Transport
Roads & Maritime
Services

22 November 2013

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SF2011/001962/3 (325DA129)
KM

Manager, Infrastructure Projects
Department of Planning & Infrastructure
GPO Box 39
SYDNEY NSW 2001

Attention: Ms Rebecca Sommer

CORMORANT ROAD / TOURLE STREET (MR108): PREFERRED PROJECT REPORT FOR PORT WARATAH COAL SERVICES TERMINAL 4 (MP 10/14864) – REVISED PROPOSAL

Dear Ms Sommer,

I refer to your letter dated 9 September 2013, received on 11 September 2013 (your reference: 10/14864), requesting comment from Roads and Maritime Service regarding the Preferred Project Report for the subject application. I also refer to Road and Maritimes previous letter dated 7 May 2012.

Roads and Maritime Responsibilities

Transport for NSW and Roads and Maritime primary interests are in the road network, traffic and broader transport issues. In particular, the efficiency and safety of the classified road network, the security of property assets and the integration of land use and transport.

In accordance with the *Roads Act 1993*, Roads and Maritime has powers in relation to road works, traffic control facilities, connections to roads and other works on the classified road network. Cormorant Road / Tourle Street (MR108) is a classified (State) road. Roads and Maritime concurrence is required for connections to this road with Council consent, under Section 138 of the Act. Roads and Maritime consent is required for traffic control signals and facilities under Section 87 of the Act. Council is the roads authority for Cormorant Road and Tourle Street.

As road works will be required on the classified (State) road, Roads and Maritime will exercise the functions of roads authority under Sections 64 and 71 of the Act.

Roads and Maritime Response and Requirements

Roads and Maritime has reviewed the information provided and considers the Preferred Project Report, and associated Traffic Impact Assessment, to be generally adequate in addressing the

59 Darby Street, Newcastle NSW 2300 | Locked Bag 2030 Newcastle NSW 2300 DX7813 Newcastle
T 02 4924 0240 | **F** 02 4924 0342 | **E** David.N.Young@rms.nsw.gov.au **www.rms.nsw.gov.au | 13 22 13**

traffic, road infrastructure and car parking requirements for this project. The following comments apply:

Traffic Impact Assessment

The following comments apply to the Cormorant Road / Pacific National Road / Site access intersection:

- A revised Traffic Impact Assessment (TIA) is to be completed prior to concept and detail design, to the satisfaction of Roads and Maritime.

- 10 year traffic growth projections must be applied, allowing an appropriate background growth on the classified road network that considers any approved developments and those in the later stages of planning approval.

  Comment: Roads and Maritime notes that an annual traffic growth rate of 1.6% has been adopted in the traffic modelling. The permanent counting station at Stockton Bridge shows an historical growth rate of 2.2%. The 10 year growth is not to be applied from the base year (2011), but from the proposed implementation date.

- The traffic analysis of the proposed signalised intersection shall be calibrated to reflect actual traffic signal operation and peak queue lengths.

  Comment: It is noted that there is some uncertainty about the timing of this project. The proponent will therefore be required to prepare and submit a revised traffic report, with current traffic counts, to confirm the required intersection configuration.

Car Parking Requirements

- A concept plan showing parking areas for both construction and operational employees, including the number of parking spaces at each car park shall be provided. Car parking areas should be positioned / designed to permit expansion, if necessary, to cater for fluctuations in parking numbers across the site during the construction phase.

- On-site and off-site parking areas associated with the subject development are to be designed and constructed in accordance with AS 2890.1-2004 and AS 2890.2-2002, including aisle widths, parking bay dimensions and loading / unloading bays for service vehicles.

- All car parking areas, inclusive of parking for construction workers should be a sealed pavement surface permitting all weather access and thereby minimising dust and erosion.

- Details of the off-site parking area(s) shall be provided, including location options and shuttle bus service routes / arrangements to ensure that the site chosen is feasible and employees will utilise the service. This is to include how employees will be restricted from driving to site should the construction workforce exceed 1,200 people.

- Advice on how the staggering of construction traffic will be implemented. It is stated that only "where possible" construction traffic will be staggered and consideration needs to be given to a situation where it is not possible.

  Comment: Roads and Maritime notes that the above two points are two of the three specific traffic impact mitigation measures put forward by the proponent to address the predicted impacts of the T4 Project construction traffic. As no information has been provided on how or when they will be implemented, enforced or monitored, Roads and Maritime is unable to determine their impact on future traffic generation and intersection operation.

Intersection Works - Terminal 4 / State Road Access

- Prior to the issuing of a construction certificate for the proposed development the developer shall upgrade the existing Cormorant Road / Pacific National Road / Site access intersection. The intersection shall be designed and constructed in accordance with the Austroads *Guide to Road Design 2010* (with Roads and Maritime supplements) and the RTA *Traffic Signal Design 2008* to the satisfaction of Roads and Maritime including, but not limited to, the following works:

    - Upgrading the intersection to a four leg traffic signal controlled intersection, which incorporates vehicular access to / from the NCIG / wind turbine sites.

    - The required lane configuration, types and lengths shall be determined by Roads and Maritime subject to a review of the requested revised TIA to be prepared to the satisfaction of Roads and Maritime in accordance with the RTA's *Guide to Traffic Generating Developments*.

      Comment: As a minimum, the intersection shall provide for two through lanes in each direction on Cormorant Road with 200 metre long approach and departure lanes. Right and left turn lane, lengths and configuration, shall be determined through traffic analysis, to the satisfaction of Roads and Maritime.

    - Signalised pedestrian crossings shall be provided on all legs of the intersection.

    - Street lighting shall be provided at the intersection to Australian Standards, or as determined by Roads and Maritime.

    - The intersection shall be designed and constructed to accommodate on-road cyclists. If cyclists cannot be accommodated on road due to site constraints, and subject to the agreement of Roads and Maritime, adequate provision shall be made off-road.

- All vehicular access to the relevant site areas shall be via this intersection. No other direct vehicular accesses will be permitted to / from the site.

- All traffic lanes shall be 3.5 metres in width on Cormorant Road including at the proposed upgraded intersection, or as determined by Roads and Maritime.

- Appropriate pedestrian and cyclist facilities, foot / cycle paths and ramps, connecting to the traffic signal controlled intersection shall be provided to the satisfaction of Roads and Maritime and Council. Pedestrian fencing may be required in certain areas. This will be identified as part of the design review process.

Conveyor Bridge over the State Road

- The land required by PWCS for the purpose of the conveyor structure may need to be retained as road reserve with a Deed Containing Agreement, *Roads Act 1993* Section 138 agreement or similar being executed between Roads and Maritime and PWCS. Roads and Maritime will provide further advice regarding the land that PWCS has requested to use when the final land requirements are determined.

- The bridge structures over Cormorant Road shall be designed and constructed to Roads and Maritime requirements, including (but not limited to):

    - Allowance for future road widening / duplication of Cormorant Road. An 8 metre distance is required between the edge of Cormorant Road shoulder (existing and proposed) and the PWCS structures.

- Any barriers / protection required to prevent errant vehicles from striking the bridge structures.

- A minimum 6.5 metre vertical height clearance from the top of the Cormorant Road pavement to the underside of the bridge structures.

- The bridge structures and approaches shall be designed to minimise impacts on road and public utility maintenance / construction activities required within the road reserve.

- Maintenance activities required for the bridge structures shall be carried out from within / on the bridge structures.

- Urban design principles in accordance with Roads and Maritime *Beyond the Pavement* publication shall be applied to the bridge and associated structures design and construction to the satisfaction of Roads and Maritime.

- The developer shall enter into an agreement with Roads and Maritime for the ongoing maintenance and ultimate demolition of the bridge structures on completion of the structures, to the satisfaction of Roads and Maritime.

Stormwater Drainage

The proposed T4 wharf side development south of Cormorant Road will have a significant impact on the stormwater drainage regime between Cormorant Road / Tourle Street and the Hunter River. The proponent will be required to maintain stormwater drainage conditions and structures such that Cormorant Road / Tourle Street remain trafficable during a 1 in 100 year storm event.

- Prior to the issuing of a construction certificate for the site, the developer shall upgrade the existing drainage structures and / or install new drainage structures as required, to the satisfaction of Roads and Maritime and Council. This should incorporate the hydraulic requirements of the Cormorant Road / Tourle Street carriageway and the 'Long Pond' (to maintain appropriate sustainable water levels).

  Comment: Roads and Maritime has been involved in discussions and exchange of information on this matter. The proponent is aware of Roads and Maritime requirements.

- Hydrologic and hydraulic investigations and assessments are to be completed to the satisfaction of Roads and Maritime and Council. These investigations / assessments must encompass the interaction of the proposed T4 site and Cormorant Road / Tourle Street carriageway drainage requirements and the 'Long Pond'.

- On-site T4 stormwater drainage, sedimentation basins and chemical containment facilities shall be designed and constructed clear of the Cormorant Road / Tourle Street road reserve to the satisfaction of Roads and Maritime and Council.

  Comment: This is to contain any pollution and / or chemical spills on the site.

- Appropriate easements and drainage structures shall be provided over the site as required to enable Cormorant Road / Tourle Street and any catchments to the north of Cormorant Road to be drained to the satisfaction of Roads and Maritime and Council.

  Comment: This is required to maintain efficient drainage between Kooragang Island, the Cormorant Road / Tourle Street carriageway and the Hunter River.

Tourle Street Bridge Stability

An independent assessment is to be undertaken on the proposed T4 river bed batter design during the detail design phase, to provide Roads and Maritime with an assurance that the Tourle Street Bridge will not be structurally impacted by a coal carrier ship (either by direct impact or possible energy transfer through the river bed). The assessment is to be conducted at the detailed design stage by a person(s) with the required technical capabilities, to the satisfaction of Roads and Maritime, and is required to:

- Validate design assumptions and friction parameters to determine the sensitivity on stopping distances, and
- Quantify the forces transmitted into the river bed stratum using numerical modelling on the revetment.

Comment: An initial assessment was completed by Aurecon Hatch on 3 December 2012 and pier reviewed by AECOM on 12 September 2013 (provided in Attachment A).

General

- A Construction Traffic Management Plan (CTMP) shall be prepared and include a Vehicle Movement Plan and Traffic Control Plans. It shall be prepared with the intention of having minimal impact to the operation of the road network during construction. The CTMP shall be submitted to Roads and Maritime and Council for review and approval prior to any construction activities occurring onsite.

  Comment: This CTMP should assume the signalised intersection has been constructed in accordance with Roads and Maritime requirements.

- As road works are required on State roads, and traffic control signals, Roads and Maritime will require the developer to enter into a Works Authorisation Deed (WAD) with Roads and Maritime. Roads and Maritime will exercise its powers under Section 87 of the *Roads Act 1993* (the Act) and the functions of the roads authority, to undertake road works in accordance with Sections 64, 71, 72 and 73 of the Act, as applicable, for all works under the WAD.
- Prior to issuing a construction certificate for the proposed development, the developer shall enter into a WAD with Roads and Maritime and complete all road works associated with the Cormorant Road / Pacific National Access Road / T4 Eastern Access Road intersection.
- Prior to issuing an occupation certificate (interim or final) for the proposed development the developer shall complete all works under the WAD to practical completion, as determined by Roads and Maritime.
- All works associated with the proposed development shall be at full cost to the developer and at no cost to Roads and Maritime or Council, to the satisfaction of Roads and Maritime.

  Comment: Further advice regarding the WAD is provided in Attachment B.

The proponent is advised that changes to the above requirements may be required when the additional information is received and assessed by Roads and Maritime. Further changes may be required during the concept and detailed design phases of the project, as part of the WAD process.

Timing of T4 and State Road Duplications Works

Roads and Maritime has commenced the planning process for the Cormorant Road / Tourle Street duplication. This project is currently on exhibition until 6 December 2013. Roads and Maritime is seeking community comments on the preferred option prior to proceeding with concept design and environmental assessment.

There is currently no funding for the construction of the project. However, should both the T4 and the Cormorant Road / Tourle Street duplication be approved and proceed in parallel, Roads and Maritime would consider PWCS funding the upgrade of the Cormorant Road / Pacific National Road / Site access intersection in conjunction with the duplication project. There are mutual benefits (financial and community) in this and it would negate the need for PWCS to design and construct the works through the Roads and Maritime WAD process. In this instance Roads and Maritime would enter into an alternative arrangement with PWCS to enable the required State road works to be delivered.

Should you require further advice please contact me on (02) 4924 0688.

Yours sincerely

Dave Young
Manager Land Use
Hunter Region

Cc Mr David Ryner
Newcastle City Council

Enc. Attachment A - AECOM Tourle Street Bridge Protection audit report
Attachment B – Preliminary WAD Advice to Consent Authority and Developer

Attachment A: AECOM Tourle Street Bridge Protection Audit Report

AECOM Australia Pty Ltd
Level 21, 420 George Street
Sydney NSW 2000
PO Box Q410
QVB Post Office NSW 1230
Australia
www.aecom.com

+61 2 8934 0000 tel
+61 2 8934 0001 fax
ABN 20 093 846 925

12 September 2013

David Arthur
Port Waratah Coal Services
PO Box 57

Carrington NSW 2294

Dear David

Site Auditor Services at Terminal 4, Kooragang, NSW

Tourle Street Bridge Protection

AECOM are pleased to provide this review of the findings provided by Aurecon Hatch in their memo titled "Runaway Vessel Grounding on Dredged Batter at Tourle Street Bridge", dated 3/12/12.

This scope of work has been performed as a variation (Variation No. 002) to the existing contract (Contract Title: Site Auditor Consultancy Services Agreement (Purchase Order No: 150643)) currently in place between PWCS and AECOM. The Purchase Order No for the Variation Order No. 002 is 162982 dated 6 August 2013.

1.0 Scope of Work

The purpose of the review is to:

a) *Provide RMS with confidence that a coal carrier will not structurally impact Tourle Street Bridge either by direct impact or by possible energy transfer through the river bed,*

b) *Work with Aurecon Hatch's Marine Lead to amend the report so that the report provides the necessary information to allow the detailed design of structures to ensure that Tourle Street Bridge is not structurally impacted,*

c) *Provide a written signoff that the contents of the Report provide a design that will not impact the structural adequacy of Tourle St Bridge,*

d) *Provide a written opinion as to where any duplication of the Tourle Street bridge may require supporting piles of greater size than the existing structure and the reasons for that opinion.*

It is noted that item 1.0(b) above has not been able to be accomplished because Aurecon - Hatch's scope on the project has ended.

2.0 Reference Items

The following material has been reviewed in preparation of this report:

- 12 page memo from Aurecon Hatch addressed to PWCS titled "Runaway Vessel Grounding on Dredged Batter at Tourle Street Bridge" dated 3 December 2012.
- 3 page letter of invitation from PWCS addressed to AECOM titled "Site Auditor Services at the Terminal 4 Site, Kooragang, NSW," dated 16 July 2013.
- 3 page letter of proposal from AECOM addressed to PWCS titled "Site Auditor Services at the Terminal 4 Site, Kooragang, NSW," dated 30 July 2013.
- 4 page letter of variation confirmation from PWCS addressed to AECOM titled "Site Auditor Services at the Terminal 4 Site, Kooragang, NSW," dated 6 August 2013.

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3.0 Review findings

1) The following assumptions have been made in the assessment by Aurecon Hatch:
   a) A ballasted vessel of 220,000 dwt and 8.0m draft travelling bow first towards the dredged slope travelling at 5.0 knots without tug assistance.
   b) A 67% laden vessel of 220,000 dwt and 13.0m draft travelling bow first towards the dredged slope travelling at 3.0 knots without tug assistance.

   We understood that these vessels and operational configuration have been confirmed with the port operator as reported in the additional references (a) and (b) (not reviewed by AECOM) including:
   i. design vessel characteristics (length, beam, displacements etc.)
   ii. minimum vessel draft requirements under various loading conditions
   iii. normal channel transit speed limits and tug requirements
   iv. operational tidal and weather constraints (i.e conditions under which the coal vessels would not be moved)

2) It is understood that specification of the primary and secondary rock revetment material requirements has been considered by Aurecon-Hatch with respect to ensuring that it remains stable under normal channel flow and vessel/tug operations in additional reference (c) (not reviewed by AECOM).

   The friction factors used in the assessment appear reasonable for the determination of stopping resistance and stopping distance. Preliminary assessment using a friction factor of 0.3 shows that the vessel will be safely stopped from reaching the Tourle Street Bridge.

   Therefore, it is recommended that further assessment of the revetment material be undertaken at the Detailed Design Stage to ensure that the desired frictional resistance is achieved.

3) It is noted that for Scenario 2 (67% laden vessel), the level of stern has been calculated to be at - 16.787m, which is below the design dredge level of -15.2m. This scenario is highly unlikely as the vessel is expected to be stalled before the vessel bow reaches the dredged batter crest because the stern will also be grounded.

   Therefore the report assessment is conservative.

4) It is noted that the Aurecon Hatch report does not present any numerical assessment of stresses or displacements of the river bed material. The report states that a 67% laden vessel travelling at 3 to 5 knots is not enough to cause any significant energy transfer in the form of travelling waves in the river bed soil medium.
   We would expect that the mechanism of dissipating the energy of a runaway ship would be through sliding friction and/or passive soil resistance over a distance (i.e. kinetic energy transferred to work done (including partial lifting of the vessel bow)). It is expected that a runaway ship would cut though any revetment protection material and embed into the river bed material causing localised yielding (e.g. a passive failure) and accompanying displacement.

   It is recommended that further detailed assessment (using numerical modelling) should be undertaken at the Detail Design stage development of the proposal to verify the assumptions.

5) With respect to impact on the future duplication of Tourle St Bridge (which we understand will be built upstream of the existing bridge), it is expected that any impact on the new bridge will be less than that on the existing bridge as the proposed bridge would be further away from the impact zone. We would expect that minor dynamic displacements may occur around the piles (e.g. a shock wave from the impact), though likely to have an insignificant effect on the existing bridge piles.
   Therefore, the supporting piles for the future bridge are not expected to be of a greater size than those of the existing bridge.

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4.0 Conclusion

The general methodology adopted in undertaking the current assessment is considered to be conservative as various mechanisms have been treated in isolation. In reality, a combination of several mechanisms will take place to dissipate the kinetic energy.

In principle, the concept design presented in the Aurecon – Hatch Report provides a design that will not impact the structural adequacy of Tourle St Bridge or its proposed duplication.

The supporting piles for the future bridge are not expected to be required to be of a greater size than those of the existing bridge for the effects of the proposed development.

It is recommended that further assessment should be undertaken at the Detailed Design Stage:

- **to validate the design assumptions and friction parameters to determine the sensitivity on stopping distances and,**
- **to quantify the forces transmitted into the river bed stratum using numerical modelling of the revetment.**

Please do not hesitate to contact the undersigned should you require any clarifications.

Yours faithfully

Philip Blundy
Technical Director
phil.blundy@aecom.com

Mobile: +61 4 0749 6873
Direct Dial: +61 2 8934 0082
Direct Fax: +61 2 8934 0001

Additional References

(a) 61202-0000-RE-MR-1002 Flood Study Report", Rev A — PWCS (2012b), "PWCS T4 Feasibility Study, Hunter River South Arm

(b) 61202-0000-DC-MR-1004 Design Criteria", Rev 0 — PWCS (2012c), "PWCS T4 Feasibility Study, Marine and Dredging

(c) 61202-0000-RE-MR-1003 Protection Calculation Report", Rev A — PWCS (2012a), "PWCS T4 Feasibility Study, Dredge Slope Scour

Attachment B: WAD Advice to Consent Authority and Developer

Advice to the Consent Authority

- On the Planning Assessment Commission's determination a copy of the Project Approval should be forwarded to Roads and Maritime within the appellant period for advice / consideration and action where required.

- Conditions of development consent do not guarantee Roads and Maritime consent to the specific road works, traffic control signals and /or other structures or works for which it is responsible. The developer must obtain Roads and Maritime authorisation in writing prior to the commencement of any road works on Cormornant Road, including traffic management, temporary or permanent road works associated with the proposed development.

Advice to the Developer

- Following development consent, early discussion with the Roads and Maritime Project Manager is recommended. Roads and Maritime will initiate the WAD process by sending out a letter and information pack on receipt of the Notice of Determination, including the name and contact details of the Project Manager.

- As the WAD process, including acceptance of design documentation and construction can take considerable time, you should allow sufficient lead time within the project development program to ensure that all documentation and works are completed in advance of occupation. Roads and Maritime will not consider granting concurrence to occupation until it is satisfied all documentation and works under the WAD have been completed.

- Authorisation to commence construction will only be granted when Roads and Maritime is satisfied that all requirements under the WAD have been met by the developer, including Roads and Maritime fees and charges, an unconditional bank guarantee for the full value of the works, detailed design documentation, environmental assessment, road occupancy license, among other matters. Roads and Maritime will issue a letter to the developer advising of this authorisation.

- Any property acquisition / dedication required to accommodate the State road works / traffic control signals associated with the proposed development shall be at full cost to the developer, including all legal and survey costs. This land shall be dedicated by the developer as public road reserve in favour of the Council, as the owner.

- Part of the developers' timeline should make provision for Roads and Maritime to satisfy its obligations under the *Environmental Planning and Assessment Act 1979* (EP&A Act) to assess the environmental impacts of the works within the road reserve. Further investigation and assessment to that undertaken for the development consent may be required to the satisfaction of Roads and Maritime, under Part 5 of the EP&A Act.

- It is recommended that the developer use design consultants with the experience and knowledge of Roads and Maritime design requirements, in particular the Austroads *Guide to Road Design 2009* (with Roads and Maritime supplements) and relevant Australian Standards.

- A fact sheet providing further information on the WAD process can be obtained from the Roads and Maritime Private Developments Website at:

  http://www.rms.nsw.gov.au/roadprojects/community_environment/private_developments.html

- Construction on a State road and / or traffic control signals requires the engagement of an Roads and Maritime pre-qualified contractor. A list of pre-qualified contractors can be found on the Roads and Maritime website below.

  http://www.rms.nsw.gov.au/doingbusinesswithus/tenderscontracts/prequalifiedcontractors.html