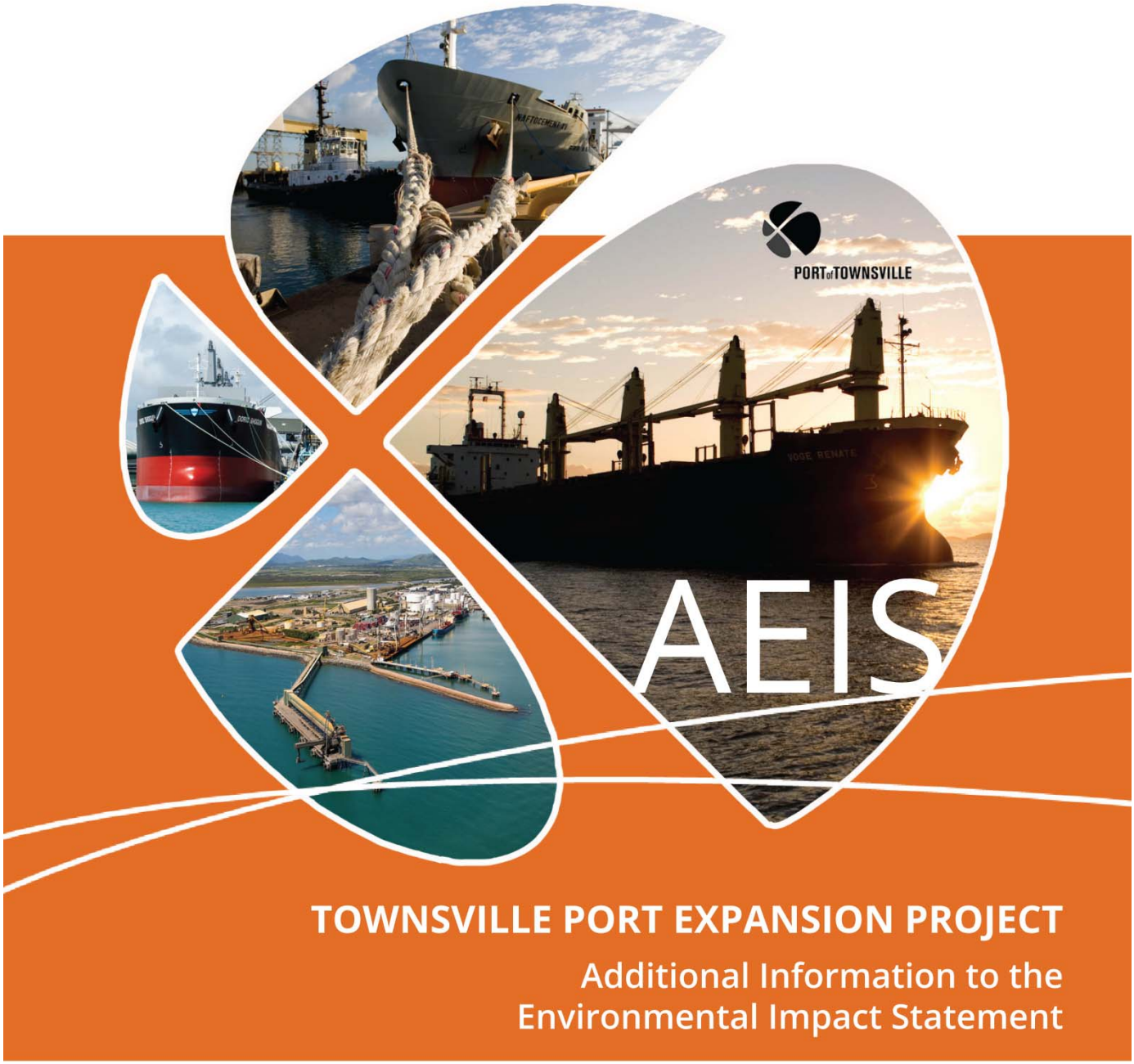


TOWNSVILLE PORT EXPANSION PROJECT

Additional Information to the Environmental Impact Statement

TOWNSVILLE PORT EXPANSION PROJECT

SECTION 16

Transport and Infrastructure

AECOM BMT WBM

16.0 Transport & Infrastructure

16.1 Introduction

Transport and infrastructure requirements and impacts associated with the Port Expansion Project (PEP) are discussed in Chapter B.14 (Transport and Infrastructure) of the Environmental Impact Statement (EIS). The PEP will result in an increase in traffic associated with the transportation of plant, equipment, products, wastes, personnel, rock armour and core material from local quarries. With the implementation of mitigation measures the PEP is not expected to significantly impact upon existing transport infrastructure and networks.

This section provides information to address submissions received in response to the PEP EIS, relevant to transport and infrastructure. Key matters raised from the submission review process include:

- inclusion of detailed quarry locations and haulage routes in the assessment
- adequacy of pavement impact assessment
- adequacy of Traffic Operations Assessment
- impact to rail network and rail safety
- consideration of future development impacts
- inclusion of detailed public transport, parking and pedestrian facilities
- traffic related impacts on amenity.

16.2 Response to Submissions

16.2.1 Inclusion of detailed quarry locations and haulage routes in the assessment

Two submissions raised the impact of construction haulage activities on the existing transport networks. It was requested that quarry locations and the proposed haulage routes to the Port are identified and assessed.

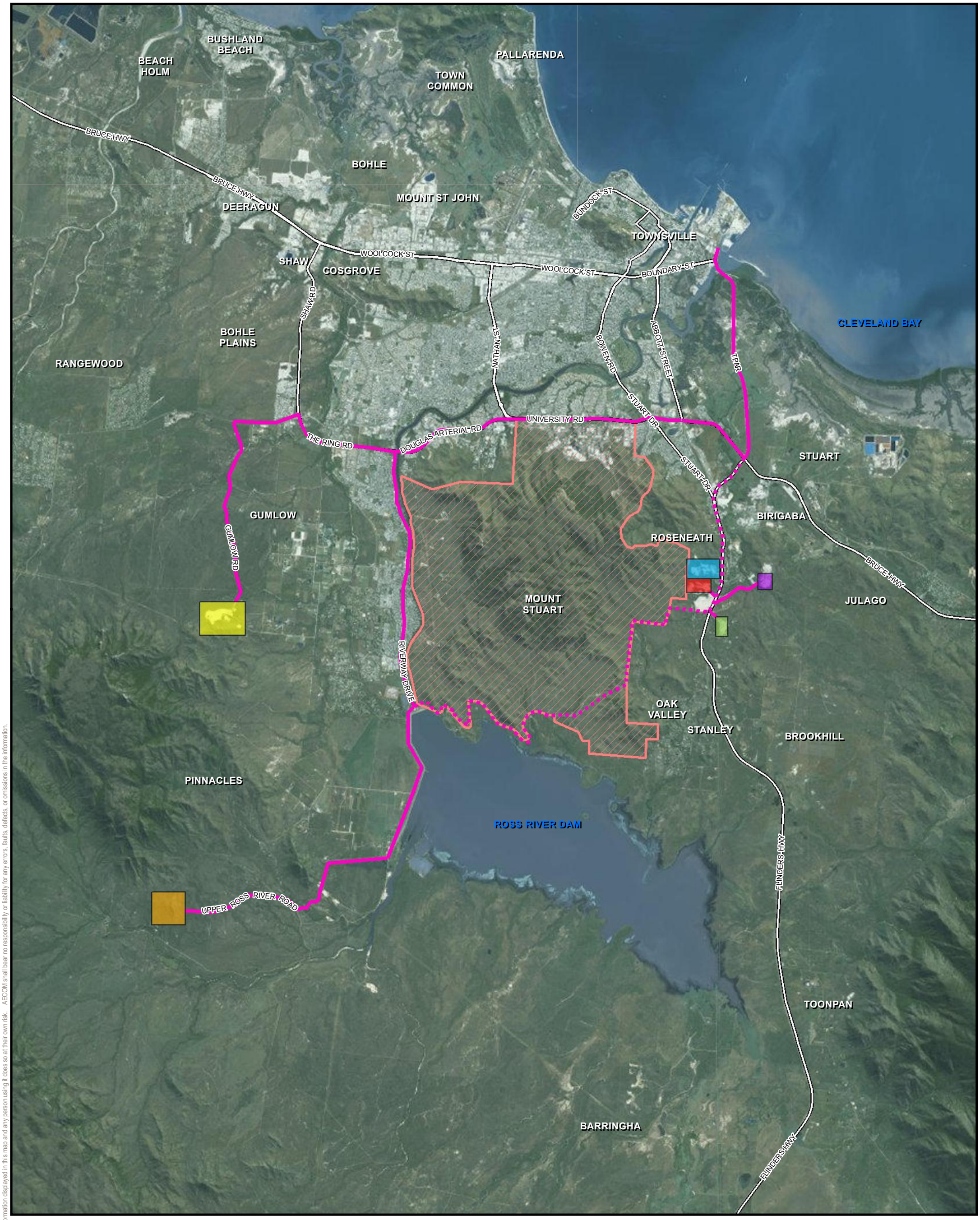
The preferred quarries for the construction of the reclamation and the associated haulage routes to transport this material to the Port is identified in Section B.14.3.2.4 of the EIS. These locations and haulage routes are indicative at this stage of the Project as a number of factors that influence route selection are subject to confirmation prior to the commencement of the revised staging. These factors include the individual annual quarry quantity limits, armour rock availability, Department of Transport and Main Roads (DTMR) proposed road works program, vehicle classifications constraints, existing pavement condition, and community expectations.

The proposed POTL Granitevale Quarry has been identified in the EIS as the primary source of armour rock for the PEP. Despite the expectation that the Granitevale Quarry will provide the majority of material, it is likely that there will be times that material will need to be supplemented by additional quarries in the region to avoid delays in the construction program. The EIS identified potential material sources adjacent to the Flinders Highway and west of the Ross River Dam. In addition to the Granitevale Quarry, these sources include:

- Holcim Quarry
- Hanson construction materials
- Boral construction materials
- McCahill Brothers Quarry.

An indicative haulage plan is provided as Figure 16.1 to illustrate the preferred quarry locations and potential haulage routes relative to the Port. It is expected that approximately 50% of the quarry material will be sourced from the Granitevale Quarry and the remaining material will be sourced from other local quarries and hauled via the Flinders Highway. It is envisaged that regardless of the quarry/s selected that the Townsville Port Access Road will be the preferred access route into the Port to minimise impacts to the community. A Road Impact Assessment, including a Pavement Impact Assessment and Traffic Operations Assessment, is proposed to be undertaken during detailed design, and provided a minimum of six months prior to haulage of quarry material commencing, to assess potential impacts to the State Controlled Road Network based on staging requirements and final haulage route.

One submission also requested detailed information on operational traffic associated with freight routes, terminal and distribution centres. At this stage of the Project individual port tenant and their operations are unknown. Relevant approvals for tenant operations will be required at the time of development.



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Kilometers

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LEGEND

- Highways
- Defence Haul Route Option
- Potential Haul Route Option
- Mount Stuart Defence Reserve

Quarry

- Boral Construction Materials
- Hanson Construction Materials
- Holcium
- McCahill Brothers Quarry
- Pinnacles Quarry
- Granitevale Quarry

NOTES:
1. All routes (except Defence Haul Route Option) are TMR B-double approved routes (haulage vehicle types are unknown, so it is possible the options would be revised based on route approval, if larger than B-double).

2. Defence Haul Route Option is on defence land, so in not a publicly owned road. It therefore does not have a route classification.

Data Soiurce:
Roads, Localities - StreetPro 2010.
Options, Offset Area, POTL land - AECOM 2014.
Service Layer Credits: Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AEX, Getmapping, Aerogrid, IGN, IGP, swisstopo, and the GIS User Community

PORT EXPANSION PROJECT AEIS

Haul Route Options

PROJECT ID	60161996
CREATED BY	CFS
LAST MODIFIED	21 Mar 2016
VERSION	1

Figure 16.1

Filename: P:\601X\60161996\4. Tech Work Area\4.7 GIS\60161996_PLN_151v4.mxd

A3 size

16.2.2 Pavement Impact Assessment

DTMR requested a Pavement Impact Assessment be undertaken including further information on the extent of impacts to pavement and how these impacts will be mitigated. A preliminary analysis, based on the DTMR *Guidelines for Assessment of Road Impacts of Development* was undertaken in Section B.14.4.2 of the EIS, to identify the likely magnitude of pavement impacts due to predicted heavy vehicle movements generated during construction and operation.

The preliminary analysis was performed based on an increase in equivalent standard axles in excess of 5% or greater than background traffic. This analysis suggested the threshold will likely be exceeded for heavy vehicles during the construction and operational phases of the PEP. The assessment also recommended government agencies be consulted to develop an appropriate agreement for associated maintenance, upgrades and rehabilitation requirements.

A meeting was held with DTMR in October 2014 to clarify a number of points related to their EIS submission. From this meeting it became apparent that the key matter for DTMR was quarrying and potential haulage routes, in particular the proposed route from Granitevale Quarry along Riverway Drive.

In response to the DTMR submission, and to ensure that adequate forward planning is achieved, POTL has carried out the detailed Pavement Impact Assessment on Riverway Drive. Following agreement of the Pavement Impact Assessment report a process was undertaken to formulate an agreed set of conditions regarding pavement impacts, potential timing, and appropriate reimbursement for rehabilitation costs. The conditions resulting from the Pavement Impact Assessment form part of the Development Application for the Granitevale Quarry which was finalised in March 2016 and submitted to Townsville City Council (TCC) for final approval consideration.

The Pavement Impact Assessment has been undertaken in accordance with relevant standards and DTMR 'GAIRD' guidelines and based upon measured and forecast traffic volumes at the time of the assessment. The assessment also considered the planned upgrade of Riverway Drive by DTMR. It is proposed that unless there is a significant change to the route assessed in the Development Application, the Pavement Impact Assessment will form part of the Traffic Impact Assessment proposed to be carried out in future to assess road safety matters, before commencing construction.

16.2.3 Adequacy of Traffic Operations Assessment

DTMR and TCC raised queries regarding the adequacy of the Traffic Operations Assessment undertaken as part of the EIS, with a request for a short and long term Traffic Master Plan. Section B.14.4 of the EIS provides an assessment of transport related impacts relevant to the PEP, based on construction and operational assumptions outlined in Appendix Q.1 and Q.2 of the EIS. This assessment is based on baseline data, with applicable growth rates and other contributing factors applied. This was considered the most appropriate method of assessment based on the scope and scale of the PEP. Further, changes to the transport network, since the time of carrying out the baseline studies, and as highlighted in the submissions, illustrate how quickly Traffic Operations Assessments become outdated. This supports the case for assessment closer to the time of construction.

As a result of the design refinement updates, the earliest that road traffic impacts could now increase will be approximately 2017 when Stage 1 construction could commence. The assessment will include the provision of a reliable Network Impact Assessment, based on known transport and infrastructure at the time and will address concerns raised by DTMR and TCC regarding adequacy of assumptions.

Assumptions regarding timing, volumes and haulage details applied to the construction and operation of the PEP have changed with the design refinement and the impact on the assessment of the PEP are addressed in Section 16.3.2. Changes to traffic volumes have been assessed through a series of semi-quantitative comparisons of traffic scenarios. This information has been presented to illustrate the likely changes to construction traffic impacts as a result of the refined staging. It is accepted that this assessment will need to be refined prior to the construction of Stage 1.

The DTMR submission also raised the assessment of road intersections, noting that only those within the immediate vicinity of the Port were assessed as part of the EIS. This approach was chosen as the use of these intersections by PEP construction related traffic had a higher level of certainty, particularly given the 30 years over which various phases of construction were proposed. In addition, Sidra was used to assess only those intersections where PEP related volumes were predicted to be 5% or greater than background traffic.

A Road Safety Assessment will be undertaken prior to the commencement of construction (i.e. Stage 1) as part of the detailed design process and subsequent approvals. This is considered more appropriate given the nature of known traffic volumes and road/intersection upgrades rather than at the level of reporting required in an EIS / AEIS.

All impact assessments will be undertaken in accordance with the relevant standards at the time, with timing determined with DTMR.

16.2.4 Impact to rail network and rail safety

The DTMR submission requested a description and analysis of all rail level crossings proposed to be utilised by PEP during the construction and operation phases to be included in the EIS, with specific reference to the application of the Australian Level Crossing Assessment Model (ALCAM) tool; the identification of rail safety impacts; and associated amelioration measures to mitigate these impacts.

Construction haulage routes proposed to be used for the PEP do not cross any Open Level Crossings. Construction haulage or operational tasks are unlikely to affect rail assets based on current preferred routes. This will be confirmed upon finalisation of construction details and haul routes prior to the commencement of Stage 1.

Construction and operational impacts to the rail network and rail safety will be confirmed, in accordance with the ALCAM, as part of the detailed design of Stage 1 with appropriate mitigation measures identified and agreed upon in consultation with DTMR. It should be noted with current road projects underway, specifically Cluden to Vantassel Road, Open Level Crossings will be upgraded to overpasses and therefore not be impacted.

As previously discussed it is proposed to finalise and submit the required assessments a minimum of six months prior to haulage of quarry material commencing.

16.2.5 Consideration of future development impacts

TCC requested that the assessment consider previous planning studies, schemes and models as impacts and this information be used as input into the traffic analysis. The traffic analysis will be revised prior to construction of Stage 1 (2017) to account for any considerable changes to magnitude of impacts that may have occurred since the original assessment was completed. A cumulative assessment, including consideration of relevant previous studies at the time of the assessment, will also be considered prior to construction.

At this time, the DTMR Riverway Drive upgrade is the only known future development with direct impact on the construction of the PEP as it falls within the proposed haulage routes. All other commercial/residential developments, and other major planning projects in the vicinity, still valid at the detailed design phase, will be considered in the pre-construction assessments.

16.2.6 Inclusion of detailed public transport, parking and pedestrian facilities

TCC raised the lack of detail on public transport, parking, pedestrian/cycling facilities and end of trip facilities in the EIS. POTL is responsible for the management of traffic and transport facilities under its direct control only (i.e. in common areas on Port land). POTL adheres to the safety and security requirements of Ports in Australia under a range of State and Commonwealth legislation. As part of these requirements, public access is currently restricted and primarily managed through the controlled access points (Port gates). It is anticipated that the PEP will be governed under the same security provisions that are currently in place at the Port and public access will not be permitted.

Port tenants are responsible for the management of traffic and transport facilities within their leased areas. Port tenants and operations are subject to trade demand and as such, cannot be identified with certainty, at this time. All port tenants and operations must however, adhere to the Port Land Use Plan (POTL, 2013), POTL guidelines and relevant legislative requirements ensuring compliance relevant to transport and traffic facilities and management.

TCC also requested that the PEP include provisions for pathway network planning and connection with the TCC Central Business District (CBD) Master Plan and Public Transport Strategy. These provisions are not applicable on Port of Townsville land and therefore have not been considered in this assessment. Whilst POTL is currently collaborating with TCC in relation to Ross Creek Priority Development Area including some Port areas, this will not include the PEP which is proposed for internal port operations only. Operational requirements for movement around the PEP, and including the movement of ships' crews, will be managed internally by POTL and considered further at the detailed design phase.

16.2.7 Traffic related impact on amenity

TCC raised the assessment of noise generated by increased railway and site traffic associated with the PEP. Noise and vibration impact to surrounding sensitive receptors are addressed in Section 10.4.8 of the EIS and further clarified in Section 12.0 (Noise and Vibration) of the AEIS. The assessment of noise and / or vibration from the railway servicing the current and future Port operations was excluded from the assessment as the railway falls under Queensland Rail jurisdiction and is not within the Port of Townsville's development control or authority.

Another submission received raised environmental and human health impacts of increased traffic and exports as a result of the PEP. The revised design has resulted in haulage routes for construction traffic being refined to avoid the use of Boundary Street for bulk materials haulage where possible. The majority of heavy vehicle traffic is proposed to use the purpose built Townsville Port Access Road as detailed in section 16.3.4. Port tenants are responsible for the management of traffic and transport facilities within their leased areas. Port tenants and operations are subject to trade demand and as such, cannot be identified with certainty at this time. All port tenants and operations must however, adhere to the Port Land Use Plan (POTL, 2013), POTL guidelines and relevant legislative requirements ensuring compliance with relevant safety standards.

Potential environmental and human health impacts as a result of the PEP are also considered in the impact assessments for Air Quality (Chapter B.9), Noise and Vibration (Chapter B.10), Terrestrial Ecology (Chapter B.7) and Health and Safety (Chapter B.20) in the EIS. Further information is provided in the relevant sections of the AEIS.

16.3 Revised Environmental Impact Assessment

16.3.1 Legislation and policy

There have been no known legislation or policy changes since the preparation of the EIS relevant to the assessment of transport and infrastructure. All applicable standards and legislation will be considered during the detailed design phase.

16.3.2 Design refinement

The project design has been revised as described in Section 2.0 of the AEIS. This revision has resulted in revised staging for the PEP, impacting a number of transport and traffic assumptions/details that were based on the original EIS staging.

There has been no refinement to the design of transport related infrastructure. However, detailed assessments of transport impacts are to be undertaken as part of the detailed design phase and prior to construction of Stage 1. At this time the information will be available and relevant to the respective construction stage, and details will be known with greater certainty.

As raised in TCC and DTMR submissions, the following will be reassessed and submitted a minimum of six months prior to haulage of quarry material commencing:

- travel split assumptions for haulage routes
- movements allowed at intersections
- layout configurations with consideration to Townsville Port Access Road
- revised modelling and intersection analysis – based on known haulage routes, updated assumptions
- Road Safety Assessment, including consideration of public safety
- relevant monitoring plans.

Many of the above mentioned items will form part of the Road Impact Assessment and Traffic Operations Assessment. The Pavement Impact Assessment will be utilised as a part of this process.

The following will be considered prior to operation of the PEP where relevant:

- import and export volume splits
- train size assumptions through intersections
- shipping volumes
- public transport needs.

16.3.3 Supporting studies

No additional studies were required to assess the revised design and adequately address submissions received as a result of the public consultation period.

Changes to traffic volumes, due to the refined design, have been assessed through a series of semi-quantitative comparisons of heavy and light vehicle traffic movements. This information is based on the revised staging and extrapolation of original traffic assumptions and is summarised in the Figure 16.2. This figure illustrates potential vehicle movements during each construction stage.

Commitments to undertake the following, either during detailed design or prior to construction, as identified in the above sections, include:

- compliance with legislation/acts/standards current at time of detailed design
- consideration to detail and assumption refinements noted in Section 16.3.2 above
- confirmation of detailed haulage routes
- impact assessments (Road Impact Assessment, Traffic Operations Assessment) a minimum of six months prior to haulage of quarry material commencing
- Road Safety Audit a minimum of six months prior to haulage of quarry material commencing
- relevant monitoring plans for construction.

16.3.4 Revised assessment

16.3.4.1 Impact assessment

The design refinement expands the reclamation area by approximately 50 ha to the north-east to avoid sea placement of dredged material. Transportation of materials to the site has increased from the EIS by approximately 17%. Construction of the larger reclamation area requires additional good quality material for capping and pavements to be transported to the larger reclamation area from onshore sources.

The types of impacts associated with the revised refinement are expected to be consistent with those originally identified in Section B.14.4 of the EIS, however the number and rate of vehicle movements has increased as a result of the larger reclamation. Average numbers of heavy vehicles hauling armour rock from quarry sources has increased during Stage 1 and Stage 2, for a limited period during placement of revetments and the breakwater. Whilst the average number of traffic movement is higher at these times (by 4-6 vehicle movements per hour), the duration that material is being hauled at this intensity has reduced since the EIS, as illustrated in Figure 16.2. During the remainder of the Project construction, average heavy vehicle movements are either similar or less than predicted in the EIS.

Haulage routes have been refined since the EIS. The EIS utilised data that was captured prior to the completion of the Townsville Port Access Road and a number of route options were still being considered to haul armour rock. With the Townsville Port Access Road now functional it is proposed that heavy vehicle construction traffic will avoid the use of Boundary Street for bulk materials haulage where possible, as illustrated in Figure 16.1. This will significantly decrease the potential traffic impact on Boundary Street compared to the EIS.

Light vehicle peaks have also changed since the EIS as illustrated in Figure 16.2. Typically highest peaks for light vehicles occur during berth construction, whilst heavy vehicle traffic movements are higher during bulk material haulage periods of the Project.

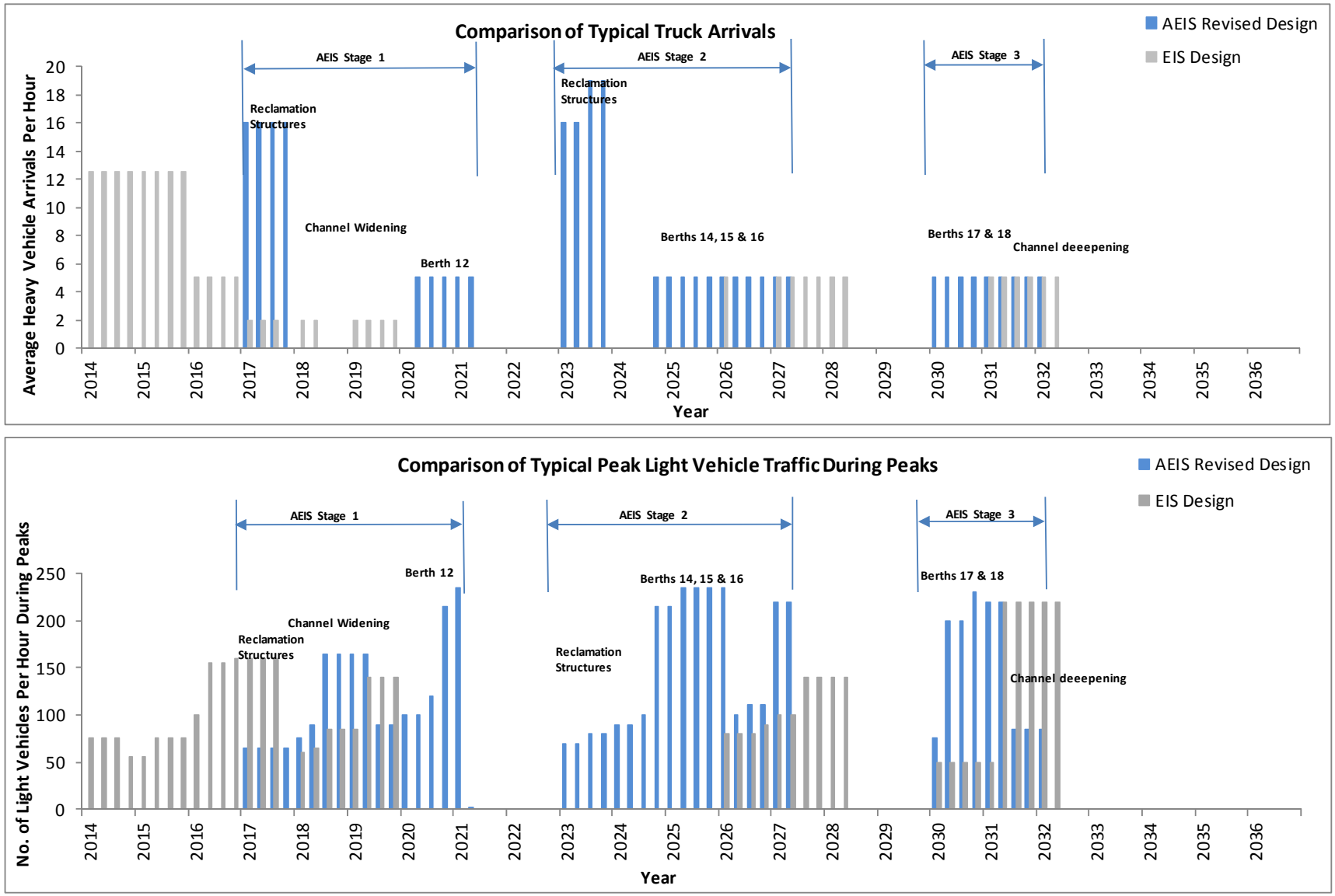

Figure 16.2 Comparison of traffic volumes from EIS to the revised design AEIS

16.3.4.2 Mitigation measures

Mitigation measures to reduce the impact of the PEP, in regards to transport and infrastructure, are outlined in the updated Construction Environmental Management Plan (refer to Appendix B2) and Operational Environmental Management Plans (refer to Appendix B3) of the AEIS.

16.3.5 Summary

Table 16.1 provides a summary of the mitigation measures proposed to reduce impacts of the Project on transport infrastructure. Mitigation measures will be outlined and implemented through the Construction Environmental Management Plan and the Operational Environmental Management Plan.

Table 16.1 Summary of Transport and Infrastructure Impacts and Mitigations Measures

Element	Primary Impacting Process	Updated Risk Rating			Mitigation Measures	Mitigated Risk Rating
		Magnitude	Likelihood of impact	Risk Rating		
Road Network						
Medium – term amenity reduction and increased safety risk along main haulage route due to heavy vehicle transport during revetment and breakwater construction.	Construction activities	Moderate	Likely	Medium	Undertake additional impact assessments (Road Impact Assessment, Traffic Operations Assessment) submitted a minimum of six months prior to haulage of quarry material commencing. Undertake Road Safety Audit to be submitted a minimum of six months prior to haulage of quarry material commencing. Update the Port Community Forum as required for any transport and safety issues.	Medium
Decrease in operational efficiency of key intersections.	Construction activities	Moderate	Likely	Medium	Investigate opportunities for intersection improvements to mitigate against additional traffic impacts from construction related activities.	Low
Pavement degradation as a result of increased load intensity.	Construction activities	High	Likely	High	Determine the need for pavement rehabilitation and maintenance in consultation with DTMR and/or TCC. Consider future planning projects (i.e. Riverway Drive) in allocating haul routes.	Medium
Decrease in operational efficiency of key intersections.	Operational activities	Moderate	Likely	Medium	Investigate cost effective solutions to alleviate additional traffic impacts from the expanded port activities.	Low
Pavement degradation as a result of increased load intensity.	Operational actvities	Moderate	Almost certain	High	Determine the need for pavement rehabilitation and maintenance in consultation with DTMR and/or TCC.	Low
Rail						
Ongoing efficiency of existing and planned rail networks.	Construction activities	Negligible	Unlikely	Negligible	Nil	Negligible
Ongoing efficiency and operation of rail infrastructure.	Construction activities	Negligible	Unlikely	Negligible	Nil	Negligible
Reduced performance of rail network (Mount Isa Line) due to signficant increase in demand.	Operational activities	Moderate	Likely	Medium	Work with government to further implementation of the 'Mount Isa Rail Infrastructure Master Plan' to address the future rail capacity requirements.	Medium
Increase in demand locally between Stuart and the Port on the rail network (North Coast Line).	Operational activities	Minor	Likely	Medium	Work closely with Queensland Rail to identify appropriate trigger points and when viable, plan for the rail access via the Eastern Access Corrdior.	Low
Conflicting rail movement congesting rail and road networks (Town and Port track).	Operational efficiency and capacity	Moderate	Likely	Medium	Work closely with Queensland Rail to identify appropriate trigger points and when viable, plan for the development of rail along the Eastern Access Corrdior. This will provide sufficient capacity for the PEP rail requirements and will provide an opportunity to address existing port rail efficiency, capacity and amenity issues.	Low

Element	Primary Impacting Process	Updated Risk Rating			Mitigation Measures	Mitigated Risk Rating
		Magnitude	Likelihood of impact	Risk Rating		
Increased rate of rail infrastructure degradation.	Increased rail traffic	High	Likely	High	Work with Queensland Rail to determine progressive rail infrastructure renewal programmes in anticipation of increased rate of degradation.	Medium

16.4 Conclusion

The PEP is not expected to significantly impact upon transport infrastructure on site (within Port) or within the surrounding area. All impacts, mitigations measures, assumptions, and assessments will be reviewed and revised as necessary during the detailed design phase.

A Pavement Impact Assessment has been completed since the EIS and has been submitted as part of a separate Development Application for the proposed Granitevale Quarry to support DTMR future planning. A Road Impact Assessment, including the aforementioned Pavement Impact Assessment, Traffic Operations Assessment, and any other relevant mitigation plans or measures, audits, and management policies, will be undertaken prior to construction of Stage 1, at a time agreed with DTMR, or other applicable agency as required.

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