

TOWNSVILLE OCEAN TERMINAL

ENVIRONMENTAL IMPACT STATEMENT SUBMISSION RESPONSE

RESPONSE TO DEPARTMENT OF EMERGENCY SERVICES

August 2008

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DEPARTMENT OF EMERGENCY SERVICES

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

1.1 Emergency Services

The EIS has been examined in relation to the state interests administered by DES for disaster mitigation and the protection of people, property and the environment from hazardous materials. The EIS has also been examined in relation to the impacts of the project on the safety of people during construction and operation and the impact on the delivery of emergency services to the project and adjacent areas.

The following comments are made on the content of the EIS and a series of recommendations are outlined below.

1.1.1 Natural Hazards

Section 4.1.2 of the EIS outlines the need to address the potential impacts from a number of natural disasters, including providing flood immunity, and the overall impacts from storm or cyclone weather events.

The report describes the need for a Disaster Action Plan for the project to prepare for and respond to natural hazards. This plan is to provide information to residents in case of an emergency. Consultation with Council regarding this plan is proposed and the Disaster Action Plan should be in accord with the Local and District Disaster Management Plans.

No assessment of the State Planning Policy 1/03: *Mitigating the Adverse Impacts of Flood, Bushfire and Landslide* (SPP 1/03) appears to have been undertaken as part of the EIS.

Additionally, there are a number of inconsistencies between the natural hazard and risk conclusions contained in the EIS and the Hazard and Risk Assessment Report prepared by Hyder Consulting.

An example of inconsistencies in the EIS documentation regarding hazard and risk is outlined below:

- Section 5.3 (Table 4.3) of the Hazard and Risk Assessment Report details that damage to coastal areas from cyclone, severe storm and storm tide events have a high probability and high risk of occurring.
- In Section 1.6 (Table 4.13.4), the Health and Safety Report outlines that *the storm tides associated with cyclones cause widespread damage to coastal areas in Townsville*. The Local Disaster Management Plan assesses this threat as high probability and high risk.
- However, Section 4.1.1 of the EIS states that *while the data indicates cyclones are an annual occurrence in tropical northern regions including Townsville, the majority cause no significant damage*.

The EIS (Section 4.16.2) also details the need to prepare an Emergency Plan in case of a port emergency or evacuation procedure. The plan is to be developed in consultation with the Townsville Port Authority and Townsville City Council. Other entities to be included in the Emergency Plan discussions are the Townsville-Thuringowa State Emergency Services Unit and the regional offices of the Queensland Fire and Rescue Service (QFRS) and the Queensland Ambulance Service (for contact details see Attachment 3).

Recommendation

The Disaster Action Plan should be developed in consultation with the regional office of Emergency Management Queensland (contact details Attachment 3).

The EIS will need to directly address the requirements of the SPP 1/03 and ensure either that these matters are adequately addressed in the EIS or that the hazards are not applicable.

If any hazard or risk proves to be severe, the EIS will need to clearly define the interaction between those hazards and people, property and any hazardous materials stored in bulk on the site, and demonstrate risk mitigation and appropriate solutions, if necessary, to meet the specified outcomes in SPP 1/03. Further, the EIS should define solutions and response strategies which specifically and systematically address the requirements of SPP 1/03. For example, the proponent should demonstrate clearly that the development is not affected by a hazard or that appropriate measures are taken to mitigate the exposure.

Discrepancies between the natural hazard assessments must be corrected in the documentation.

Section 4.16.2 (Fire and Explosion) of the EIS should be amended to include all operational arms of DES in the process of preparing an Emergency Plan.

RESPONSE

The Department of Emergency Services (DES) comments on inconsistencies in the Hazard and Risk Assessment Report are noted. These have been considered by Hyder Consulting in their review and alterations made to the report. Refer Appendix A16 in Volume 2.

The Proponent acknowledges the advice and input from DES over the last few months, to develop a draft proposed Disaster Management Plan (DMP) for the Townsville Ocean Terminal Development. The DMP has been developed to a draft stage for the Supplementary EIS and it is proposed that this will be further developed and expanded in detail by the Proponent and the relevant Body Corporate with further input from the DES and other emergency services agencies including the TCC. The draft proposed Disaster Management Plan has been included in the SEIS at Appendix A15 in Volume 2.

At the request of the emergency services group, requests have been made to the developers of the adjoining developments in the Breakwater precinct, to include similar and co-ordinated DMPs that will then cover the whole precinct. Discussions are ongoing with these developers and the initial response has been positive.

1.1.2 Major Hazard Facilities

The Chemical Hazards and Emergency Management (CHEM) Services of DES is the lead agency for the Queensland government in the assessment of hazard and risk for major hazard facilities. A letter detailing the concerns of CHEM Services is attached. (Attachment 1).

Recommendation

That the project proponents follow the CHEM Services recommendation that a full risk assessment be undertaken in regard to Berth 1 of the Port of Townsville and that the appropriate mitigation actions are undertaken.

RESPONSE

See Section 1.2 Responses.

1.1.3 Industrial and Other Hazards

The EIS describes an increase in the number of vessels using the marina, including:

- *dredging activities associated with construction of the Breakwater Cove Precinct;*
- *piling activities associated with construction of the Townsville Ocean Terminal;*
- *increase in commercial and private watercraft due to the Breakwater Cove Precinct development;*
- *increase in operation and berthing of cruise and military vessels at the Townsville Port Terminal; and*
- *increased sea traffic movements.*

The report does not appropriately assess the impacts of the proposed increase in vessels due to the project or adequately address the potential for small and large vessel collisions.

The North Queensland Regional office of the QFRS has examined the project proposal and identified a number of issues relating to fire and industrial hazard and risk. The concerns of the QFRS are detailed in Attachment 2, and address the risks due to proximity to the Port of Townsville.

Recommendation

The EIS will need to assess the potential impacts of the proposed increase in vessels and small and large vessels.

The EIS must address the issues raised by the QFRS in Attachment 2.

RESPONSE

See QFRS responses in Section 1.3.

1.1.4 Emergency Response

a) Construction and operational traffic impacts

Section 5.2.2 and 5.3 of the Construction Methodology Report prepared by Hyder Consulting Pty Ltd, describes the type and frequency of the three material transport options and related construction traffic. However this report does not give adequate consideration of the potential adverse traffic safety impacts for the project.

Furthermore, section 10 of the Traffic Impact Assessment Report undertaken by Holland Traffic Consulting, and Section 4.3.1.2 of the EIS provides an insufficient assessment of the emergency access and evacuation options for the development. The report proposes helicopter, private boat or ferry transportation for emergency service access. A more extensive assessment of alternative options is required for emergency access to ensure the delivery of fire, ambulance and counter-disaster services to the community particularly along Sir Leslie Thiess Drive, and for the Breakwater Cove Precinct residential dwellings.

Detailed issues relating to traffic impacts on the provision of services by QFRS are included in Attachment 2. QFRS have also identified an emergency response issue in relation to access within the site during construction, given that the proposed methodology is to bund and drain the whole area. Adequate provision must be made for access within the site for emergency medical treatment, rescue and fire fighting.

Recommendation

The preparation of a project Traffic Management Plan should be undertaken in consultation with relevant agencies, including DES. The Traffic Management Plan should specifically address construction and operational traffic in relation to safety impacts for vehicles, impacts on emergency access and provide information on altered conditions.

The EIS must also address the potential project impacts on emergency access during operation of the facility. A discussion on how these changes will affect safety and emergency access must also be undertaken and should include liaison with DES.

Further operational traffic assessment must detail the potential impacts of the increased load on the wider traffic network (in particular the inner urban Townsville area) as a result of the increased residential population.

QFRS recommendations in relation to traffic planning and management, and emergency access to the site must be addressed.

RESPONSE

The comments of DES are noted. Reference is made to the draft proposed DMP. The specific recommendation for a project Traffic Management Plan is acknowledged and it is suggested that this will be undertaken as part of the CMP.

1.1.5 Conclusion

On the basis of the significant and extensive concerns that this complex project raises in relation to the safety of people, property, the environment, natural hazards, hazardous materials, and emergency access and response, it is recommended that the Coordinator-General seek additional information from the proponent before the project progresses. It may also be necessary that explicit conditions be required of the project in relation to these matters.

RESPONSE

Noted.

1.2 Chemical Hazards and Emergency Management (CHEM) Services

1.2.1 Background

Chemical Hazards and Emergency Management (CHEM) Services, Department of Emergency Services (DES) has received and provides comment on "Townsville Ocean Terminal Hazard and Risk Assessment", dated 13 November 2007, Report No: QL00704-HRA-R034.

1.2.2 Proximity to Origin Energy

The proposed Townsville Ocean Terminal (TOT) is in the vicinity of Origin Energy, LPG Gas Terminal that is classified as a Major Hazard Facility under the Dangerous Goods Safety Management Act, 2001. As is the case for Origin Energy, a major hazard facility has the unlikely potential for an accident of sufficient severity to have adverse effects beyond the boundaries of the site. The consequences of such events on the proposed development have been considered based on the safety report provided by Origin Energy to CHEM Services, April 2003.

- Individual Fatality Risk

Origin Energy determination of Individual fatality risk indicates that the risk contours for risks 0.5×10^{-6} extend beyond but remain close to the site boundaries of the Origin Energy Site. This risk contour will not impinge on the proposed TOT and, for this criteria, the TOT proposal is consistent with the risk criteria for land use safety planning as defined in Hazardous Industry Planning Advisory Paper No. 4 published by the New South Wales Department of Planning.

- Injury Risk

Origin Energy has defined a number of unlikely major accident scenarios with consequences that extend beyond the site boundaries. These include overpressure from a number of types of explosion and the heat from a number of types of fire.

The scenario modelled by Origin Energy with the worst consequences is the BLEVE of one of the 250T LPG Bullets. While the TOT is within the range of the effects in this worst case accident, the probability of occurrence is approximately once in a thousand million years. CHEM Services considers this to not be a credible event and can be ignored for planning of the TOT.

The next worst case scenario identified at the Origin Energy Terminal is a cold, catastrophic rupture of one of the 250T storage vessels. The pressure generated by such an event has a 10% chance of causing injury at the TOT but with no fatalities expected. Origin Energy has identified the probability of this event as being 1.2×10^{-8} /yr or once in a 120 million years. At this frequency the injury risk would be considered acceptable.

- Lease Expiry

Origin Energy advises that the lease to the land that they occupy is due to expire in February 2009 and that Origin Energy are expected to relocate their operations. As noted above, the current location of Origin Energy Gas Terminal is not considered to impact on the TOT proposal. Future locations of the terminal will need to be considered in due course.

RESPONSE

The comments by CHEM Services in relation to Origin Energy are acknowledged. It is noted that construction of the Townsville Ocean Terminal development is forecast to commence early in 2009 co-inciding with the proposed relocation of the Origin Energy Terminal.

1.2.3 Proximity to Berth 1

The proposed Townsville Ocean Terminal (TOT) is in the vicinity of Berth 1 of the Port of Townsville where large quantities of numerous dangerous goods are transferred. This includes flammable liquids, flammable gases and toxic substances. Preliminary consequence modelling conducted by CHEM Services indicates that the consequences of a major accident at Berth 1 may have adverse impacts on the proposed residential development and ocean terminal and suggest that a full risk assessment be conducted to accurately establish the risk and consequences of operations at Berth 1.

RESPONSE

CHEM Services comments are noted. A study has been undertaken of the dangerous goods and the overpressure impacts on existing development and the Townsville Ocean Terminal development. Refer Appendix A17 in Volume 2 - Hyder Consulting Explosives Overpressure Report.

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

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

1.2.4 Proximity to other Dangerous Goods

CHEM Services is unable to comment on the risks or consequences of other dangerous goods that are handled through the port. Materials such as Ammonium Nitrate will have consequence zones that may impact on the proposed development. Further risk assessment may be required for such materials.

Recommendation

CHEM Services concludes that the proposal appears to meet the Risk Criteria for Land Use Safety Planning as defined in Hazardous Industry Planning Advisory Paper No. 4 for individual fatality and injury risk surrounding Origin Energy Terminal.

CHEM Services is concerned regarding the potential risk and consequences of Berth 1 operation but has inadequate information to make an assessment in this regard. A full risk assessment is recommended to be conducted on Berth 1 operations as they effect the proposed development. Similarly, CHEM Services cannot adequately assess the risk and consequences of handling of other dangerous goods in the port and recommends that a full risk assessment be conducted where other dangerous goods may impact the TOT during an emergency. CHEM Services offer their assistance to review the assessment(s) and to provide comment to the approving authority for this proposal.

RESPONSE

Included in that report is an assessment of the specific risks associated with fuel loading/unloading at Berth 1. A full risk assessment was not possible as insufficient data was available from the Port. Although the risk is considered acceptable, the Proponent acknowledges the requirement to undertake a full assessment prior to commencing construction.

CHEM Services comments are noted. A study has been undertaken of the dangerous goods and the overpressure impacts on existing development and the Townsville Ocean Terminal development. Refer Appendix A17 in Volume 2 Hyder Consulting Explosives Overpressure Report.

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

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

1.3 Queensland Fire & Rescue Service

The comments outline concerns with the construction and operation of the planned development that QFRS believes has not been adequately assessed or for which the proposed mitigation is insufficient or not verifiable.

QFRS has confined the opinion to areas where it has an emergency response or legislative responsibility

References in the comment are relative to the EIS document titled Townsville Ocean Terminal Hazard and Risk Assessment. Dated 13th November 2007 .Report no: QL00704-HRA-R034.

RESPONSE

Queensland Fire and Rescue Services (QFRS) advice and input into the development of a draft proposed Disaster Management Plan (DMP) in conjunction with other emergency services groups is acknowledged.

The draft proposed DMP will be developed in greater detail by the Proponent with further input expected from QFRS and the other emergency services agencies.

Refer to the draft proposed Disaster Management Plan at Appendix A15 in Volume 2.

Reference is also made to the overpressure report at Appendix A17 in Volume 2 Hyder Consulting Explosives Overpressure Report

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

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

1.3.1 Emergency Response

Operational risks register item reference SO4

It is the opinion of QFRS that the EIS fails to address impact of traffic conditions on emergency response both to the development and other established premises. QFRS considers that the impact of the extra 500 dwellings and 200 habitable berths coupled with the arrival, berthing and departure of a cruise ship will have considerable impact on traffic flow in the area. Traffic converges on The Strand to one lane at the intersection of Wickham St which can delay response to an emergency incident if the road is heavily congested with traffic.

During events at the Entertainment Centre traffic is often backed up into The Strand.

Increased local traffic to proposed residences or to the cruise ship terminal will have an adverse effect on this situation.

Additionally the provision of clearances, load ratings and turning circles for emergency response vehicles has not been indicated for the site.

Recommendation

A **quantitative** study should be conducted to determine probable arrival times at the most disadvantaged point of the development with appliances responding from South Townsville Fire and Rescue Station using traffic flow with a fully operational port, and residential area together with an event at the Entertainment Centre or Casino.

Methods of mitigation such as widening roadways to accommodate additional or emergency lane and alternative approaches should be presented

The design ratings of the road system should accommodate the clearances, turning circles and load ratings for large QFRS Emergency Response Vehicles (ERV)

RESPONSE

The comments of QFRS are noted. It is envisaged that a quantitative study will be undertaken at the peak traffic impacts to accurately determine the road specifications as part of the Operational Works approvals.

It is noted that the current road designs for the TOT Project have been based on the requirement to provide clearances, turning circles and load ratings for all QFRS vehicles.

1.3.2 Public Health and Safety

Operational risks register item reference HS3

It is the opinion of QFRS that the EIS fails to address the methods for, facilities required and safe evacuation routes from the development when the whole of site may need to be evacuated

This site is unique in that there is only one land route available for evacuation and this route may be compromised by toxic emissions or airborne projectiles from an incident at the adjacent Port Facilities. Prevailing winds in Townsville originate from the E by NE inclusive of NE and SE winds which would on most occasions distribute towards the evacuation route.

The link below provides a good example of Smoke density associated with Petroleum Handling and Storage facilities. This example is the aftermath of an Ammonium Nitrate explosion in an American Port in 1947

<http://www.texascity-library.org/TCDisasterExhibit/tc1947p10.htm>

At a recent workshop in Townsville involving Emergency Response Agencies and the developers, evacuation options were discussed.

Mitigating options include, Sheltering in Place (SIP), evacuation by water craft, early warning and control systems, and resources available to commit to an evacuation.

Current Building Regulations require that persons must be able egress a building to a road, however because of the uniqueness of this project QFRS is of the opinion that procedures and facilities should be available to ensure persons can safely egress the site.

Currently BR's require that adequate warning systems are installed within residential and accommodation buildings to alert persons of the presence of smoke and toxic gases however each building stands alone. Under the Deemed to Satisfy provisions of the Building Code of Australia there is no current requirement for all buildings at the site to have interconnected warning systems.

Due to the resources required to warn all persons on this site of an event that may endanger them the QFRS suggests that an all of site interconnected warning system and procedure would assist in providing an effective evacuation plan.

It should be noted that SIP may be an option for short term events involving discharge of smoke/hazardous vapours however it would not be considered viable for an extended incident or in the case of an explosion that could cause damage to structures.

Additionally facilities should be included for non ambulant persons to not only egress the premises but also the site.

Recommendation

A Study should be conducted and presented using credible scenarios of the ability of persons to evacuate the fully populated site without suffering illness or injury. Indicators of tenable time frames for each scenario for the egress route should be established and effective alternate routes planned. The study should specify the additional resources, facilities and procedures necessary to accomplish safe evacuation.

RESPONSE

The methods, facilities required and safe evacuation routes from the development were amongst a range of other emergency issues, discussed at two workshop meetings with the valuable input from QFRS and other emergency services agencies.

As a result a draft proposed Disaster Management Plan (DMP) was produced recognising that this will be further refined with the input and assistance of the relevant agencies.

The draft proposed DMP is included in the Supplementary EIS at Appendix A15 in Volume 2.

1.3.3 Exposure risks from TOT

Operational risks register item reference HS5

QFRS considers that the detail provided in reference HS5 is insufficient for QFRS to make a determination on the suitability of the proposed risk treatment.

Recommendation:

Each of the features at TOT both on land and from the Vessels that will be authorised to berth there that might lead to a fire or explosion should be sufficiently detailed along with the impact and the treatment of each risk to enable QFRS to provide an opinion.

1.3.4 Exposure to Townsville Port incidents.

Operational risk register item references HS6, HS7

QFRS considers that the proposed treatment of risk reference items HS6 and HS7 will be inadequate to ensure an incident of significance does not occur.

The treatment implies that TPA and Major Hazard Facilities (MHF) comply or will comply with the standards. It is accepted by QFRS that it is a lawful requirement for organisations to comply with the applicable codes and doing so will reduce the risks significantly. As QFRS applies regulations under the Fire and Rescue Service Act it encounters breaches of these codes, some of which could lead to the failure of installed Fire Safety Systems and create serious risks to the public.

There are multiple Acts, Regulations, Standards and Codes governing the safety of the Port, administered by several Government Agencies.

It appears that the Risk Assessor is accepting at face value a factor that if not verified could lead to a **Catastrophic** incident occurring. The frequency of Unlikely has been reduced to **Rare** and the risk rating of **High** is reduced to **Moderate** on what appears to be an assumption. In any case the consequence of the risk remains **Catastrophic**. AS3846 stipulates maximum quantities of particular hazardous materials and handling procedures to reduce the impact of an event. If the result of the good practices stipulated in AS3846 still lead to a **Catastrophic** event then QFRS considers that further controls need to be implemented

QFRS is of the opinion that enforcing the good handling practices embodied in the standards and limiting the quantity of materials to amounts that would not cause a **catastrophic event** should be the aim of any risk management treatment.

E.g. A **Disastrous** incident that occurred involving a ship carrying fertiliser, at Texas City in the United States of America in 1947 affected not only the ship with the cargo but also another ship carrying Ammonium Nitrate and the greater port area including Large Fuel and Oil Storage facilities. A huge loss of life was suffered as a result of multiple explosions at this incident

The link below provides details of this incident.

<http://www.texascity-library.org/TCDisasterExhibit/tc1947.htm>

It is also a concern of the QFRS that the Contractors ,Owners and Occupiers of the development will be reliant on TPA to ensure the safety of the site (from an event in the Port) during construction, and in the operational phase, however, these parties will have no direct control over events within the Port..

Recommendation

Risk mitigation methodologies inclusive of a **quantitative** study should be conducted to reassess Likelihood, Consequences and Risk Rating of any of the features that might impact the development from each of the premises within the Port Area, in isolation, and collectively, considering the impact that any incident might have to the whole of the Port Area.

This study should determine the controlling Legislation, the way in which it is administered by each of the controlling agencies and overlapping roles, any deficiencies in the infrastructure that are current, projected ,or have not been rectified from previous audits.

The study should specify an effective risk mitigation strategy determining the best method of administration, costing and resources necessary to apply an independent controlling function to the Port acceptable to all parties.

RESPONSE

The comments by QFRS on operational risks in their submission are acknowledged (Sections 1.3.1 to 1.3.5). In addition to the comments at 1.3.1 and 1.3.2, these have all been considered in the revised risk assessment. This risk assessment can be found at Appendix A16 in Volume 2 Hyder Consulting Hazard and Risk and Appendix A18 in Volume 2 Risk Registers.

1.3.5 Loading/Unloading incident at the TOT

Operational risks register item reference HS9

QFRS considers there is insufficient detail in operational risk register item reference HS9 to properly ascertain the level of response required by QFRS and the suitability of the risk treatments.

The outcome of a response to any incident is not only determined by the procedures that might be developed but also the infrastructure that is in place to control the incident. To properly develop this, detail of the type and quantity of any goods being handled, access to the area, emergency facilities on site, and the numbers of persons that might be affected by any unloading incident should be available.

Recommendation

Credible scenarios should be developed by the applicant for loading /unloading incidents and the treatment options including specification of emergency facilities and response resources. This should also take into consideration the numbers of persons that would need to be disembarked from a vessel if necessary and the facilities available for access and egress. Facilities available on board the vessels that are suitable for shore operations should also be considered.

RESPONSE

The comments by QFRS on operational risks in their submission are acknowledged (Sections 1.3.1 to 1.3.5). These have been considered in the revised risk assessment. This risk assessment can be found at Appendix A16 in Volume 2 Hyder Consulting Hazard and Risk and Appendix A18 in Volume 2 Risk Registers.

1.3.6 Access and intervention to site during construction

There is no assessment in the EIS of the capacity of QFRS to intervene in incidents that may occur during the construction phase of the landfill areas or the buildings

It is generally accepted that QFRS will respond however due to the nature of the area access within the site may be unsuitable for Fire Service vehicles. Moving apparatus by foot onto site is time consuming and may result in QFRS being unable to intervene effectively.

Recommendation

The applicant should broaden the EIS to consider the type of incident that may require the intervention of QFRS and stipulate any specialised apparatus that may be required. (E.g. tracked vehicle that can carry fire fighting apparatus and extinguishing mediums) Where this specialised equipment is not available from the QFRS then it should be provided on site.

RESPONSE

QFRS comments in regard to the provision of adequate access during construction are acknowledged. The CMP will address this and it will dictate certain solutions for the methodology to provide for adequate access.