the EIS and SEIS and my consideration of them, I have also made recommendations to apply conditions (set out in Schedule A2) to:

- protect the safety of occupants and to limit property damage from natural disaster events
- minimise disturbance to fish habitat, sensitive marine fauna and avifauna in the vicinity of the project
- maintain water quality and minimise impacts from dredging during construction and operation of the project
- minimise disruption to navigation of vessels in Ross Creek and the Port of Townsville's operations during construction of the project.

I consider that the EIS for the project has addressed the environmental and other impacts of the project and meets the requirements of the Queensland Government for impact assessment in accordance with the provisions of Part 4 of the SDPWO Act.

Therefore, pursuant to section 52 of the SDPWO Act, I recommend that the Minister may approve the project subject to the conditions contained in Schedules A1 and A2 of this report.

Signed

.....

Colin Jensen

Coordinator-General

Date: 30 January 2009



1. Introduction

This report provides an evaluation of the environmental impact statement (EIS) for the Townsville Ocean Terminal (TOT) project (the project). It is not intended to record all the matters that were identified and subsequently settled. Instead, it concentrates on the substantive issues identified during the EIS process.

The report:

- summarises the key issues associated with the potential impacts of the project on the physical, social and economic environments at the local, regional, state and national levels
- presents an evaluation of the project, based on information contained in the EIS, supplementary EIS (SEIS) report, submissions made on the EIS and information and advice from advisory agencies and other parties
- recommends conditions under which the project may proceed.

Under a bilateral agreement with the Australian Government, this report will be used by the Australian Government Minister for the Environment, Heritage and the Arts to make an assessment of the controlled action for the purposes of the *Environmental Protection and Biodiversity Conservation Act 1999* (EPBC Act).

2. Project description

2.1 The proponent

The proponent of the Townsville Ocean Terminal Project is a joint-venture partnership between Tabcorp and City Pacific Limited. Tabcorp is only involved at the approvals process stage. City Pacific Limited will continue the process by undertaking the design, construction and delivery of the TOT.

Tabcorp (ACN 063 780 709) operates various entertainment activities in Australia, including the Townsville Jupiters Casino, TAB, Tabaret, Keno and TAB Sportsbet.

City Pacific Limited (ACN 079 453 955) is a diversified financial services company that listed on the Australian Stock Exchange in 2001. City Pacific provides approximately \$3 billion per year in loans to fund residential property; property development; commercial property investment; plant and equipment, and business finance.

It is recognised that City Pacific Limited has indicated that it may separately pursue the assigning of their rights to another party. Should this occur the assessment of the project and this report will remain in effect.

2.2 The project

The proposal is to develop approximately 80 hectares of land under tidal water seaward of the existing Townsville Casino and Entertainment Centre, to build:

- a dedicated cruise terminal and wharf to receive cruise ships and military vessels
- a residential canal development of approximately 200 single and 500 multistorey dwellings
- marina facilities for general recreational vessels and visiting superyachts
- new foreshore public open space areas.

The project has been formulated in accordance with the *Breakwater Island Casino Agreement Act 1984* (BICA Act), which sets out the planning and approvals framework for the development. The project site is defined as the 'future development area' (FDA) within the BICA Act. The site (see Figure 1) is an area of water partially enclosed by the breakwater known as the Western Breakwater along Ross Creek's western side, and by the breakwater running westward from the end of the Western Breakwater (known as the Offshore Breakwater).

The BICA Act ratifies an agreement to enable the establishment of a casino and other facilities in Townsville. The hotel-casino complex was intended to enhance the tourist industry of Queensland by providing an international-class hotel, casino and convention centre with high-standard ancillary amenities such as restaurants, entertainment theatres, sporting and other community facilities. The Act provides for the operation of the casino and the development and use of other areas of land in the casino area. This includes the water area in front of the casino, which is designated as the FDA. The Act provides for reclamation of the area and for creation of land that will become part of the City of Townsville planning scheme.

2.3 Project rationale

The motivation for the project is to improve cruise shipping facilities in Townsville, which is consistent with the Queensland Cruise Shipping Plan approved by the state government in November 2001. Combined with this is the benefit of providing improved military ship-berthing facilities. This is likely to increase visits by Australian and United States naval vessels to Townsville. Currently cruise and naval ships use the existing Port of Townsville wharves, which have limited facilities for passengers and service personnel.



Coupled with the development of the terminal is the proposal to build a residential precinct and marina facilities to the west of the terminal. The residential component will consist of 500 units in multistorey blocks and 200 individual lots. The marina will have 460 private and public marina berths including 10 superyacht berths.

Demand for additional marina berths in North Queensland is strong and there is also a market for superyacht facilities in North Queensland. The proposed superyacht berths at the TOT will complement existing facilities in Cairns and the Whitsundays.

Consumer demand for waterfront residential opportunities in Townsville, such as those proposed at Breakwater Cove, is also reportedly strong. Waterfront property prices in Townsville have experienced above-average growth for at least the past five years, and sales in other developments have been rapid. The continuing development of similar residential complexes in the area substantiates the popularity of this type of residential development.

3. The environmental impact assessment process

3.1 Declaration as a significant project

City Pacific Limited lodged an initial advice statement for the project with the Coordinator-General on 19 April 2006. Pursuant to section 26 of the SDPWO Act, the Coordinator-General declared the Townsville Ocean Terminal Project to be a 'significant project for which an EIS is required' on 26 October 2006.

On 16 October 2006, the Australian Government determined that the project was to be a controlled action pursuant to section 75 of the EPBC Act (reference number EPBC 2006/3089).

3.2 Terms of reference for the environmental impact statement

Draft terms of reference (TOR) for the environmental impact statement were prepared and distributed to the advisory agencies and for stakeholder comment. The draft TOR were publicly released and advertised for public comment in the *Townsville Bulletin*, the *Courier-Mail* and the *Weekend Australian* on Saturday 18 November 2006. Comments on the draft TOR were accepted until the close of business on 18 December 2006. The TOR were finalised and formally issued to City Pacific Limited on 24 March 2007 following evaluation of all comments received from advisory agencies and the public.

3.3 Public review of the EIS

The EIS was approved for release and advertised publicly on Saturday 1 December 2007, inviting submissions until close of business on Friday 1 February 2008. A CD-ROM copy of the EIS was available free of charge from the proponent, and hard copies were available for purchase.

The EIS was displayed at:

- Jupiters Casino, Townsville
- Townsville City Council
- State Library of Queensland, Info Zone, South Bank, Brisbane.

Information on the project was available via the City Pacific website and Coordinator-General's website, and general consultation was undertaken using methods such as advisory agency briefings; stakeholder meetings, for example with the Townsville Motor Boat and Yacht Club; and a public meeting in Townsville on 16 January 2008, hosted by the Townsville branch of the Institute of Environment Australia and New Zealand.

The following advisory agencies were approached formally to conduct an evaluation of the EIS:

- Department of Communities
- Department of Emergency Services
- Department of Housing
- Department of Local Government, Sport and Recreation
- Department of Main Roads
- Department of Natural Resources and Water
- Department of Primary Industries and Fisheries



- Department of Tourism, Regional Development and Industry
- Environmental Protection Agency
- Queensland Health
- Queensland Police Service
- Queensland Transport
- Townsville City Council
- Port of Townsville Limited (formerly Townsville Port Authority)
- Great Barrier Reef Marine Park Authority
- Queensland Museum (Museum of Tropical Queensland)
- Royal Australian Navy
- Australian Government Department of Environment, Water, Heritage and the Arts.

Following the eight-week public review of the EIS a total of 156 submissions were received with the following distribution.

Distribution		Number
Advisory agencies	Department of Tourism, Regional Development and Industry Department of Housing Department of Communities Department of Emergency Services Queensland Police Service Department of Main Roads Department of Natural Resources and Water Department of Primary Industries and Fisheries Environmental Protection Agency Queensland Health Queensland Transport Townsville City Council Port of Townsville Limited (formerly Townsville Port Authority) Australian Government Department of Environment, Water, Heritage and the Arts	14
Industry	Townsville Chamber of Commerce Sun Metals on behalf of Townsville Port Users Group.	2
Private	North Queensland Conservation Council Townsville Enterprise Limited Townsville Bird Observers Club Townsville Local Marine Advisory Committee P&E Law on behalf of the residents and Bodies Corporate of buildings at Numbers 1 and 7 The Strand P&E Law on behalf of Townsville Motor Boat and Yacht Club Limited	10
Individual		130



3.4 Review of the supplementary EIS

Copies of the SEIS were issued to all advisory agencies and other respondents to the EIS were informed that the report was available. The SEIS was available for review on the City Pacific Limited website and was accessible via a link on the Department of Infrastructure and Planning website.

Advisory agencies were invited to comment on the SEIS and to provide specific advice to the Coordinator-General for consideration for inclusion as conditions or recommendations in this report. Comments from advisory agencies were due by the close of business on 12 September 2008.

The substantive issues raised in submissions on the EIS were:

- the impacts of the proposed permanent residential uses in the Breakwater Cove precinct on
 - future operation of the port
 - traffic loads on the adjacent road network—primarily peak trip generation
- potential threats to the health and safety of future residents due to exposure to tropical cyclone impacts and proximity to port operations
- potential impacts on sensitive marine fauna, including inshore dolphins and dugongs
- the potential disruption to navigation of Ross Creek due to the ocean terminal and a proposed temporary bridge during the construction phase.

The issues listed above are discussed individually in section 4 of this report. Any conditions necessary to manage the environmental effects of the development are included in each discussion. Where applicable the reasons for each condition are provided.

4 Evaluation of environmental effects

4.1 Summary

The SDPWO Act defines 'environment' to include:

- a) ecosystems and their constituent parts, including people and communities.
- b) all natural and physical resources.
- c) the qualities and characteristics of locations, places and areas, however large or small, which contribute to their biological diversity and integrity, intrinsic or attributed scientific value or interest, amenity, harmony and sense of community.
- d) the social, economic, aesthetic and cultural conditions that affect, or are affected by, things mentioned in paragraphs (a) to (c).

'Environmental effects' mean 'the effects of development on the environment, whether beneficial or detrimental'. These effects can be direct or indirect, of short, medium or long-term duration and cause local or regional impacts.

This section outlines the major environmental effects identified during the EIS process, including those raised in the EIS, SEIS, in submissions on the EIS, and in consultation with advisory agencies and other key stakeholders. I have provided comments on these matters and, where necessary, made recommendations to mitigate adverse impacts.

The project has been formulated in accordance with the *Breakwater Island Casino Agreement Act 1984* (BICA Act), which sets out the planning and approvals framework for the development. The BICA Act requires the proponent to prepare an EIS for evaluation by the Coordinator-General prior to seeking approval for the project from the Minister.

Following the Coordinator-General's evaluation, the Minister must consider an application for approval of the Future Development Area Scheme (FDA Scheme). The scheme sets out the allowable development and use of land within the project site. If approved, the FDA Scheme takes effect as a preliminary approval that is equivalent to a preliminary approval overriding a planning scheme (section 3.1.6 in the *Integrated Planning Act 1997*)

The Minister may approve, refuse or vary the proposed scheme in whole or in part and subject to conditions.

4.2 Compatibility with the Port of Townsville

4.2.1 Context

The residential canal and marina component of the proposal ("Breakwater Cove") comprises 500 multiple-dwelling units of up to six storeys in height and 200 lots of canal-style detached housing. The residential component would be constructed on a site that is currently vacant (permanently inundated seabed), directly adjacent to the port and downwind of the prevailing south-easterly to north-easterly wind directions.

The proposed ocean terminal precinct would also be located directly adjacent to and downwind of the port. Figure 1 shows locations.



Figure 1—Project layout





Although similar uses have been approved in other locations close to the port, the project would introduce a large number of new permanent residences in closer proximity. For example, the distance from Berth 10 to the closest approved dwelling site is presently 470 metres; this would be reduced to 340 metres should the TOT be approved. The distance from Berth 1 (located near the outer perimeter of the port) to the nearest approved dwelling site is approximately 1300 metres, which would be reduced to 610 metres.

The Port of Townsville is an extremely important state asset, being the major gateway port servicing North Queensland and the North West Minerals Province. Its further development as an operational port will be critical to the economic growth of the region; it provides an essential export link from the rich mineral provinces to world markets. Trade through the port is predicted to treble in the medium term although details of timing and products are difficult to predict. Developing the port access corridor and upgrading other infrastructure is currently underway and designed to facilitate growth of export trade.

The proximity of the port to the Townsville CBD and adjacent urban areas in South Townsville is leading to potential conflicts between residential and port activities. There is a strong imperative to protect the integrity of the port and to provide for an effective and sustainable interface between the two activities.

In considering the compatibility of the proposed new residential development with the port, the basis for my assessment is twofold:

1. to determine the impacts on the costs and risks for existing operations and future expansion of the port
2. to consider the health, safety and amenity of future residents within the development.

4.2.2 Potential amenity impacts from port operations

The EIS (including the supplementary report) examined a range of likely nuisance impacts of the port on the proposed residential areas. These included air quality, dust-fall, noise, odour, electronic interference and lighting. Several specialist studies and site-specific monitoring programs were undertaken to improve the understanding of the likely emissions that would affect residents.

A number of submissions in response to the EIS highlight the limitations of the site-specific monitoring data, particularly the short monitoring period for dust-fall within the project site. Although some project-specific baseline data is quite limited, all available data have been included and assessed, and supplementary modelling has been undertaken; this has improved confidence in predictions.

To address the uncertainty of the current knowledge of the port emissions regime, the proponent has committed to establishing a monitoring station within the project site that would record noise levels and air quality (e.g. particulates and dust). This monitoring station would operate over the project construction period (three+ years) to provide a detailed baseline dataset. It is envisaged that after construction, the monitoring station would become part of the Environmental Protection Agency's monitoring network and be operated continuously to assist in the investigation and management of any nuisance complaints.

The EIS finds that, with some exceptions, port emissions do not regularly exceed existing regulatory requirements, and the project site would not be exposed to excessive impacts. Some recognised limits may occasionally be exceeded during certain odour events (e.g. live cattle export) and noisy operations (e.g. ships horns and scrap metal loading). However, in comparison to other locations in Townsville and many other residential areas in Queensland, the EIS concludes that noise and air-quality nuisance impacts would not be unacceptable.

Odour emissions from the handling of live cattle, molasses and sugar can occasionally cause accepted limits to be significantly exceeded. All of these cause odour nuisance to existing residents in the CBD and nearby suburbs with some anecdotal reports of extended periods of uncomfortable levels. Due to their relative proximity to port operations, the proposed permanent dwellings would be more exposed to odour nuisance than other residential areas.

4.2.3 Port protection measures

The EIS sets out proposed port protection measures that include the Port Protection Agreement, Port Protection Code and the Community Management Scheme. These provide guidance for the residential development and commit residents to a contractual arrangement that aims to protect the port from unwarranted complaint. The overall objectives of the measures are to:

- acknowledge the port operations and their importance
- make initial and subsequent buyers aware of the port and its potential nuisance
- limit body corporate rights to complain about or take action against the port
- undertake site-specific monitoring during the construction period to accurately describe the character of port emissions
- provide design guidelines for residential buildings that will provide comfortable ambient conditions within the buildings, even under worst-case port operations
- provide design guidelines for external areas of residential buildings that will optimise the use of the site to limit the nuisance impact of port activities.

The EIS notes that while the proposed port protection measures are unusual for a residential precinct adjacent to a major port, they are not uncommon for housing near similar public infrastructure such as railways, arterial roads etc. Port protection measures are designed to ensure that prospective buyers are fully aware of potential nuisance impacts and can only lodge nuisance complaints to the port through the body corporate. Based on experiences in similar situations, the EIS finds that it is likely that residents, well informed with monitoring data and protected by well-designed housing, will become accustomed to nuisance impacts and should coexist well with the port.

Several case studies of other ports were supplied by proponents and submitters. These examined a wide range of comparable scenarios and provided evidence that well-managed situations do exist in some cases. No broad conclusions can be drawn except that in cases where poorly managed situations have occurred, it is likely to be the port operations that are compromised rather than the adjacent residential uses.

4.2.4 Conclusions


Although the measured and predicted emissions affecting the project site show that regulatory limits are generally not exceeded, the limited data presented in the EIS leaves some uncertainty. It is clear however that the proposed permanent residences of the project would be exposed to emissions (such as noise, dust and odour) from the port to a greater degree than other nearby residential areas due to their proximity and the direction of prevailing winds.

Despite the port's apparent compliance with regulatory standards, some uncertainty remains in determining the actual amenity impacts that may occur. Both the Environmental Protection Agency and Queensland Transport advise that nuisance complaints are likely to be made despite the port operating within lawful limits—this has occurred recently in Townsville and other Queensland ports. Also, some regulatory standards are not accurate predictors of nuisance. For example, the acceptable limit for dust deposition is 120 mg/m²/day measured over a month. However, much of that amount could occur as an individual large dust event over a short period of one to two hours, with noticeable nuisance impacts.

Occupants' sensitivity would be mitigated to a large extent by the port protection measures proposed in the EIS, particularly the regulation of building design. The critical component of the port protection measures is the ability to tightly regulate building design to include adequate screening, insulation and dust exclusion elements. The proposal also includes a six-metre-high acoustic barrier between the port and the residential precinct to limit noise nuisance.

The long-term monitoring of noise and air quality within the project site would be valuable in ensuring a scientific basis to the ongoing management of nuisance issues.

The EIS notes the forecast expansion of the port's throughput and predicts likely port emissions for the period up to 2050. By considering model simulations of existing emissions



and for increased use of the existing ore loading facilities, the EIS concludes that emissions affecting the project site would not increase significantly. Although the EIS finds otherwise, it is highly likely that future port operations for loading materials such as magnetite, and construction works for newer berths to seaward will necessarily increase the intensity and duration of emissions at the project site. In the project's initial stages, much of the new throughput of the port is likely to be via existing berths, which currently have relatively low utilisation rates. However, the cumulative effects of simultaneous or more frequent activities could be significant.

I find that the proposed port protection measures cannot fully mitigate the amenity impacts on permanent residents or completely remove risks to the port and its users. Reasons include:

- Existing emissions from the port could be accurately described by the proposed monitoring program. However, since the future activities in the port are not easily predicted, the intensity and nature of future emissions cannot be well defined. Building design standards based on the next two to three years of a monitoring program period may not be adequate to mitigate against future port operations
- The building design codes attempt to limit nuisance impacts on private open space areas within the development, but the majority of outdoor living areas of the residential properties (particularly the detached housing) could be subject to substantial impacts of dust-fall, noise and odour emissions from the port.
- Recent experience in Townsville and other Queensland ports suggests that serious concerns about amenity and/or health can arise even though emissions are lower than regulatory limits.
- The proposed protection measures would limit an owner or occupier from making a complaint directly to the port or other authority. However, there can be no limit on a person making comment or raising concerns with another person such as a journalist or a political representative.
- The rights of residents to complain or sue the port through the tort of nuisance are limited by agreement. This agreement cannot and should not limit a resident's right to raise health and safety concerns related to the port's operations.
- The long-term protection of the covenant and release provision could be compromised over time if the covenant is not adequately bound to land title.

The EPA, in administering the *Environmental Protection Act 1994*, is required to investigate and resolve all nuisance complaints. Since the port protection measures cannot fully mitigate amenity impacts or eliminate potential complaints, introducing new sensitive receptors in close proximity has the potential to require changes to current port operations.


The port has the potential to expand rapidly over the medium term and it is likely that future port operations and construction works will necessarily increase the intensity and duration of emissions at the project site. At a certain point in the port's expansion, the EPA would need to manage cumulative impacts and ultimately may need to impose a no-net-increase conditioning regime. This point would be reached earlier as a result of the project.

Contemporary environmental protection regulations would impose greater constraints than have occurred in the past, and the port must also work within its existing constraints. Having considered the above matters, I find that more regulatory costs would likely be imposed on port operators due to the number and proximity of the proposed new dwellings.

4.3 Health and safety risks to future residents

4.3.1 Explosive and hazardous cargoes

The port currently handles a number of dangerous cargoes including security sensitive ammonium nitrate (SSAN), LPG, petroleum products and explosives (primarily navy munitions). Operations involving these dangerous cargoes are constrained by the relevant regulatory controls and the proximity of nearby development. The port operators also have a duty of care to ensure that risks to the safety of employees and nearby residents are appropriately managed.



The specialist reports completed for the EIS conclude that the location of the proposed dwellings in the project site would not affect the regulatory controls associated with the existing handling of dangerous cargoes. However, the EIS indicates that in some cases the port would be unlikely to be permitted to increase the quantities of dangerous cargo handled, particularly SSAN and Class 1 explosives.

There are relatively few shipments of LPG and petroleum products to the port and, combined with the necessary safety measures and protection systems, the likelihood of a significant incident is very low. The findings of the EIS and advice from the Department of Emergency Services (DES) indicate that although the consequences of an incident are serious, the probability of one occurring is extremely low. The port uses the following appropriate safety measures:

- Staff are in attendance and emergency shutoff equipment is available to personnel on the ship and on the wharf.
- Delivery lines have automatic shutoff systems in the event of a break in the connecting coupling.
- One-way valves are in place on the receiving pipework to prevent backflow of gas.
- Pipework is pressure tested prior to receiving a shipment.


In the event of an oil spill, which could cover large areas of the port including the TOT berth, the dispersal of oil would be limited by floating booms installed in the berth pocket. In the event of a fire in an oil spill, a cruise ship would be needed to evacuate the passengers. The SEIS found that once passengers were on shore the possibility of heat from an oil fire being able to cause injury is very low due to the distance from the flame.

A number of submissions from organisations—notably the Port of Townsville, DES and the Townsville Port Users Group—raise concerns about the proposed proximity of residences with dangerous cargo handling. Advice from DES includes a general recommendation that facilities for dangerous goods should be designed ‘... to ensure that risks are not introduced in an area where feasible alternatives are possible and justified.’ Several other submissions point to the standard practice of maintaining safe buffer distances between hazardous activities and residential areas. The submissions provide reference to guidelines, including those published by the WA Environmental Protection Authority (Guidance Statement No. 3: *Separation distances between industrial and sensitive land uses*) and PIANC (Permanent International Association of Navigation Congresses [International Navigation Association]), that recommend buffer distances of 1000 metres or more.

Certain port operations at Berth 10 (including handling SSAN and Class 1 explosives) are already significantly constrained by its proximity to the casino, the Townsville Entertainment Centre (TEC) and nearby permanent residential development. The project would reduce the distance from Berth 10 to the nearest approved dwelling site from 470 metres to 340 metres. The distance to the casino building is approximately 400 metres and the TEC is even closer. The port has imposed an operational constraint on handling explosives at Berth 10 while an event is underway at the TEC.

The fuel and LPG terminal at Berth 1 has been located near the outer perimeter of the port, partially to maximise the buffer distance from existing development. The project would reduce the distance from Berth 1 to the nearest dwelling from approximately 1300 metres to 610 metres.

The project’s master plan is based on the proponent’s understanding of the regulatory requirements for the management of dangerous cargoes in the port—confirmed by the specialist investigations in the EIS. Following these investigations, additional safety measures were introduced to the project: building design codes proposed as part of the port protection measures include a requirement to construct a safe refuge within each dwelling. The intention is to provide a suitably protected room that allows occupants to shelter temporarily during an emergency such as a chemical fire or explosion in the port, or a tropical cyclone. The proponent has committed to completing a disaster management plan for the site to ensure occupants are prepared to respond to a serious incident. This would include provision for an alternative evacuation route by water across to access points on the Strand Breakwater if



necessary. The disaster management plan will be finalised in consultation with DES prior to permanent occupation of the site.

4.3.2 Port emissions

A large proportion of the port's trade is the handling of bulk metal ore and concentrates including lead, zinc and nickel. All available information indicates that there are no concerns of long-term health impacts caused by metal dust emissions affecting the project site under current conditions. EIS model simulations of lead dust show statutory limits for respirable particulates set out in the *Environmental Protection (Air) Policy 2008* would be exceeded if Berth 11 was used at 100 per cent capacity. However from a practical viewpoint this level of berth utilisation is highly unlikely to be achieved. The lead levels tested in the fallout sample at the casino car park were higher than levels in the sample taken from the Jezzine Army Barracks (located at the opposite end of the Strand). While not exceeding any goal level, the casino car park sample is almost 50 per cent of the World Health Organisation's quoted advisory goal while being from a low level of utilisation of Berth 11.

The EIS examines other potential health and safety issues associated with the proximity of proposed residential uses to the port including sleep disturbance (associated with noise) and electromagnetic radiation from ship radars. None of these was found to be of concern.

In addition to the amenity impacts associated with live cattle loading in the port, concerns were raised of the potential for elevated human health risks on future residents due to the exposure to pathogens from live cattle. This was investigated as part of the EIS and I am satisfied that permanent residents are not likely to be affected to a greater extent than other urban areas in Townsville in the vicinity of the live cattle transport route.

4.3.3 Conclusions on hazardous cargo and port emissions

It may be technically correct to conclude that developing the project would not result in the port's infringement of legislative requirements associated with dangerous cargoes. However, I find that it would not be prudent to allow the development of a large number of habitable buildings in close proximity to these activities in the port. Greater buffer distances need to be provided than those presently proposed in the master plan.


Although the need for evacuation would be limited by the requirement for a safe refuge within each dwelling, due to the single road access, a rapid evacuation from the site during an emergency would be difficult. Where evacuation is necessary, the proposed over-water route would provide a reasonable alternative; however, some people may require vehicular access (e.g. elderly and disabled). In the case of an incident at Berth 1, this access would result in residents travelling directly toward the hazard.

Regarding the emission of metal dust, again I find that it would not be prudent to allow the development of a large number of habitable buildings in close proximity to the emission of these materials from the port. The possibilities of greater releases in the future and the potential for perceived or real effects when open outdoor areas are used create an unnecessary risk. Greater buffer distances need to be provided than presently proposed in the master plan.

4.3.4 Sustainable building design

A number of submissions to the EIS raise concern that, in order for the buildings and open areas to meet the requirements of the port protection measures, the buildings and garden areas will have to be built without taking the natural environment into account. The submissions contend that the enclosure of living areas and the use of air-conditioners are not in keeping with the principles of sustainability. Natural cooling through cross ventilation and taking advantage of sea breezes would be excluded while high-energy-using air-conditioners would be needed to retain comfort levels.

The EIS provides a number of designs for sustainability measures such as solar power supplies, stormwater use and passive environmentally-functional design features that could be included in the residential component. In the SEIS, examples of noise control from inner



Brisbane residential developments were considered to show how passive design features could be built into residential dwellings to control noise levels without preventing the use of natural climate advantages.

4.3.5 Conclusions on port compatibility

Overall the port would be at risk of adverse outcomes as a direct result of the number and proximity of the proposed permanent residential buildings. Given the importance of the port to the state and the likely demand for its future expansion, I find the constraints imposed by particular elements of the project unacceptable.

I accept that an alternative form of the proposed development in the project site may be feasible. Any alternative should take into account the identified limitations of the proposed port protection measures and should incorporate appropriate buffer distances between incompatible land-uses, including evacuation routes.

Since forming this opinion I have consulted with the proponent who has agreed to consider this requirement. To address the concerns above, the proponent has developed a further design scheme for the FDA, which takes into account the requirements for separation distances from certain activities in the port. The proposed design plan is shown as a Zone Plan in Appendix A of this report and is referred to in my recommendations.

Recommendation 1. In order to ensure the development achieves acceptable compatibility with the future operations of the Port of Townsville, the FDA Scheme should only be approved if:

1. The project master plan is amended, to the satisfaction of the Coordinator-General, such that:
 - a) All development conducted within the project site is in accordance with the Zone Plan attached to this report and marked Appendix A.
 - b) All habitable buildings and evacuation routes are not to be located within a radius of 800m to hazardous operations at Berth 1 in the port, as depicted by zone A of the Zone Plan - Appendix A.
 - c) All habitable buildings are no closer to hazardous operations at Berth 10 in the port than habitable rooms of the existing casino building, as depicted by zone B of the Zone Plan - Appendix A.
 - d) Permanent residential areas, shown as Zone D in Appendix A, must be separated by at least 1000m from berths 2, 3 and 11 (being the significant dust sources).
 - e) Short term accommodation such as hotels, commercial, retail and hospitality uses may be located in the area shown as Zone C in Appendix A.
 - f) The community facilities and benefits provided by the project should be equivalent to, or better than, the existing proposal.
2. The port protection code to be incorporated into the FDA Scheme provides design criteria for the provision of suitable amenity in the private open space of the residential areas.
3. The FDA Scheme includes sustainable building design requirements consistent with the Townsville City Plan.

Recommendation 2. In order to accurately define the baseline conditions within the project site, the following conditions should be included with an approval of the FDA Scheme:

1. Establish a monitoring station within the project site to operate continuously over the construction period and for at least 10 years following construction. The monitoring station is to be designed and operated in consultation with the Environmental Protection Agency (EPA) and is to record noise levels, air quality (including heavy metal content) and other relevant parameters as required.
2. All data are to be made freely available to the public in a similar manner to the EPA's air monitoring network.

4.3.6 Risks to the safety of future residents due to exposure to coastal hazards

Safety of residents

The proposed residential development would be exposed to coastal hazards including storm-tide inundation and damage from wave overtopping. The development would result in the creation of permanent residential housing in the most seaward location in Townsville and therefore appears to be dangerously exposed to coastal hazards. In particular the proposal includes several detached housing lots and multiple dwelling units on the outer breakwater.

A number of submissions express concern about the safety of occupants and potential property damage as a result of coastal hazards. Also, several submissions highlight the recent predictions of rising global sea levels and the increased incidence of severe tropical cyclones associated with climate change.

The EIS acknowledges the threats posed by coastal hazards and commits to a careful design process to manage the risks including physical model testing of the structures. Additionally, the proponent has committed to completing a disaster management plan for the project covering a response to major tropical cyclones. Key elements include on-site mitigation such as the provision of safe refuges within the development site and site-specific emergency management and evacuation planning.


The safety of future residents during severe tropical cyclone events is of critical importance and the design needs to minimise the risks. Community acceptance of mitigation of natural hazards in Queensland is typically based on a design event with a one per cent annual exceedence probability (AEP). This is the recommendation in various policy documents including the State Planning Policy 1/03 *Mitigating the Adverse Impacts of Flood, Bushfire and Landslide* and EPA's guideline *Mitigating the adverse impacts of storm tide inundation*. I note that Townsville City Council has generally adopted the one per cent AEP in considering development constraints for natural hazards such as flooding and storm-tide inundation, and I am satisfied that this level is generally appropriate for ensuring the safety of people and the protection of property from the effects of natural hazards.

In the present case I would prefer that a higher level of mitigation is applied for the safety of occupants to minimise the need for an evacuation response. During the warning phase of a tropical cyclone event, the details of the storm's intensity, pathway and timing cannot be accurately known and emergency managers must prepare for a conservative scenario. It therefore follows that evacuation arrangements would typically be activated on a more frequent basis than would be needed if the magnitude of the threat is precisely known. I therefore recommend that all habitable buildings be designed to ensure the safety of occupants for events up to and including the 0.2 per cent AEP storm.

Allowing for rising sea levels must be included when considering flooding and storm-tide risk. Based on current advice from the EPA, Townsville City Council has adopted a value of 0.3 metres (over a 50-year planning period). A report recently released by the EPA's Office of Climate Change entitled 'Climate Change in Queensland: what the science is telling us' discusses the current scientific understanding of potential sea-level rise. From this it can be concluded that a reliable estimate of predicted sea level rise is 0.8 metres by 2100.

I am aware of recent cases outside Queensland where certain development proposals have been refused—a contributing factor to the decisions has been the concern of increased coastal hazards caused by climate change. These cases illustrate the importance of ensuring that future property owners are not exposed to unacceptable risks from foreseeable natural hazards. These include the risk of increased cyclone occurrence, which has been predicted as one impact of the climate change.

It is important that development decisions continue to be based on the community's expectation of reasonable risk. In the present case I recommend that the nature and configuration of the proposed development warrants the adoption of 0.8 metres for predicted sea level rise, corresponding to a planning period of more than 90 years.



Although the proposed permanent residential housing within the project site would be exposed to coastal hazards associated with tropical cyclones, I am satisfied that appropriate design standards can be imposed to reduce the risks to acceptable levels. Detailed structural and hydraulic design needs to take into account impacts of both storm-tide inundation and wave overtopping.

Protection of property

Along with the safety of occupants, a key consideration is the risk of damage to property from coastal hazards. Where private residences are potentially exposed to inundation and wave action, it is reasonable to expect that only minimal damage would occur up to a nominated threshold. I therefore recommend that the detailed design of the project is required to demonstrate that negligible damage would occur to privately owned buildings for events up and including the one per cent AEP storm.

Recommendation 3. To minimise risks to the safety of occupants and risks of potential damage to private property, the following conditions should be included with an approval of the FDA Scheme


1. The design of the project must demonstrate the following, through appropriate model testing:
 - a) The immunity of all habitable rooms in buildings and the safe provision of evacuation routes from coastal hazards for events up and including 0.2 per cent annual exceedence probability (AEP). This condition recognises the drainage function of the roads for the surrounding land and that evacuation routes may include such roads. Evacuation routes during these events are to be designed to allow for inundation to a depth of no greater than 300 millimetres at the crown of the road.
 - b) All on-site infrastructure (including breakwaters, roads and services) maintains its function during, and immediately after, events up to and including one per cent AEP.
 - c) Negligible damage would occur to privately owned buildings for events up to and including one per cent AEP.
 - d) The consideration of coastal hazard design conditions must incorporate a 0.8 metre sea level rise component and a 10 per cent increase in tropical cyclone intensity.
2. A comprehensive disaster management plan (DMP) addressing all operational aspects of the project must be finalised in conjunction with the Local Disaster Management Group. The DMP must be completed to the satisfaction of the Department of Emergency Services prior to any residential use of the site.

4.4. Impacts on the coastal environment

4.4.1 Context

The project site is largely an artificial environment enclosed on three sides by breakwater structures and sheltered from the predominantly east to north-easterly wave climate. The seabed comprises a layer of soft 'ooze' material of variable depth between 1.3 metres and 3.1 metres. The reported examination of cores recovered in a geotechnical investigation indicates a mixture of clays and sands: organic, extremely soft to soft silty clay; clayey silt with very loose and loose sand; and silty sand to clayey sand. Underlying the soft sediments are deep layers of clay and dense sands that are suitable as reclamation materials.

The proposed construction methodology involves the reclamation of land predominantly using materials within the site. A program of relocating the soft sediments to extract the underlying dense clay and sand materials has been formulated and described in the EIS. The proposed method is to undertake these works 'in the dry'. Therefore, the project site would be initially enclosed by the construction of breakwaters and temporary sheet pile walls. Continuous dewatering operations would be required during the construction period.



The project master plan provides for the construction of an additional breakwater along the open edge of the site and a series of interconnected internal artificial waterways. A short access channel extending from the north-west corner of the site would be dredged. Approximately 460 marina berths and private pontoons for recreational boats would be provided. These new boating facilities would be located within Townsville's recreational boating node adjacent to the port, the existing Breakwater Marina and public boat ramps, and other marina facilities in Ross Creek.

4.4.2 Visual impacts

The project site is in a very prominent position close to Townsville's CBD and many of the inner city's residential and recreation areas, including the Strand and the casino hotel area. Accordingly the completed project, especially the proposed multi-storey hotel and apartment buildings (up to 9 storeys) and a large ship in the ocean terminal, will be highly visible to many of Townsville's residents and visitors.

The EIS assessed the existing visual character of the project area and investigated the likely impacts on visual amenity. The EIS concluded that, despite the project's high visibility and prominence, it would have a generally positive visual impact on its surroundings. In considering the project's location adjacent to similar urban areas and the port, I am satisfied that the project would have no significant detrimental visual impacts - once fully constructed.

Several EIS submissions raised concerns about impacts of the project on visual amenity during the construction period. The construction program includes an extended period of reclamation works where the entire site is to be bunded and pumped dry. By its nature, this phase of the construction is likely to appear "messy" and may attract negative comment. Due to the prominence of the site and its potential to have adverse visual impacts during this period it is important that the construction program is carefully managed to ensure its duration is minimised as much as possible. Additionally, it is important to ensure that the site would be appropriately remediated if the project is delayed or abandoned.

I understand that the delivery of the project is controlled by a development agreement that includes provisions to ensure the desired sequencing and satisfactory progress of the works. This agreement also includes certain financial measures to guarantee performance during early stages of construction. I also note that the agreement has been structured to ensure the ocean terminal would be completed as the first part of the project. Notwithstanding these arrangements, a number of additional project control conditions are recommended to assist in the effective delivery of the project. As an added measure, before construction commences I will ensure that sufficient financial surety has been obtained from the proponent for completion of the reclamation works in the event of a default.

Recommendation 4. In order to minimise visual amenity impacts during the project's construction, the following conditions should be included with an approval of the FDA Scheme:

1. Prior to commencement of construction, the proponent must demonstrate to the Coordinator-General that the risk of failure and/or unnecessary delay to the reclamation works has been minimised, including:
 - a) The design of all temporary works and all interim stages has adequately considered seasonal conditions and the potential for storm events, floods and other adverse weather.
 - b) All key construction approvals have been obtained.
 - c) The proponent and its contractor have sufficient resources to complete the reclamation works, including compliance with the EMPs and approval conditions.
2. Include provisions in the construction environmental management plan that requires that all construction works are carried out in a safe, tidy and timely manner, including appropriate management of materials stockpiles and construction waste.

4.4.3 Marine plants and fish habitat

Seagrass sampling was initially undertaken within the project site and in adjacent areas in September 2007. In May and June 2008 more detailed biological distribution mapping was undertaken. Relevant findings include:

- Seagrasses (*halophila ovalis* and *halophila spinulosa*) were found within the project footprint in low densities, with scattered patches in the northern half of the area, and more contiguous coverage in the southern half. Seagrass areas covered 17.9 hectares, or 30.5 per cent of the project site. Isolated patches of *halophila uninervis* were also reported.
- No seagrass or other marine plants were found in the immediate vicinity to the north-west of the project site. A large bed of *caulerpa taxifolia* (an introduced pest) was found extending along the length of the Strand and was overlapped by a large seagrass bed of variable density towards Kissing Point.
- The percentage cover of *macroalgal* species within the project footprint was minimal (7.9 hectares, or 13.9 per cent of the project site), and was spread out in sparse patches over the southern two-thirds of the area.
- There was a low density of benthic macroinvertebrates, found across 21.3 hectares or 36.3 per cent of the site.
- In the area that may be affected by the proposed temporary Ross Creek bridge, no saltwater couch or seagrass species were found. Mangrove trees, *avicennia marina*, were reported on the creek banks.


The construction methodology requires that all marine plants will be removed from the project site as a result of the draining and excavation work. The Department of Primary Industries and Fisheries (DPIF) advises that the seagrass beds in the project area are highly productive fish habitat and that their removal should be avoided or fully mitigated and offset in accordance with the policy 'Mitigation and compensation works or activities causing marine fish habitat loss'.

The proponent has committed to securing an appropriate offset and will undertake further detailed seagrass mapping in the full growth season to quantify the extent of mitigation required. The proponent has also committed to undertake the following additional mitigation actions:

- incorporating fish-friendly structures into the final design of the project facilities, using DPIF's *Fisheries Guidelines for Fish Friendly Structures*
- including components in the construction environmental management plan (EMP) to minimise loss and impacts on marine biota trapped when the project area is enclosed.

Recommendation 5. To ensure minimal disturbance to fish habitat, the following conditions should be included with an approval of the FDA Scheme:

1. The proponent must apply to the Department of Primary Industries and Fisheries (DPIF) for operational works approval for the removal, damage or destruction of marine plants associated with construction of the project. No operational works are to commence until approval is granted.
2. The impacts of the development on marine plants must be fully mitigated and offset in accordance with the DPIF policy "Mitigation and compensation works or activities causing marine fish habitat loss" to the satisfaction of the DPIF. Monitoring of marine plants undertaken in November/December 2008 will provide the basis for determining an appropriate fisheries offset in accordance with the Queensland Government Environmental Offsets Policy.
3. The proponent must apply to the DPIF for operational works approval for the construction of a waterway barrier to enclose and exclude tidal exchange in the project area.
4. Where practicable, the final design of the project facilities must incorporate fish-friendly structures using DPIF's "Fisheries Guidelines for Fish Friendly Structures"

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5. DPIF must be consulted in completing the environmental management plans for all works that may impact on fish habitats or fishing activities during construction and operation of the project, including the temporary access across Ross Creek.
 6. The finalised construction EMP must include the constitution of a Technical Advisory Panel, with DPIF representation, that will provide advice and support to the parties should problems arise that may result in negative impacts on the surrounding waters during construction. The powers of the DPIF and the EPA to give the contractor direction in the relation to issues within their respective jurisdictions, will not be affected by this advisory panel.
 7. The proponent must include measures in the construction EMP, to the satisfaction of the DPIF and EPA, to:
 - a) Minimise the number of motile marine biota trapped when the project area is enclosed.
 - b) Provide for the rescue, and maximise the survival, of marine biota trapped within the project area.

4.4.4 Marine fauna

Although the project site is semi-enclosed by artificial structures, it forms part of the Cleveland Bay marine environment. It is sheltered from the predominant easterly wind-waves and supports a partial coverage of marine plants considered by DPIF to be a productive fish habitat.

A number of submissions responding to the EIS include concerns that the development of the project site and the subsequent increase in recreational boating would significantly affect sensitive marine fauna, including inshore dolphins, dugongs and sea turtles. In response, the SEIS provides an updated impact assessment on marine fauna for the project site and within Cleveland Bay. This analysis includes an assessment of habitat loss, noise impacts and the potential increased risk of boat strikes.


Other impacts include fuel/oil spills and the introduction of marine pests, for which risks remain high despite mitigation. These impacts are created by all marine activity around Townsville and cannot be entirely mitigated. Plans to reduce the likelihood of such events occurring should be developed and response plans should be in place to address the impacts where required.

The operation phase may cause pet-borne lethal pathogens to be introduced into Cleveland Bay. This risk would be minimised by imposing a ban on domestic cats under the body corporate. Maintaining water quality through appropriate disposal of waste and adequate flushing of the marina would be expected to reduce the risk of impacts on dolphins, dugongs and marine turtles to a negligible level.

Collision risk was a serious concern in many submissions and considered a major factor affecting dugongs in the area. A collision risk model for Cleveland Bay suggests that it is an area of low risk because dugongs occur principally in only one area and move in a single corridor across the area of heaviest traffic (as opposed to between numerous islands, as in Moreton Bay). The risk of increased boat strike to dugongs as a result of the proposed TOT is considered small. However, turtles are more widely spread and the risk of boat strike is likely to increase with greater boat use. Therefore, control measures should be considered.

The EIS determined that the development site is not critical habitat for the sensitive marine fauna investigated. This was based on available observations, analysis of core feeding areas and the known behaviour characteristics of key species. The EIS also concluded that the effects of constructing and operating the development are unlikely to have significant consequences for dolphins, dugongs or other marine mammals.

Further correspondence on the SEIS from concerned individuals criticises the findings and maintains that the project would significantly impact the Australian snubfin dolphins (*Orcaella heinsohni*), and the Indo–Pacific humpback dolphins (*Sousa chinensis*) found in Cleveland Bay. Concerns were based on the view that the project site is a critical habitat and that the development could degrade adjacent habitat during and after construction. People's concerns



are heightened because of the very small populations of both dolphin species in Cleveland Bay and the risks to their survival locally.

Marine fauna specialists from relevant advisory agencies were asked to offer advice on the project's impacts. Having taken this expert advice into account, I conclude that there is no evidence that the project site forms part of a critical habitat for Cleveland Bay's inshore dolphins, dugongs and sea turtles, and that its development would not threaten the survival of local populations. Observation data show that the inshore dolphin species and dugongs are not thought to favour the project site as preferred habitat. Green turtles are widespread throughout Cleveland Bay and have been observed within the project site, although along with dugongs, this species occurs at highest density in the more permanent seagrass beds in the far east of Cleveland Bay. I accept that the habitat within the project site is unlikely to provide a significant feeding area for any of the key species considered. In particular, the seagrass coverage is relatively sparse and ephemeral when compared to nearby areas in Cleveland Bay.

I am concerned about noise disturbance and other impacts of construction, and consider that the construction methodology of the project must be carefully considered to reduce these impacts as far as practicable. The EIS includes a 'worst-case' noise model for piling operations and predicts a relatively rapid attenuation of noise from the source due to the seabed and sub-surface geology characteristics of the area. Specialist studies presented in the SEIS consider that direct injury to sensitive marine fauna from piling noise is not possible based on published injury thresholds for this type of noise.

It is reasonable to infer that the increase in the number of recreational boats in the residential development would result in a potential increased incidence of boat strike of sensitive marine fauna. However, given the project's location within Townsville's recreational boating node and next to a major port, it is not realistic to focus only on the impacts of this project. Improving the management of recreational boating impacts may be needed generally in the region.

Recommendation 6. To avoid (where possible) and otherwise minimise the disturbance to sensitive marine fauna, the following conditions should be included with an approval of the FDA Scheme:


1. Finalise the construction environmental management plan in consultation with EPA to include measures for appropriate management of:
 - a) fuel or oil spills
 - b) noise impacts on marine fauna
 - c) introduction of marine pests
 - d) entrapment of marine fauna within bunded areas.
2. In consultation with EPA, implement a monitoring program to assess the impacts of the construction and operation of the project on populations of key marine fauna in Cleveland Bay. This may be implemented by a financial contribution to existing monitoring programs.
3. Through the body corporate structures, incorporate a ban on domestic cats within the project site to minimise the contamination of artificial waterways with lethal pathogens.

Recommendation 7. In order to reduce the risks of injuring marine fauna by boat strike, Maritime Safety Queensland should consider the imposing the following:

1. An appropriate speed limit in the vicinity of the breakwater structures at the mouth of Ross Creek. This speed limit would apply to all vessels although certain exemptions may be necessary, as determined by the Regional Harbourmaster.
2. A no wash speed limit within the canal and access channel of the project.

4.4.5 Shorebirds

A specialist avifauna impact assessment report was completed for the EIS. Concerns were raised in a submission by the Townsville Region Bird Observers Club (TRBOC) that the



project site included valuable habitat and that members have reported sightings of threatened species in the locality.

TRBOC have kept irregular data on the birds of the port area for approximately 12 years and have reported observing 30 species (Table 1, supplementary EIS Appendix 14, Attachment B) from the port breakwater during this period. During May 2008 site inspections were conducted as part of the EIS. This work, in conjunction with the TRBOC observations, resulted in a list of 35 bird species potentially relevant to the site.

The EIS finds that most of the species would be considered transient and not resident or reliant on the site because preferred habitat occurs within adjacent areas. However, the habitat provided by the site could be considered 'preferred' by a number of species, including the eastern reef egret and striated heron. The site provides shelter, forage resources and perches for these species. Other shorebirds and coastal species, such as cormorants, gulls and terns, use the existing constructed part of the site occasionally for roosting while foraging in the local waters.

Sightings of the little tern, *Sterna albifrons*, (listed as endangered in Queensland) and sooty oystercatcher, *Haematopus fuliginosus*, (listed as rare in Queensland) have been recorded at the site, both roosting and foraging. The little tern roosts in the breakwater (rocky) habitat and forages in the nearby waters, and the sooty oystercatcher roosts in the rocky habitat and forages on the intertidal sections of the breakwaters. There are no breeding records for these (or any other) species within the site. It is possible that the terns may shelter near the breakwater in rough weather while the oystercatcher prefers exposed reefs and rocky shores on islands.

Although some of the species considered as potentially occurring may occasionally use the existing site (or locality), the EIS finds that the site does not form significant habitat critical to their survival. The EIS discusses the range of intertidal habitats, including 'rocky shores', in Cleveland Bay and on Magnetic Island (within 20 kilometres of the project site). Habitat considered of greater quality than that which occurs on the project site exists within this region and comprises approximately 40 kilometres of natural and nine kilometres of artificial rocky shore habitat.

The existing site comprises entirely artificial rock habitat—constructed breakwaters—and provides approximately three kilometres (less than six per cent) of the total rocky habitat available in Cleveland Bay. If the project is constructed, approximately three kilometres (i.e. the same amount that currently exists) of rocky shore habitat would be provided in the form of the new breakwaters. Impacts on avifauna associated with the project include loss of forage and roost habitat for some common (resident) species for the period of construction.

In order to provide similar habitat in the locality, a number of management measures could be introduced to the project. The EIS recommends that the proposed northern breakwater extension and at least some of the proposed Strand breakwater be managed as compensatory bird habitat. The EIS also recommends designing the breakwater to provide favourable conditions for birds to shelter, roost and forage, restricting access by pedestrians and domestic animals, and monitoring bird activities.

Although the habitat is artificial, it does provide some support to a limited number of species, with even fewer using or likely to use the site regularly. I am satisfied that the project site is not an important or critical habitat for rare and endangered bird species.

Recommendation 8. To avoid and minimise the disturbance to shorebirds, the following conditions should be included with an approval of the FDA Scheme:

1. To the maximum practical extent, an appropriately designed compensatory habitat (based on advice from suitably qualified scientists) should be provided within the new breakwater structures.
2. Access by pedestrians and domestic animals to compensatory habitat areas should be restricted.

3. Annual funding of \$500.00 (indexed annually by CPI) should be provided to the Townsville Regional Bird Observers Club for a term of 10 years for the ongoing monitoring and maintenance of avifauna observation records.
4. Finalise the construction environmental management plan in consultation with EPA to include measures that would minimise disturbance to avifauna by:
 - a) fencing of areas that do not require construction access to provide bird habitat.
 - b) excluding dogs from the construction site.
 - c) ensuring the site / project environmental officer is aware of bird habitat and has procedures available to manage and monitor accordingly.

4.4.6 Water quality

Construction impacts

Constructing the project would involve large-scale earthworks and developing and modifying major engineered structures within the coastal environment. The construction methodology involves enclosing and dewatering the site to allow the works to proceed without direct connection to tidal waters. This is partially intended to reduce the risk of releasing large quantities of unconfined sediments into adjacent coastal waters. Given the nature of the seabed sediments in the project site and the extent of the proposed works, any other method would be likely to cause significant impacts.

The following construction activities could potentially affect the environmental values of adjacent waters in Cleveland Bay:

- placement of rock during breakwater construction
- site dewatering operations
- dredging of the outer access channel for the artificial waterways
- dredging of a temporary access channel to the existing marina (if required)
- the initial breach of the temporary works to flood the artificial waterways
- dredging of the ocean terminal berth pocket and extension of the swing basin.

After investigating the scope and magnitude of the likely construction impacts, the EIS provides a number of recommendations to minimise potential for environmental harm. In summary the proposed measures include:

- completing a detailed baseline water quality monitoring program to define the existing conditions adjacent to the site
- developing appropriate water quality criteria for all water released from the site
- providing containment ponds within the project site to settle, and if necessary treat, water prior to discharge. Treatment may be required to neutralise acidic waters and/or promote flocculation of fine sediments
- compliance testing against approved discharge criteria prior to release
- discharging water via a diffusive device and mixing zone such as a permeable rock wall and/or behind a silt curtain
- using silt curtains in conjunction with dredging and breakwater construction activities
- suspending dredging operations during adverse wind and tidal conditions
- implementing a controlled flooding program over an extended period to minimise the movement of disturbed sediments.

Operational impacts

After the project has been completed, management controls will need to be established to maintain acceptable water quality both within the artificial waterways and in adjacent waters. The design of specific components in the development and the appropriate allocation of responsibilities will have a large bearing on the success of the management measures.

Key elements of the project design include:

- the layout of the artificial waterways and their flushing characteristics
- water sensitive urban design (WSUD) techniques applied to the stormwater drainage network to minimise contamination with pollutants

- provision of suitable facilities for efficient maintenance dredging operations.

The EIS describes the hydrodynamic modelling undertaken to assess the flushing characteristics of the artificial waterways. As a result of the modelling, some modifications were made to the project master plan to improve flushing. Additional recommendations, such as openings in the centre sections of the Strand breakwater, have been made to further improve flushing performance. I accept the findings of the modelling that demonstrate residence times in the artificial waterways are sufficiently short to maintain adequate water quality. I acknowledge that a new project master plan would necessarily have different flushing characteristics than the current proposal. I therefore recommend that the new master plan is modelled to demonstrate acceptable flushing performance before an approval is sought for the FDA Scheme.


The EIS discusses a range of WSUD measures for the management of stormwater quality and I note the commitments given by the proponent for their implementation. However, given the urban uses proposed in the project and their proximity to coastal waterways, it is likely to be difficult to implement best practice WSUD principles in this project. To maximise the effectiveness of the proposed measures, a stormwater quality management strategy should be developed prior to, and as a key input, to the detailed design of the project.

The proposed new waterways within the Breakwater Cove component of the development will be a canal, as defined by section 9 of the *Coastal Protection and Management Act 1995*. In accordance with section 121 of the Act, the local government assumes the ongoing responsibility for maintaining the canal and keeping it clean. Operationally, this role will be undertaken by the body corporate and is subject to a separate agreement with Townsville City Council.

Following its construction, the ocean terminal will be transferred to the ownership of the Port of Townsville. Maintenance dredging of the berth pocket will be undertaken as part of regular port dredging operations.

Recommendation 9. In order to avoid and minimise impacts on water quality of adjacent coastal waters, the following conditions should be included with an approval of the FDA Scheme:

1. Finalise the water quality component of the construction environmental management plan in consultation with EPA and Commonwealth Department of Environment, Water, Heritage and the Arts (DEWHA) to include the following measures:
 - a) Complete a detailed baseline water quality monitoring program to define the existing conditions adjacent to the site including appropriate wet season sampling and vertical distributions.
 - b) Develop water quality discharge criteria for all water to be released from the site.
 - c) Specify compliance testing of water against approved discharge criteria prior to release.
 - d) Develop, monitor and optimise of all water treatment and discharge processes.
 - e) Develop a methodology for the monitoring and treatment of acid sulphate soils within the project site.
 - f) Develop a methodology for the initial flooding of the artificial waterways to minimise the mobilisation of disturbed sediments.
 - g) Design and management of dredging operations to minimise adverse impacts on adjacent waters from suspended sediment plumes.
 - h) Specify threshold wind and tidal conditions at which all dredging operations are to cease.
2. Develop a comprehensive stormwater quality management strategy in consultation with EPA to be incorporated into the detailed design of the project layout. This strategy shall be completed prior to seeking lot reconfiguration approval and include details of ongoing management responsibilities of the bodies corporate for the monitoring, maintenance and (where necessary) upgrade of stormwater drainage systems.
3. Finalise the maintenance dredging component of the construction environmental management plan in consultation with EPA to include the following measures:

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- a) design and management of dredging operations to minimise adverse impacts on adjacent waters from suspended sediment plumes
 - b) specification of threshold wind and tidal conditions at which all dredging operations are to cease
 - c) design and management of dredge material dewatering and disposal operations to minimise adverse impacts on adjacent waters.

Recommendation 10. In order to ensure the water quality impacts of the project are acceptable, the FDA Scheme may only be approved if:

1. The proponent demonstrates, to the satisfaction of the Coordinator-General, that the flushing performance of the amended layout of the artificial waterways is equivalent to, or better than the existing proposal.
2. The preliminary design of a dredge material rehandling facility is incorporated in the project masterplan. This must include a review of predicted dredging volumes.

4.5 Effects on infrastructure

4.5.1 Road network

The main elements of the project, including 700 new permanent dwellings and the ocean terminal, have the potential to generate significant numbers of additional private car movements.

Using modelling techniques, the EIS investigated the impacts of the development on the adjacent road network. The base case modelling indicates an emerging congestion problem in the inner city area at peak traffic times. In particular, this is apparent at the Flinders/Denham Streets intersection, although other nearby links would be similarly affected.

The traffic congestion at non-peak times appears to be less of a concern. However, the existing situation could be aggravated when special events are held at the Townsville Entertainment Centre, resulting in higher-than-normal traffic movements to and from the breakwater area and through the inner city.


The EIS concludes that Sir Leslie Thiess Drive—the main feeder to the project site—is more than adequate to accommodate the anticipated loads and the project will not materially impact the existing situation on the adjacent road network. Accordingly, the EIS finds that no road infrastructure upgrades and/or augmentations are required in order to accommodate the project.

However, all the traffic studies in the EIS assume that Townsville City Council will construct an alternative crossing of Ross Creek at the end of The Strand (the 'Strand Bridge'). This may reflect council's current planning; however, recent advice from council and the Department of Main Roads express significant concerns with the consequential impacts of this option. High traffic loads would be experienced along the Strand and expensive intersection upgrades in South Townsville are likely to be needed. A decision has not been made to construct a bridge (funding or statutory approval). Therefore it cannot be considered as a certainty.

The EIS traffic modelling did not investigate the external traffic impacts for the scenario without the Strand Bridge. It is reasonable to anticipate that the peak loads from the proposed 700 new residential properties in Breakwater Cove without the Strand Bridge would significantly exacerbate the current traffic situation.

Townsville City Council has recently embarked upon an inner-city traffic modelling project to help develop feasible solutions to the anticipated traffic congestion problems. This may or may not include construction of an alternative Ross Creek crossing. If council decides that a bridge should be delayed or avoided, the TOT project is likely to trigger significant bring-forward costs or alternative mitigation works.

The proponent has committed to paying a fair and equitable contribution to address all impacts. However, the extent of the contribution will not be known until council's traffic management planning study has been completed.



Recommendation 11. In order to secure fair and equitable contributions for mitigation of the project's impacts on the road network, an application for approval of the FDA Scheme may only be approved if:

1. Infrastructure agreements Heads of Agreements for the mitigation of impacts on the road network are executed separately with Townsville City Council (local roads) and the Department of Main Roads (State controlled roads). The Heads of Agreements must at a minimum set out the process the parties will follow to resolve the detail of the infrastructure contribution to be made by the proponent in respect of the proposed infrastructure agreements.
2. An independent arbiter may be appointed by the Treasurer to oversee the negotiations of the separate infrastructure agreements. The independent arbiter will have the power to review and decide on areas of disagreement between the parties with the purpose of achieving agreements containing reasonable terms.

4.5.2 Impacts on road pavements

The EIS investigated the potential impacts of construction traffic on the service life of road pavement. The proponent has acknowledged the need to compensate the relevant parties for the potential decrease in the service life of affected roads. A suggested rate is provided in the EIS; however, I accept that the level of contribution must be determined in consultation with the infrastructure providers.

Recommendation 12. In order to ensure the proponent's commitment to compensate for road pavement wear, the following condition should be included with an approval of the FDA Scheme:

1. Compensation for road pavement wear associated with the construction of the project is to be specifically covered in agreements with each of the relevant parties. These agreements are to be resolved prior to the issue of the relevant operational works approvals or such later date approved by the Treasurer of Queensland. Compensation in this regard will relate to the roads under the control of the Townsville City Council, the Port of Townsville Limited and the Department of Main Roads. An independent arbiter may be appointed by the Treasurer to oversee the negotiations of the separate agreements. The independent arbiter will have the power to review and decide on areas of disagreement between the respective parties with the purpose of achieving agreements containing reasonable terms.


4.5.3 Water and sewerage

The EIS reports that extensive discussions have been held between the proponent and Townsville City Council on the matter of providing adequate water and sewerage services to the site. The EIS concludes that augmenting the existing infrastructure is manageable and similar to works required for other new developments. Council have advised that the water and wastewater infrastructure required for the development has not been included within council's headworks policy and must be provided at the proponent's expense.

The proponent has committed to paying for the necessary augmentation of water and sewerage services for the project. Preliminary assessment of the scope of the required works has been undertaken in the EIS.

Recommendation 13. In order to secure fair and equitable contributions for the augmentation of water and sewerage services to service the project, an application for approval of the FDA Scheme may only be approved if:

1. An infrastructure agreement Heads of Agreement for the augmentation of water and sewerage services is executed with Townsville City Council. The Heads of Agreement must at a minimum must set out the process the parties will follow to resolve the detail of the infrastructure contribution to be made by the proponent in respect of the proposed infrastructure agreement.

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2. An independent arbiter may be appointed by the Treasurer to oversee the negotiation of the infrastructure agreement. The independent arbiter will have the power to review and decide on areas of disagreement between the parties with the purpose of achieving an agreement containing reasonable terms.

4.5.4 Impacts on navigation in the port and Ross Creek

Temporary bridge crossing

The construction phase of the project would require the importation of more than 1.8 million tonnes of rock and other material to the site over a 27-month period. Rock would be sourced from existing quarries in the region and delivered by truck. Several potential haulage options were investigated considering various combinations of road and barge routes. The preferred option described in the EIS would require a temporary crossing of Ross Creek in the form of a single-lane opening bridge.

A significant number of EIS submissions express concerns at the project's proposal to construct a temporary bridge across Ross Creek for haulage of materials. The concerns centre on the disruption to navigation of recreational vessels, primarily from the Townsville Motor Boat and Yacht Club. Furthermore, concerns were raised about significant noise and vibration impacts to residents of existing dwellings. In response, the proponent made a significant effort to mitigate impacts and investigate alternative solutions. The EIS reports that the temporary bridge remains the preferred solution; however, an alternative mode of creek crossing via barge appears to be promising.

This alternative to the temporary bridge across Ross Creek involves barging the trucks back and forth across the creek to the site. The proponent has advised that discussions with the Port of Townsville and the Regional Harbourmaster have confirmed that this option is possible and two potential locations for barge landing ramps have been identified. I accept that this option would require an access agreement to be negotiated with the Port of Townsville and therefore may not be viable. The final preferred option must be carefully considered to ensure safe navigation and minimal disruption to port operations.


Submissions on the EIS raised concerns that the increased lighting associated with the project may interfere with navigation lights in the port area, including lead lights and channel marks. Although it is difficult to predict the actual impacts, it is critical that any potential interference is avoided and I note the proponent has committed to ensuring that any impacts would be mitigated.

Concerns were also raised that security measures associated with a navy vessel berthed at the ocean terminal would obstruct access to and from Cleveland Bay by boat users who presently use Ross Creek. The supplementary EIS examined this issue and determined that, although buffer distances of up to 100m may be imposed, minimal disruption to users is likely. I am satisfied that this matter has been sufficiently investigated and that the necessary security arrangements could be implemented without significant impacts.

Constructing and operating the ocean terminal

Constructing the ocean terminal would involve significant maritime works in the port area including excavation, sheet piling and dredging. This would require the operation of floating plant in the vicinity of the proposed ocean terminal causing possible temporary disruption to navigation of Ross Creek.

The supplementary EIS proposes that the berth pocket for the cruise terminal be created by dry excavation. This would be done by sheet piling the area to be created, pumping the area dry, and using excavators to remove the breakwater rock and bed material. A period of dredging in the harbour would be needed to finalise the deepening into the harbour channel and to shape the berth pocket. All excavation activities would need to be coordinated with the Regional Harbourmaster and the Port of Townsville Limited to ensure that port traffic was not disrupted.



Recommendation 14. In order to avoid and otherwise minimise disruption to port operations and navigation of vessels in Ross Creek, the following conditions should be included with an approval of the FDA Scheme:

1. The transfer of construction material across Ross Creek by a temporary facility should utilise the barging method presented in the supplementary report to the EIS. In the event that the preferred barging method is not possible or capable of approval by the relevant authorities the temporary bridge option can be pursued.
2. Finalise the design and operational plan for the proposed temporary creek crossing in consultation with the Regional Harbourmaster, the Port of Townsville Limited, Townsville City Council and appropriate stakeholder input, addressing the following matters:
 - a) width of opening and vertical clearance requirements
 - b) mitigation of noise and vibration impacts on nearby dwellings and other sensitive sites
 - c) provision of appropriate truck traffic management strategies and marshalling areas
 - d) bridge opening protocols (if applicable), noting the requirement that a bridge should remain open as a default position
 - e) temporary mooring pontoons, signage and navigation beacons as required
 - f) implementation of impact monitoring and complaint management procedures including a process for corrective action
 - g) a decommissioning plan.
3. The methodology for constructing the ocean terminal berth pocket is to be finalised in consultation with the Regional Harbourmaster and the Port of Townsville Limited.
4. Include a provision in the construction environmental management plans to regularly review the impacts of the project's lighting on safe navigation in the area and to ensure that appropriate mitigation measures are provided.

5. Environmental management plans

The aim of the environmental management plans (EMPs) is to detail the actions, procedures and responsibilities to be carried out during the implementation phase of the project so that the project's potential construction and operational impacts are addressed. These impacts were identified during the environmental studies and consultation conducted as part of the EIS process.

Draft EMPs were prepared by the proponent for the construction and operation components of the project. They were provided in the EIS and updated in the SEIS. These draft EMPs outline commitments to protect the environmental values potentially affected by construction of the land areas, and operation of the canal estate and marina facilities. These commitments include environmental protection objectives, standards, measurable indicators and control strategies (to demonstrate how the objectives will be achieved).

The Draft EMPs have been refined based on submissions received during the EIS consultation period. The EMPs will be further refined and expanded following the Coordinator-General's decision on the project; during the detailed design phase of the project and through consultation with the regulators.

The EMPs will become reference documents because they convert the undertakings and recommendations of the environmental studies into a set of actions and commitments to be followed by the designers, constructors and future operators of the proposed project.

The EMPs will also serve as the benchmark for measuring the effectiveness of environmental protection and management. This can be achieved by specifying the monitoring, reporting and auditing requirements, with nominated responsibilities and timing, to ensure the necessary mitigation measures are met. The EMPs also provide, as appropriate, for unforeseen events by outlining corrective actions that may be implemented in these situations.

Draft recommendation 15. In order to avoid or minimise environmental impacts, the following recommended conditions should be included with an approval of the FDA Scheme.

1. The proponent and/or its contractor(s) must finalise the Townsville Ocean Terminal environmental management plans to the satisfaction of EPA at least one month prior to commencement of construction of the project.
2. The proponent and/or its contractor(s) must comply with all requirements of approved environmental management plans.

6. Matters of National Environmental Significance

6.1 Project assessment and approvals

An *Environment Protection and Biodiversity Conservation Act 1999* (EPBC) referral for the TOT was sent to the Australian Minister for the Environment and Water Resources at the time, who deemed the project constituted a 'controlled action' under section 75 of the EPBC Act on 16 October 2006 (reference number EPBC 2006/3089). The controlling provisions for the decision include:

- sections 12 and 15A (World Heritage)
- sections 16 and 17B (Wetlands of international importance)
- sections 18 and 18A (Listed threatened species and communities)
- sections 20 and 20A (Listed migratory species).

The controlled action may be considered for approval under section 133 of the EPBC Act once the Minister has the Coordinator-General's EIS evaluation report from the EIS process prepared under section 35 of the SDPWO Act.

This section of the report provides an interim evaluation of the potential impacts of the project on the 'controlling provisions' being the matters of National Environmental Significance (NES).

6.2 Potential impacts and mitigation measures

6.2.1 World Heritage values of the Great Barrier Reef

The project's proposed marine structures and dredging activities will be located within the World Heritage Area, but lie outside the marine park.

Potential impacts

The proposed development requires reclamation of 80 hectares of ocean floor. The development will not remove, disturb or displace any known reef or coral area. As such, no interruption of the heterogeneity and connectivity of reef areas will occur. Although the development will remove 80 hectares of seabed including seagrass and other marine plants, these areas are not designated under the EPBC Act as ecologically significant, rare or scarce in relation to the Great Barrier Reef World Heritage Area (GBRWHA).

Construction of the project will involve large-scale earthworks and the development and modification of major engineered structures within the coastal environment. The construction methodology involves the enclosure and dewatering of the site to allow the works to proceed without direct connection to tidal waters. These actions have the potential to cause turbidity, which may affect the water quality of the GBRWHA.

The following construction activities have potential to affect the environment values of adjacent waters in Cleveland Bay:

- placement of rock during breakwater construction
- site dewatering operations
- dredging of the outer access channel for the artificial waterways
- dredging a temporary access channel to the existing marina (if required)
- the initial breach of the temporary works to flood the artificial waterways
- dredging of the ocean terminal berth pocket and extension of the swing basin.

Dredging will be required in the entrance channel to the marina and in the ocean terminal inside the port. The port is regularly dredged on a much larger scale than proposed for this



work with no substantial impact on the GBRWHA reported, and no increased impact is expected for the TOT project.

The proposal for dredging of artificial waterways and access channel does not include offshore disposal of the dredge material. Dredged material will be pumped to reclamation ponds within the TOT, and the material will be beneficially reused as fill in the land area creation (after dewatering). As such, a negligible impact is expected during the dredged material disposal. Dewatering of the dredged material and the discharge of water from the construction site are to be done using settlement ponds inside the site, discharging through a diffuser, and having a high frequency of water-quality monitoring to determine if further control measures or shutdown is necessary during these activities. A water-quality monitoring program is being developed with the EPA to establish background levels and to determine action levels for intervention during construction and dredging dewatering activities.

After construction the entrance to the canal estate and marina will require maintenance dredging. Disposal of dredged spoil will initially be to areas of the canal estate where the canals are to be deeply excavated to provide material for construction of the land platforms. In later years the dredged material will be placed in a dewatering pond to be built at the seaward side of the outer breakwater. Dried material will be removed from here by truck for land-based disposal.

There are no records of coral communities within the development and/or dredge footprint. Fringing reefs occur in other areas of Cleveland Bay particularly around Magnetic Island. Plume modelling of dredge plumes was done to consider the potential sediment impacts. These indicate that movement of materials would be along the Strand in a westerly direction and not far enough out into the bay to affect reef areas. Areas of seagrass along the bay from the Strand have not been noted as suffering due to the dredging of the port.

Control measures are proposed for dredging to further reduce the potential for an impact. The use of silt curtains and placing limitations on dredging to avoid unfavourable tides and winds are proposed. The detailed requirements for management of dredging operations have not yet been finalised.

I have assessed the flushing characteristics of the proposed artificial waterways and determined that its impact on water quality of adjacent coastal waters would be acceptable. I acknowledge that a new project master plan would necessarily have different flushing characteristics than the current proposal. To ensure that the water quality impacts of a revised project are acceptable I have recommended that it should not proceed until an assessment demonstrates that its flushing performance is equivalent to, or better than, the current proposal.

6.2.2 Wetlands of international importance

Townsville has one Ramsar-listed wetland—the Bowling Green Bay Wetlands, between Alligator Creek and Cape Bowling Green to the east of Townsville. The Ramsar site is unlikely to be impacted by silt from the dredging or site dewatering as the port is between the project site and Ramsar wetlands, which is more than 18 kms away. Plume modelling of dredge plumes also indicated that movement of dredge materials would be in the opposite direction (i.e. along the Strand) in a westerly direction, away from the Ramsar site which is to the east of Townsville.

A number of other wetlands, such as the Townsville Town Common, are considered important. The project is generally downstream of these and is not considered likely to have an impact.

The EIS notes that the controlled action for wetlands was referred in an early stage of the project when possible sources of reclamation materials was to be sand dredged from the Ross River mouth. This proposal has been discarded and as a consequence the possible impact on wetlands is much reduced.

6.2.3 Listed threatened species and communities

The EPBC Act lists all of Australia's protected species. Schedule 3 of the *Nature Conservation Act 1992* and Nature Conservation (Wildlife) Regulation 1994 lists all of Queensland's vulnerable wildlife. Several species listed under this legislation are likely to occur on or adjacent to the development site. Information on the species, likelihood of occurrence and habitat was provided in report A14 of the SEIS.

Terrestrial species

All activities associated with the project occur within marine areas or within areas already used or approved for the required purpose. All rock, fill and other construction materials would be sourced from existing licensed sources, and no new haulage roads are required. Consequently, the project would have no additional effects on listed terrestrial threatened species.

Marine species

Turtles

Six species of turtle, the flatback (*Natator depressus*), green (*Chelonia mydas*), loggerhead (*Caretta caretta*), leatherback (*Dermochelys coriacea*), hawksbill (*Eretmochelys imbricata*) and the Olive Ridley (*Lepidochelys olivacea*) have been recorded in the offshore, intertidal, estuarine and shoreline habitats in the Great Barrier Reef World Heritage Area. All of these species of turtle are listed as endangered or vulnerable under the EPBC Act and the Nature Conservation Act.

Most of these turtles are reported to some degree in Cleveland Bay, with green and flatback being the most commonly reported. The beaches of Townsville and Magnetic Island regularly have nesting flatback and green turtles recorded. Green turtles are widespread throughout Cleveland Bay and have been observed within the project site. However, this species occurs at highest density in the more permanent seagrass beds in the far east of Cleveland Bay.

Dugongs

Dugongs have wide geographical distribution in shallow tropical and subtropical waters of the Indo-Pacific region. Dugongs are present in Cleveland Bay. However they are unlikely to have a strong presence in the project area as the seagrass communities are not as extensive as in other areas in the vicinity, such as along the Strand towards Kissing Point in the west and Cape Cleveland to the east, where greater numbers of dugong are likely to be found. The EIS reported that the TOT area had limited seagrasses and did not show signs of feeding trails caused by dugongs.

Cleveland Bay is a dugong protection area declared under the *Fisheries Act 1994* and dugongs are relatively abundant, although they do not frequent areas close to the Port of Townsville. The SEIS found that dugongs were found in areas with greater concentration of their preferred food—seagrass—in Cleveland Bay. They were reported to be most frequent along the south-west shore of Magnetic Island and the eastern and south-eastern shores of Cleveland Bay near Cape Cleveland, where the most extensive seagrass beds occur.

It is therefore considered that the project does not pose a significant risk to dugongs in the Cleveland Bay area.

Dolphins

The EIS reported on an impact assessment of the proposed TOT project on the Australian snubfin dolphin *Orcaella heinsohni*, and the Indo-Pacific humpback dolphin *Sousa chinensis*. Neither species was considered to regularly frequent the project site, although they are reported to occur in adjacent waters. Based on the available observation data, both the snubfin dolphin and the Indo-Pacific humpback dolphin appear to favour the main edge of the Ross River plume, which rarely if ever extends beyond the shipping channel. This area is a favoured feeding area and a relatively large number of sightings have been reported. The dolphins are considered widely spread in Cleveland Bay, and move in and out of the bay.

Conclusion

Correspondence to the SEIS from concerned individuals criticises the findings and maintains that the project would cause significant impacts to snubfin and humpback dolphins in Cleveland Bay. This is based on the view that the project site is a critical habitat and that the development could degrade adjacent habitat during, and post, construction. The concerns are heightened because of the very small populations of both dolphin species in Cleveland Bay and the risks to their survival at a local scale.

Advice on the project's impacts has been sought from marine fauna specialists in relevant advisory agencies. My conclusions are that there is no evidence that the project site forms part of a critical habitat for Cleveland Bay's inshore dolphins, dugongs and sea turtles, and that its loss would not threaten the survival of local populations.

6.2.4 Listed migratory species

Migratory birds

The main focus for migratory birds is the Ramsar-listed wetland to the east. As described earlier this is unlikely to be impacted by the project. The TOT site comprises entirely artificial rock habitat and provides approximately three kilometres (less than six per cent) of the total rocky habitat in Cleveland Bay. If constructed, approximately three kilometres (i.e. the same amount that currently exists) of rocky shore habitat would be provided.

Consultants recorded six threatened bird species (i.e. red goshawk, whitebellied sea-eagle, white-throated needletail, barn swallow, black-faced monarch and Australian painted snipe) and noted comments from others that both little tern and sooty oystercatcher have been '*observed feeding inside the development site*'. The consultants also conclude that it is unlikely that '*this area is their primary food source*'. Although some of the species considered as potentially occurring in the Townsville region (e.g. white-bellied sea-eagle, white-throated needletail, migratory wader species) may occasionally use the site or locality, it is believed that the site does not form significant habitat critical to their survival.

Although the habitat is artificial, it does provide a measure of support to a limited number of species, with even fewer using or likely to use the site regularly. I am satisfied that the project site is not an important or critical habitat for migratory bird species. The construction of additional breakwaters and provision for isolated areas of the breakwaters leads me to conclude that transitory habitat will be re-established as has happened with the existing breakwaters.

Cetaceans

Humpback whales have been sighted in Cleveland Bay during the migration season and with growing whale numbers sightings should increase. The Indo-Pacific humpback dolphin is migratory and moves into and out of Cleveland Bay. These groups do not make use of the project area and the development of the site is not considered likely to have an impact.

Other protected species

Migratory turtles use the bay areas for feeding and nesting, but only green turtles (*Chelonia Mydas*) and flatback turtles (*Natator Depressus*) have been observed intermittently in the project area, and this area is not considered an important habitat for the species.

Saltwater crocodiles (*Crocodylus porosus*) are declared 'vulnerable' under the Nature Conservation Act and are protected under both the 'marine' and 'migratory' provisions of the EPBC Act. Occasional sightings of saltwater crocodiles occur in Cleveland Bay near the project site, but, given the nature of the site and its urban setting, the development is not likely to affect this species.

6.3 Project alternatives

The project site is defined as the future development area within the BICA Act and consequently an alternative site is not available for the project. Additionally, the ocean



terminal component of the project is located within the port to provide access to suitable deep water and no feasible alternatives are available.

The BICA Act sets out the framework for development of residential areas on reclaimed land within the FDA, and the current project master plan was formulated for that purpose. Alternative designs of the TOT were developed previously and these were discussed in the EIS; however, similar high-density urban and marina uses were contemplated.

6.3.1 Alternative of taking no action

The alternative of not undertaking the project was investigated in the EIS. The no-project alternative would result in the loss of a social and economic opportunity for Queensland and the Townsville region. The provision of the cruise terminal has been considered advantageous for the Townsville region for a number of years and is a part of the Queensland Government's Cruise Shipping Plan. The economic activity of the residential area is expected to add to the development of the Townsville economy.



7. Conclusion

In view of the documentation provided the EIS process for the Townsville Ocean Terminal project, I am satisfied that the requirements of the Queensland Government for impact assessment in accordance with Part 4 of the SDPWO Act have been met. The EIS process has provided sufficient information to the government and the community to allow evaluation of potential environmental impacts that could be attributed to the project. Careful management of the key construction and operational activities, and adoption of the redesign criteria I have recommended should ensure that potential environmental impacts will be minimised or avoided.

In accordance with section 17(2) of the SDPWO Regulation, a copy of this report will be provided to the Commonwealth Minister to enable him to make a decision under Part 9 of the EPBC Act.

Under the provisions of Part 9 of the EPBC Act, the Commonwealth Minister may approve or refuse the taking of the proposed action. In approving a proposed action, the Commonwealth Minister may attach conditions to the approval if he is satisfied that the condition is necessary or convenient to protect a matter of national environmental significance, or to repair or mitigate damage to a matter of national environmental significance.

Appendix A – Zone Plan

The FDA area is to be divided into 4 zones with particular permissible and non permissible uses.

ZONE A

- The area within the FDA bounded by a line 800m from berth 1.
- No habitable buildings or evacuation route.
- Permitted uses will be marinas, public open space incl kiosks, roads, carparking and the Ocean Terminal.

ZONE B

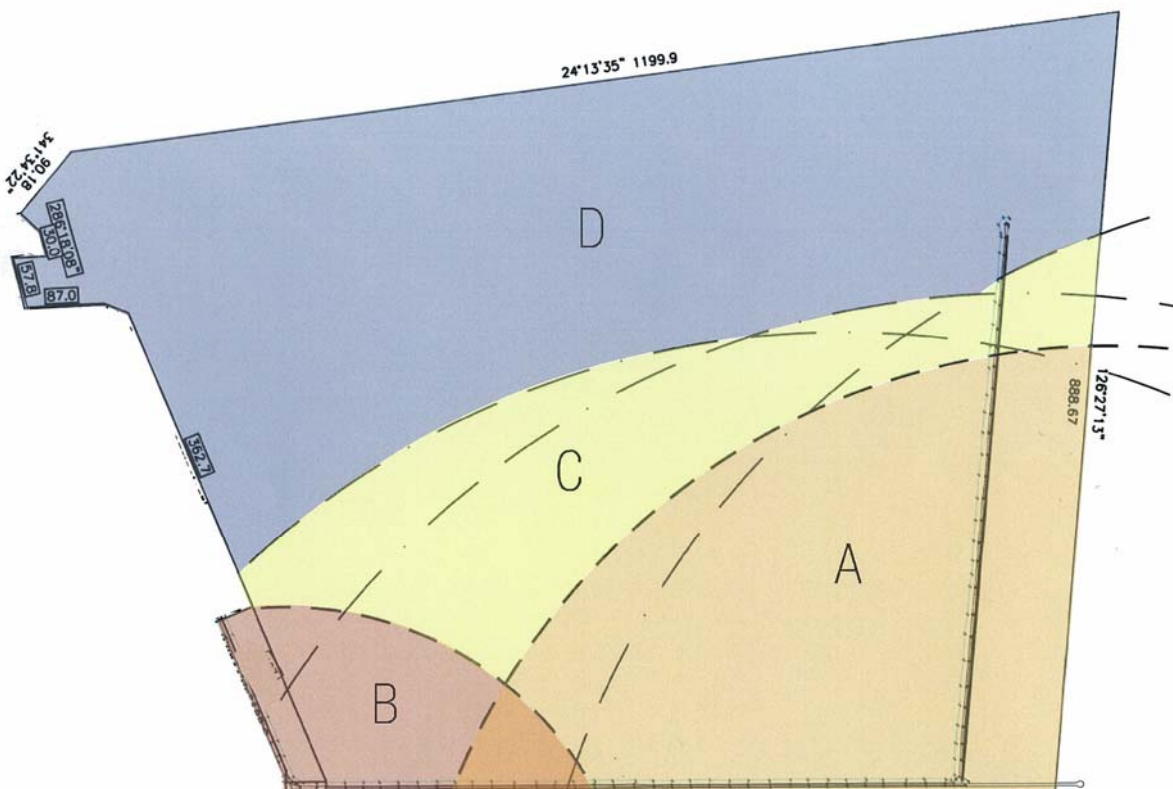
- The area within the FDA bounded by a line 400m from berth 10.
- This criteria is nominally the distance from berth 10 to the nearest habitable building being Jupiters Townsville Hotel & Casino (390m).
- As for Zone A being no habitable buildings but an evacuation path is permitted through this area.
- Permitted uses as for Zone A being marinas, public open space incl kiosks, roads, carparking and the Ocean Terminal.

ZONE C

- The area between Zones A and B and a line 1000m from the combination of berths 2, 3 and 11.
- Within this zone habitable building are permitted provided they are not permanent residential.
- Permitted uses would be as for Zones A and B plus hotel, short term accommodation, commercial, retail and hospitality.

ZONE D

- This zone is the area outside of the 1000m line and bounded by the FDA boundaries to the south, west and north.
- All uses are permitted including residential. Detached and semi detached housing will be permitted where such dwellings comply with the Port Protection Codes in the FDA in the Scheme. The Codes have yet to be finally determined.



Schedule of recommendations

Schedule A1 - Recommendations of the Coordinator-General to the Treasurer of Queensland regarding approval of the Future Development Area Scheme

Recommendations pursuant to section 52 of the *State Development and Public Works Organisation Act 1971*.

Recommendation 1. In order to ensure the development achieves acceptable compatibility with the future operations of the Port of Townsville, the FDA Scheme should only be approved if:


1. The project master plan is amended, to the satisfaction of the Coordinator-General, such that:
 - a) All development conducted within the project site is in accordance with the Zone Plan attached to this report and marked Appendix A.
 - b) All habitable buildings and evacuation routes are not to be located within a radius of 800m to hazardous operations at Berth 1 in the port, as depicted by zone A of the Zone Plan - Appendix A.
 - c) All habitable buildings are no closer to hazardous operations at Berth 10 in the port than habitable rooms of the existing casino building, as depicted by zone B of the Zone Plan - Appendix A.
 - d) Permanent residential areas, shown as Zone D in Appendix A, must be separated by at least 1000m from berths 2, 3 and 11 (being the significant dust sources).
 - e) Short term accommodation such as hotels, commercial, retail and hospitality uses may be located in the area shown as Zone C in Appendix A.
 - f) The community facilities and benefits provided by the project should be equivalent to, or better than, the existing proposal.
2. The port protection code to be incorporated into the FDA Scheme provides design criteria for the provision of suitable amenity in the private open space of the residential areas.
3. The FDA Scheme includes sustainable building design requirements consistent with the Townsville City Plan.

Recommendation 10. In order to ensure the water quality impacts of the project are acceptable, the FDA Scheme may only be approved if:

1. The proponent demonstrates, to the satisfaction of the Coordinator-General, that the flushing performance of the amended layout of the artificial waterways is equivalent to, or better than the existing proposal.
2. The preliminary design of a dredge material rehandling facility is incorporated in the project masterplan. This must include a review of predicted dredging volumes.

Recommendation 11. In order to secure fair and equitable contributions for mitigation of the project's impacts on the road network, an application for approval of the FDA Scheme may only be approved if:

1. Infrastructure agreements Heads of Agreements for the mitigation of impacts on the road network are executed separately with Townsville City Council (local roads) and the Department of Main Roads (State controlled roads). The Heads of Agreements must at a minimum set out the process the parties will follow to resolve the detail of the infrastructure contribution to be made by the proponent in respect of the proposed infrastructure agreements.
2. An independent arbiter may be appointed by the Treasurer to oversee the negotiations of the separate infrastructure agreements. The independent arbiter will



have the power to review and decide on areas of disagreement between the parties with the purpose of achieving agreements containing reasonable terms.

Recommendation 13. In order to secure fair and equitable contributions for the augmentation of water and sewerage services to service the project, an application for approval of the FDA Scheme may only be approved if:

1. An infrastructure agreement Heads of Agreement for the augmentation of water and sewerage services is executed with Townsville City Council. The Heads of Agreement must at a minimum must set out the process the parties will follow to resolve the detail of the infrastructure contribution to be made by the proponent in respect of the proposed infrastructure agreement.
2. An independent arbiter may be appointed by the Treasurer to oversee the negotiation of the infrastructure agreement. The independent arbiter will have the power to review and decide on areas of disagreement between the parties with the purpose of achieving an agreement containing reasonable terms.

END OF COORDINATOR-GENERAL'S RECOMMENDATIONS SCHEDULE A1

Schedule A2 – Recommendations of the Coordinator-General to the Treasurer of Queensland regarding conditions of approval of the Future Development Area Scheme

Recommendations pursuant to section 52 of the *State Development and Public Works Organisation Act 1971*.

Conditions recommended by the Coordinator-General to be imposed on the approval of the FDA Scheme by the Minister pursuant to schedule 2, section 66 of *Breakwater Island Casino Agreement Act 1984*.

Recommendation 2. In order to accurately define the baseline conditions within the project site, the following conditions should be included with an approval of the FDA Scheme.


1. Establish a monitoring station within the project site to operate continuously over the construction period and for at least 10 years following construction. The monitoring station is to be designed and operated in consultation with the Environmental Protection Agency (EPA) and is to record noise levels, air quality (including heavy metal content) and other relevant parameters as required.
2. All data are to be made freely available to the public in a similar manner to the EPA's air monitoring network.

Recommendation 3. To minimise risks to the safety of occupants and risks of potential damage to private property, the following conditions should be included with an approval of the FDA Scheme

1. The design of the project must demonstrate the following, through appropriate model testing:
 - a) The immunity of all habitable rooms in buildings and the safe provision of evacuation routes from coastal hazards for events up and including 0.2 per cent annual exceedence probability (AEP). This condition recognises the drainage function of the roads for the surrounding land and that evacuation routes may include such roads. Evacuation routes during these events are to be designed to allow for inundation to a depth of no greater than 300 millimetres at the crown of the road.
 - b) All on-site infrastructure (including breakwaters, roads and services) maintains its function during, and immediately after, events up to and including one per cent AEP.
 - c) Negligible damage would occur to privately owned buildings for events up to and including one per cent AEP.
 - d) The consideration of coastal hazard design conditions must incorporate a 0.8 metres sea level rise component and a 10 per cent increase in tropical cyclone intensity.
2. A comprehensive disaster management plan (DMP) addressing all operational aspects of the project must be finalised in conjunction with the Local Disaster Management Group. The DMP must be completed to the satisfaction of the Department of Emergency Services prior to any residential use of the site.

Recommendation 4. In order to minimise visual amenity impacts during the project's construction, the following conditions should be included with an approval of the FDA Scheme.

1. Prior to commencement of construction the proponent must demonstrate to the Coordinator-General that the risk of failure and/or unnecessary delay to the reclamation works has been minimised, including:
 - a) The design of all temporary works and all interim stages has adequately considered seasonal conditions and the potential for storm events, floods and other adverse weather.
 - b) All key construction approvals have been obtained.


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- c) The proponent and its contractor have sufficient resources to complete the reclamation works, including compliance with the EMPs and approval conditions.
 2. Include provisions in the construction environmental management plan that requires that all construction works are carried out in a safe, tidy and timely manner, including appropriate management of materials stockpiles and construction waste.

Recommendation 5. To ensure minimal disturbance to fish habitat, the following conditions should be included with an approval of the FDA Scheme.

1. The proponent must apply to the Department of Primary Industries and Fisheries (DPIF) for operational works approval for the removal, damage or destruction of marine plants associated with construction of the project. No operational works are to commence until approval is granted.
2. The impacts of the development on marine plants must be fully mitigated and offset in accordance with the DPIF policy "Mitigation and compensation works or activities causing marine fish habitat loss" to the satisfaction of the DPIF. Monitoring of marine plants undertaken in November/December 2008 will provide the basis for determining an appropriate fisheries offset in accordance with the Queensland Government Environmental Offsets Policy.
3. The proponent must apply to the DPIF for operational works approval for the construction of a waterway barrier to enclose and exclude tidal exchange in the project area.
4. Where practicable, the final design of the project facilities must incorporate fish-friendly structures using DPIF's "Fisheries Guidelines for Fish Friendly Structures"
5. DPIF must be consulted in completing the environmental management plans for all works that may impact on fish habitats or fishing activities during construction and operation of the project, including the temporary access across Ross Creek.
6. The finalised construction EMP must include the constitution of a Technical Advisory Panel, with DPIF representation, that will provide advice and support to the parties should problems arise that may result in negative impacts on the surrounding waters during construction. The powers of the DPIF and the EPA to give the contractor direction in the relation to issues within their respective jurisdictions, will not be affected by this advisory panel.
7. The proponent must include measures in the construction EMP, to the satisfaction of the DPIF and EPA, to:
 - a) Minimise the number of motile marine biota trapped when the project area is enclosed.
 - b) Provide for the rescue, and maximise the survival, of marine biota trapped within the project area.

Recommendation 6. To avoid (where possible) and otherwise minimise the disturbance to sensitive marine fauna, the following conditions should be included with an approval of the FDA Scheme.

1. Finalise the construction environmental management plan in consultation with EPA to include measures for appropriate management of:
 - a) fuel or oil spills
 - b) noise impacts on marine fauna
 - c) introduction of marine pests
 - d) entrapment of marine fauna within bunded areas.
2. In consultation with EPA, implement a monitoring program to assess the impacts of the construction and operation of the project on populations of key marine fauna in Cleveland Bay. This may be implemented by a financial contribution to existing monitoring programs.

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3. Through the body corporate structures, incorporate a ban on domestic cats within the project site to minimise the contamination of artificial waterways with lethal pathogens.

Recommendation 8. To avoid and minimise the disturbance to shorebirds, the following conditions should be included with an approval of the FDA Scheme.

1. To the maximum practical extent, an appropriately designed compensatory habitat (based on advice from suitably qualified scientists) should be provided within the new breakwater structures.
2. Access by pedestrians and domestic animals to compensatory habitat areas should be restricted.
3. Annual funding of \$500.00 (indexed annually by CPI) should be provided to the Townsville Regional Bird Observers Club for a term of 10 years for the ongoing monitoring and maintenance of avifauna observation records.
4. Finalise the construction environmental management plan in consultation with EPA to include measures that would minimise disturbance to avifauna by:
 - a) fencing of areas that do not require construction access to provide bird habitat
 - b) excluding dogs from the construction site
 - c) ensuring the site / project environmental officer is aware of bird habitat and has procedures available to manage and monitor accordingly.

Recommendation 9. In order to avoid and minimise impacts on water quality of adjacent coastal waters, the following conditions should be included with an approval of the FDA Scheme:

1. Finalise the water quality component of the construction environmental management plan in consultation with EPA and Commonwealth Department of Environment, Water, Heritage and the Arts (DEWHA) to include the following measures:
 - a) Complete a detailed baseline water quality monitoring program to define the existing conditions adjacent to the site including appropriate wet season sampling and vertical distributions.
 - b) Develop water quality discharge criteria for all water to be released from the site.
 - c) Specify compliance testing of water against approved discharge criteria prior to release.
 - d) Develop, monitor and optimise of all water treatment and discharge processes.
 - e) Develop a methodology for the monitoring and treatment of acid sulphate soils within the project site.
 - f) Develop a methodology for the initial flooding of the artificial waterways to minimise the mobilisation of disturbed sediments.
 - g) Design and management of dredging operations to minimise adverse impacts on adjacent waters from suspended sediment plumes.
 - h) Specify threshold wind and tidal conditions at which all dredging operations are to cease.
2. Develop a comprehensive stormwater quality management strategy in consultation with EPA to be incorporated into the detailed design of the project layout. This strategy shall be completed prior to seeking lot reconfiguration approval and include details of ongoing management responsibilities of the bodies corporate for the monitoring, maintenance and (where necessary) upgrade of stormwater drainage systems.
3. Finalise the maintenance dredging component of the construction environmental management plan in consultation with EPA to include the following measures:
 - a) design and management of dredging operations to minimise adverse impacts on adjacent waters from suspended sediment plumes
 - b) specification of threshold wind and tidal conditions at which all dredging operations are to cease
 - c) design and management of dredge material dewatering and disposal operations to minimise adverse impacts on adjacent waters. This must include a review of

predicted dredging volumes.

Recommendation 12. In order to ensure the proponent's commitment to compensate for road pavement wear, the following condition should be included with an approval of the FDA Scheme.

1. Compensation for road pavement wear associated with the construction of the project is to be specifically covered in agreements with each of the relevant parties. These agreements are to be resolved prior to the issue of the relevant operational works approvals or such later date approved by the Treasurer of Queensland. Compensation in this regard will relate to the roads under the control of the Townsville City Council, the Port of Townsville Limited and the Department of Main Roads. An independent arbiter may be appointed by the Treasurer to oversee the negotiations of the separate agreements. The independent arbiter will have the power to review and decide on areas of disagreement between the respective parties with the purpose of achieving agreements containing reasonable terms.


Recommendation 14. In order to avoid and otherwise minimise disruption to port operations and navigation of vessels in Ross Creek, the following conditions should be included with an approval of the FDA Scheme:

1. The transfer of construction material across Ross Creek by a temporary facility should utilise the barging method presented in the supplementary report to the EIS. In the event that the preferred barging method is not possible or capable of approval by the relevant authorities the temporary bridge option can be pursued.
2. Finalise the design and operational plan for the proposed temporary creek crossing in consultation with the Regional Harbourmaster, Townsville City Council and appropriate stakeholder input, addressing the following matters:
 - a) width of opening and vertical clearance requirements
 - b) mitigation of noise and vibration impacts on nearby dwellings and other sensitive sites
 - c) provision of appropriate truck traffic management strategies and marshalling areas
 - d) bridge opening protocols (if applicable), noting the requirement that a bridge should remain open as a default position
 - e) temporary mooring pontoons, signage and navigation beacons as required
 - f) implementation of impact monitoring and complaint management procedures including a process for corrective action
 - g) a decommissioning plan.
3. The methodology for constructing the ocean terminal berth pocket is to be finalised in consultation with the Regional Harbourmaster.
4. Include a provision in the construction environmental management plans to regularly review the impacts of the project's lighting on safe navigation in the area and to ensure that appropriate mitigation measures are provided.

Recommendation 15. In order to avoid or minimise environmental impacts, the following recommended conditions should be included with an approval of the FDA Scheme.

1. The proponent and/or its contractor(s) must finalise the Townsville Ocean Terminal environmental management plans to the satisfaction of EPA at least one month prior to commencement of construction of the project.
2. The proponent and/or its contractor(s) must comply with all requirements of approved environmental management plans.

END OF COORDINATOR-GENERAL'S RECOMMENDATIONS SCHEDULE A2



Schedule B - Recommendations of the Coordinator-General to Queensland Transport regarding the management of environmental impacts associated with the development

Recommendation pursuant to section 25 of the *State Development and Public Works Organisation Act 1971*.

Recommendation 7. In order to reduce the risks of injuring marine fauna by boat strike, Maritime Safety Queensland should consider the imposing the following:

1. An appropriate speed limit in the vicinity of the breakwater structures at the mouth of Ross Creek. This speed limit would apply to all vessels although certain exemptions may be necessary, as determined by the Regional Harbourmaster.
2. A no wash speed limit within the canal and access channel of the project.

END OF COORDINATOR-GENERAL'S RECOMMENDATIONS SCHEDULE B