NSW GOVERNMENT | Planning & Infrastructure

MAJOR PROJECT ASSESSMENT: Capital Strategic Dredging Project, Newcastle, NSW

SSI 10_0203

Director-General's
Environmental Assessment Report
Section 115ZA of the
Environmental Planning and Assessment Act 1979

December 2013

ABBREVIATIONS

CIV	Capital Investment Value
Department	Department of Planning & Infrastructure
DGRs	Director-General's Requirements
Director-General	Director-General of the Department of Planning & Infrastructure
EIS	Environmental Impact Statement
EP&A Act	*Environmental Planning and Assessment Act 1979*
EP&A Regulation	Environmental Planning and Assessment Regulation 2000
EPI	Environmental Planning Instrument
Minister	Minister for Planning and Infrastructure
NOW	NSW Office of Water
Part 5	Part 5 of the *Environmental Planning and Assessment Act 1979*
PEA	Preliminary Environmental Assessment
Proponent	Newcastle Port Corporation
SSI	State Significant Infrastructure

Cover Photograph: Source Environmental Impact Statement GHD March 2013

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EXECUTIVE SUMMARY

Newcastle Port Corporation (NPC) is seeking approval for the proposed dredging of 12 berths and construction of foreshore stability treatments, within the South Arm of the Hunter River, in the Port of Newcastle. The key components of the project include:

- dredging of 1,870,000m^3 of sediment from the Hunter River South Arm;
- construction of 12 berths;
- ancillary dredging to widen the channel between the proposed berths and the existing shipping channel;
- construction of foreshore treatment works to stabilise the river banks adjacent to the berths, including sheet pile walls; and
- where required, stockpiling, dewatering, treatment and transport for reuse or disposal of potentially contaminated material.

The project is declared to be a transitional State Significant Infrastructure project with a capital investment value (CIV) of $210 million, and would generate an estimated 30 jobs per year during construction (for at least 10 years). It would provide berthing opportunities for portside industrial land which is to be developed over the next 25 years.

The Department exhibited the Environmental Impact Statement (EIS) from 2 April to 17 May 2013 and received 10 submissions, including 8 from public authorities and 2 from the public. No submissions objected to the project but raised matters for the Department's consideration. The main concerns raised were impacts to water quality and contaminated sediment, estuarine ecology, non-indigenous heritage, public amenity (noise and air quality) and spoil disposal.

The Department has assessed the application, EIS, submissions and the response to submissions. The assessment found that the dredging practices would be designed to reduce, limit and manage water quality impacts through the employment of appropriate work practices (such as use of turbidity curtains) and monitoring measures. Construction is not likely to generate significant ecological, noise, traffic or air quality impacts.

The Department is satisfied that the impacts associated with the project can be adequately mitigated and/or managed through the implementation of the commitments and conditions recommended by the Department, including:

- the implementation of a comprehensive water quality management protocol to monitor water quality and groundwater during dredging;
- the monitoring of the effects of the project on tidal inundation in areas of saltmarsh;
- the establishment of public amenity goals based on actual dredging scenarios;
- recordings of non-indigenous heritage items to be removed as a result of the project; and
- general monitoring in accordance with the Construction Environmental Management Plan.

The Department considers the project is in the public interest and it would assist in increasing the Port's capacity in the non-coal sector and would allow for greater diversification of trade in non-coal commodities through the port. The Department has therefore recommended approval of the project, subject to conditions.

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1. BACKGROUND

1.1 Project Background

NPC (the Proponent) proposes to dredge 12 berths and construct foreshore stability treatments, within the South Arm of the Hunter River, in the Port of Newcastle. Seven of the berths are to be located at Mayfield, four at Walsh Point and one at Dyke Point, adjacent to Carrington (refer **Figure 1**). The project also involves ancillary dredging to widen the channel between the proposed berths and the existing shipping channel.

Figure 1: Project Location (reproduced from the Proponent's EIS)

The Project has a capital investment value of $210 million, and it would generate an estimated 30 jobs per year during its construction. The project would be constructed in stages over at least an approximate 10-year period.

1.2 Project Setting and Surrounding Land Use

The Project is located within the South Arm of the Hunter River in the Port of Newcastle and is surrounded by several existing industrial and port-related activities. It is located approximately 7km north-west of the Newcastle Central Business District. The Hunter River is located to the east with the residential suburb Stockton located more than 800 metres from the berth.

Mayfield berths 1 to 7 adjoin currently undeveloped industrial land. Newcastle Port Corporation has received concept plan approval (under Part 3A of the *Environmental Planning and Assessment Act, 1979*) for the future development of that land. This is likely to occur over the next 25 years. The closest residential areas to the proposed berths are located in Mayfield North and Mayfield East, being over 1km to the south and west.

Proposed Dyke 3 berth is located adjacent to the suburb of Carrington, approximately 270 metres to the west. Existing portside infrastructure, including rail sidings, warehouses and infrastructure associated with the Port Waratah Coal Services coal loader (refer **Figure 2**) separate the proposed berth from residential areas of Carrington.

Walsh Point berths 1-3 and Kooragang 1 would be located off Walsh Point at the eastern end of Kooragang Island. Industrial developments occupy Walsh Point although the southern tip is current vacant industrial land. Stockton is the closest residential area, located approximately 850 metres to the east.

2. PROPOSED PROJECT

2.1. Project Description

NPC is seeking project approval for the following:

- dredging of approximately 1,870,000m^3 of sediment (inclusive of approximately 20,600m^3 of landside material at proposed Mayfield berths 1 and 2) from 12 proposed berths in the Hunter River South Arm;
- construction of 12 berths (Mayfield berths 1 to 7; Walsh Point berths 1 to 3 (Walsh Point berth pocket); Kooragang 1 berth; and Dyke 3 berth);
- ancillary dredging to widen the channel between the proposed berths and the existing shipping channel;
- foreshore treatment works to stabilise the river banks adjacent to the berths; and
- where required, stockpiling, dewatering, treatment and transport for reuse or disposal to an approved landfill of potentially contaminated material comprising of:
    - 30,000m^3 of potentially contaminated sediments at Walsh Point; and
    - 2,500m^3 of potentially contaminated landside material at Mayfield (adjacent to berths M1 and M2).

NPC intends to dispose the remaining dredged material to an offshore spoil disposal ground and has separately sought approval from the Commonwealth Department of the Environment (formerly the Department of Sustainability, Environment, Water, Population and Communities, SEWPaC) for a Sea Dumping Permit under the *Commonwealth Environment Protection (Sea Dumping) Act 1981*. Disposal of this material does not form part of the proposal.

No direct operational impacts would result from the Project. The use of the berths would depend on the nature of the future landside development, which would be the subject of separate environmental assessments and approvals processes.

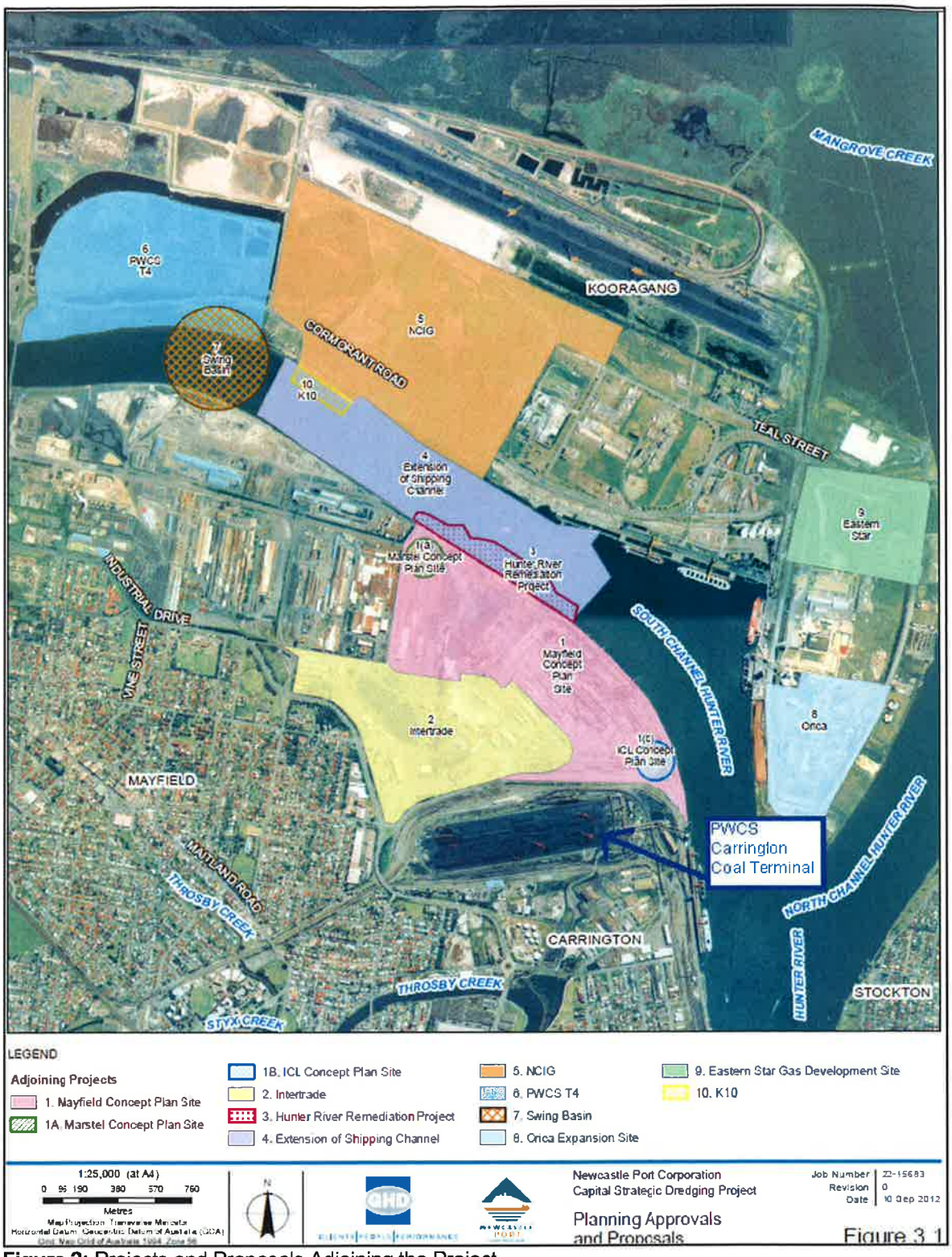

Figure 2: Projects and Proposals Adjoining the Project

Table 1 further details key project components.

Table 1: Key Components of the Project

Aspect	*Description*
Project Summary	NPC seeks approval for the capital dredging of 12 berths, together with the construction of foreshore stability treatments, within the Port of Newcastle. The Project is located in the South Arm of the Hunter River, adjacent to vacant industrial land at Carrington, Mayfield and Walsh Point. The Project, if approved, would assist future proponents to develop the adjoining land, allowing access to shipping for imports and exports (refer **Section 2.2** of this report).
Capital Dredging	The approximate volume to be dredged is 1,870,000m^3, which includes dredging of temporary batters between berths, as outlined below: • Kooragang 1 (K1) berth and Walsh Point berth pocket (comprising of up to three berth boxes (W1, W2, and W3)) would be dredged to 14.5m below the Newcastle High Tide Gauge (NHTG*), with an estimated dredge volume of 675,000m^3; • Mayfield 1 and Mayfield 2 berths (M1 and M2) would be dredged to 15.3m below the NHTG, with an estimated dredge volume of 310,000m^3; • Mayfield 3 and Mayfield 4 berths (M3 and M4) would be dredged to 13.3m below the NHTG, with an estimated dredge volume of 65,000m^3; • Mayfield 5, Mayfield 6, Mayfield 7 (M5 to M7) would be dredged to 16m below the NHTG, with an estimated dredge volume of 520,000m^3; and • Dyke 3 berth would be dredged to 17m below the NHTG, with an estimated dredge volume of 300,000m^3.
Ancillary Dredging	Ancillary channel widening is proposed to allow shipping vessels to safely navigate the area between the existing shipping channel and the proposed Mayfield 1 and 2 berths and Walsh Point Berth Pocket.
Construction of Foreshore Treatment Works	No new berth infrastructure or land-side development is proposed however, foreshore treatment is proposed to minimise berth encroachment on the existing shipping channel and adjacent port land.
Temporary Stockpiles Areas (2)	Approximately 30,000m^3 (about 1.6% of the total material to be disturbed) of dredged sediments at Walsh Point and approximately 2,500m^3 of excavated landside materials at M1 and M2 may be contaminated and require stockpiling and treatment prior to disposal or reuse. Therefore, if required, NPC is seeking approval for the stockpiling, dewatering, treatment and transport for reuse or disposal to an approved landfill of approximately: • 30,000m^3 of potentially contaminated material at/from Walsh Point; and • 2,500m^3 of potentially contaminated landside material at/from Mayfield (adjacent to M1 and M2 berths). Two temporary areas for stockpiling, adjacent to dredging at Walsh Point and Mayfield, have been identified (refer **Figure 3**).

*The NHTG datum is operated by the Port of Newcastle and is approximately the lowest astronomical tide level (and is 1.01 metres below Australian Height Datum).

The project includes an over-dredging allowance of an additional 0.5m in depth in all locations. The over-dredge allows for construction dredging tolerances and sedimentation of the berth over time between maintenance dredging periods to ensure that port operations and ship movement within the channel is not affected. The proposed project layout is shown in **Figure 3**.

Figure 3: Proposed Project Layout (reproduced from the Proponent's Environmental Impact Statement)

2.2. Project Need and Justification

NPC was established under the *Ports and Maritime Administration Act 1995* (Ports Act) and the *State-Owned Corporations Act 1989* (SOC Act). The Corporation's principal responsibility is the management, development and operation of port facilities within the Port of Newcastle for the purposes of enhancing the economic growth of the Hunter region and NSW. It is the oldest port in Australia, with coal exports representing more than 90% of total throughput tonnage.

In 2006/2007, the total volume of commodities imported and exported through the port was 85.5 million tonnes. This had a trade value of $8.3 billion. This increased in 2008/09 to 95.8 million tonnes (12% growth) and again in 2009-2010 to over 103 million tonnes, with a total trade volume of over $13 billion.

There are currently 11 non-coal berths in the port, which support trade in over 40 commodities. The existing non-coal berths are projected to approach operational capacity in 5 to 10 years or, have limited landside support areas to operate at greater capacities than currently. The Project has been designed to address the future capacity shortfall of the existing berths. Without constructing new berths, there is limited ability to grow non-coal trade, which would in turn limit the economic growth potential of Newcastle and more broadly NSW, both in terms of non-coal investment and employment.

Land adjacent to the proposed Mayfield berths is subject to a concept approval for future development (refer to **Figure 4**). Each proposed berth has been designed to support the largest class of vessel likely to use it. Therefore, the proposal would provide proponents of landside port facilities with the certainty that berths have been approved which would support their facilities and that approval for the landside works could be sought in parallel to the construction of the berths.

NPC's role is to promote and facilitate trade through the port, as well as ensuring port operations are undertaken safely. Given the domination of coal cargo and NPC's long term strategy of diversifying trade through the port, the proposal would provide surety that the waterside access to industrial land for non-coal trade is readily available. Although the proposal comprises dredging of 12 berths and assesses the impacts of all berths being dredged concurrently, it is unlikely that this would eventuate. Landside development at Mayfield will be demand driven, subject to proponents obtaining relevant approvals and likely to occur in stages over the next 25 years.

The Project is required, as it would address broad strategic trade aims for the port, taking into account existing and future landside infrastructure requirements. It is also justified as the proposed waterside works would assist NPC in increasing port capacity in the non-coal sector and expand and diversify trade in non-coal commodities.

Figure 4: Approved Mayfield Concept Plan Layout - Note the Berth Precinct does not form part of the approved Concept Plan (reproduced from the Concept Plan Application MP 09_0096 Environmental Assessment, prepared by AECOM and dated July 2010)

3. STATUTORY CONTEXT

3.1. State Significant Infrastructure

The Project involves the development of waterside shipping berths within the Port of Newcastle and has a capital investment value of approximately $210 million. The Project was subject to Part 3A of the *Environmental Planning and Assessment Act, 1979* (EP&A Act), pursuant to clause 22(1) of Schedule 1, Group 8 of *State Environmental Planning Policy (Major Development) 2005*. Group 8 of the MD SEPP included development for the purposes of port facilities or shipping berths that has a capital investment value of more than $30 million.

On 1 October 2011, Part 3A of the EP&A Act was repealed and savings and transitional provisions were created. Pursuant to section 115U(4) of the EP&A Act, and under the *State Environmental Planning Policy (State and Regional Development) 2011*, Schedule 4, Part 1, the project is now identified as transitional development, and declared to be State Significant Infrastructure (SSI) under Part 5.1 of that Act.

On the 27 February 2013, the Minister for Planning and Infrastructure delegated his functions to determine SSI applications to nominated staff of the department where:

- the relevant local council has not made an objection,
- a political disclosure statement has not been made in relation to the application, and
- there are less than 25 public submissions objecting to the proposed project.

The subject application complies with the above criteria, consequently, the Executive Director, Development Assessment Systems and Approvals, may determine the application under delegated authority.

3.2. Permissibility

The project site is subject to the provisions of Schedule 3 - Part 20 (Port of Newcastle) of *State Environmental Planning Policy (Major Development) 2005*, under which the project is located on land zoned SP 1 – Special Activities. The project is permissible with consent within the SP 1 Special Activities zone.

3.3. Environmental Planning Instruments

The project is excluded from the provisions of the *Newcastle Local Environmental Plan 2012* and is subject to the provisions of Schedule 3 – Part 20 (Port of Newcastle) of *State Environmental Planning Policy (Major Development) 2005*. With the exception of the abovementioned SEPPs, no other state environmental planning instruments substantially govern the carrying out of the project.

3.4. Objects of the EP&A Act

Decisions made under the EP&A Act must have regard to the objects of the Act, as set out in Section 5 of the Act. The objects of most relevance to the decision maker on whether or not to approve the proposal are found in sections 5(a)(i), (ii), (vi) and (vii). They are:

(a) to encourage:

- *(i) the proper management, development and conservation of natural and artificial resources, including agricultural land, natural areas, forests, minerals, water, cities, towns and villages for the purpose of promoting the social and economic welfare of the community and a better environment,*
- *(ii) the promotion and co-ordination of the orderly and economic use and development of land,*
- *(vi) the protection of the environment, including the protection and conservation of native animals and plants, including threatened species, populations and ecological communities, and their habitats, and*

(vii) ecologically sustainable development, and

With respect to Object 5(a)(i), the Department is satisfied that the proposal encourages the proper management, development and conservation of port resources and port side (landside) land. It provides the waterside works (berth boxes) required for the mooring of ships and vessels used to support the landside infrastructure envisaged adjacent to the proposed berths. The proposed design of the berth boxes has taken into account the intended usage of that land for non-coal trade and the project would assist in providing long-term capacity for handling containers, bulk goods and general cargo, thereby enhancing the economic efficiency of the port.

The project also promotes the orderly economic use and development of land (Object 5(a)(ii)). The project facilitates the development of new berths for shipping within the port which facilitates the diversity of trade through the port. This would have direct economic benefits for the region and state.

Consideration of environmental protection (Object 5(a)(vi)) is provided in **Section 5** of this report. Following these considerations, the Department is satisfied that, with appropriate management measures, the project is unlikely to have significant impacts on flora and fauna.

The Department has considered the principles of Ecologically Sustainable Development (ESD) (Object 5(a)(vii)) in its assessment. This assessment integrates all significant economic and environmental considerations and seeks to avoid any potential serious or irreversible damage to the environment, based on an assessment of risk-weighted consequences. Based on this consideration, the Department is satisfied that the project can be carried out in a manner that is consistent with the principles of ESD.

3.5. Ecologically Sustainable Development

The EP&A Act adopts the definition of ESD found in the *Protection of the Environment Administration Act 1991*. The Department's assessment has given due consideration to ESD in its assessment, and has made the following conclusions in relation to the ESD principles, as outlined below:

- *the precautionary principle* – The existing channel and berth boxes undergo regular dredging as part of the port's maintenance. The project site does not contain threatened species, populations, communities or significant habitats. The facilitation of additional berth facilities in the port would not result in any irreversible or serious environmental impacts.

- *inter-generational equity* – The project creates opportunities for trade in non-coal products. The diversification of trade through the port would assist the port's efficiency to support the needs of a growing Australian economy. It is considered that the proposal would not pose a risk to the diversity or productivity of the environment for present or future generations. The proposal would have the additional benefit of removing contaminated material from the river and landside operations to improve the overall environment.

- *conservation of biological diversity and ecological integrity* – There is unlikely to be a threat of serious or irreversible environmental damage as a result of the project. The project site does not contain any threatened or vulnerable species, populations, communities or significant habitats. The proponent will be required to monitor changes to tidal inundation attributable to the project, which could affect vulnerable saltmarsh upstream of the port, and put in place measures to minimise any impacts.

- *improved valuation, pricing and incentive mechanisms of environmental resources* – The construction of the proposed berths would assist in the development of portside land by providing future proponents with increased confidence that the land may be developed for its intended uses.

  The project would therefore indirectly provide the long-term capacity for bulk goods, general cargo and other non-coal products, and enhance the economic efficiency of the port.

In addition to providing economic benefits to the port, the project would be carried out in a manner that would avoid impacts on threatened flora and fauna species and communities.

3.6. Commonwealth *Environment Protection (Sea Dumping) Act 1981*

In addition to the NSW Minister for Planning and Infrastructure's approval under the NSW EP&A Act, the currently preferred option for sea dumping of uncontaminated dredge material will also require approval from the Commonwealth Department of the Environment (formerly SEWPaC) under the *Environment Protection (Sea Dumping) Act 1981*.

Offshore disposal is one of two options being considered by the Proponent. The other option is the beneficial re-use of the uncontaminated material, such as for beach nourishment. Whilst identified in the EIS, approval is not sought for either as part of the subject application.

The Department notes that the project cannot proceed without approval for the disposal or reuse of the dredged material. The developer (of the berths) will be required to seek the necessary approvals at the time each berth is developed. Further, any potential reuse option will need to determine the quality of the material to be dredged, that it is appropriate for its intended use and that all relevant approvals have been obtained for accepting and reusing it. However, this does not preclude the Department's own assessment and recommendation on the subject application.

4. CONSULTATION AND SUBMISSIONS

4.1. Exhibition

The Department publicly exhibited the EIS in accordance with section 115Z(3) of the EP&A Act, from Tuesday 2 April until Friday 17 May 2013 (46 days) on the Department's website and at the following locations:

- Department of Planning & Infrastructure, Information Centre, 23-33 Bridge Street, Sydney;
- Nature Conservation Council, Level 2, 5 Wilson Street, Newtown, NSW, 2042;
- Newcastle City Council Chambers, City Administration Centre, 282 King Street, Newcastle; and
- Newcastle City Library, Lawson Avenue (Corner of Ogilvie Street), Beresfield.

The public exhibition was advertised in the *Newcastle Herald* on Thursday 28 March 2013, and relevant State and local government authorities notified in writing. Nine (9) submissions were received during the exhibition period and one late submission was received. Eight submissions were from public authorities and two were from the public. A summary of the issues raised in the submissions is provided below in Sections 4.2 and 4.3.

4.2. Public Authority Submissions

Eight submissions were received from public authorities. None of the public authorities objected to the carrying out of the proposal, however, a number of issues were raised for the Department's consideration. Such issues included impacts on water quality, including associated sediment dispersion impacts; adequacy of sediment sampling for contamination; management of contaminated material and disturbance to remediated areas; noise impacts at Carrington; cumulative effects of dredging in the Hunter estuary and tidal changes from channel deepening on the upstream estuary; traffic management; and impacts on non heritage items. The list below provides an outline of the key issues raised by each public authority.

The **EPA** recommended conditions based on the following issues:

- the implementation of effective water pollution control measures during dredging and recommended the use of a backhoe dredge or cutter suction dredge in preference to a trailer suction hopper dredge;

- An Environment Protection Licence is required for any scheduled activities associated with the proposal;
- supported the preparation of a water quality monitoring strategy and identified the need for real time turbidity monitoring and management and dewatering of dredged material;
- identified shortcomings in the sediment sampling to detect contaminated sediments in the proposed dredging zone and that no bioavailability testing was undertaken;
- incorrect referencing of the PAH criterion appears to influence the conclusions relating to PAH contamination of sediments;
- considered that based on the inadequacies of the sediment testing, it does not concur with the reported conclusions that further testing of sediments is not required in relation to PAH, TPH and BTEX;
- a lack of detail regarding management controls for dredging and excavation has been presented;
- it was unclear whether retaining structures would be used to minimise disturbance to and impact on groundwater quality and therefore recommended that groundwater modelling be undertaken to identify potential disturbance of groundwater contamination;
- foreshore protection measures to prevent contaminated soil and groundwater leaching into water should be forwarded to the Department;
- where remediated areas of the BHP Closure site are disturbed that a review of the Contaminated Site Management Plan for that site be undertaken to ensure that the objectives and commitments of the existing Voluntary Remediation Agreement(s) and Contaminated Site Management Plan are not compromised;
- adequacy of proposed noise mitigation measures to meet the project noise criteria at Carrington during sheet piling works is not demonstrated;
- work at Walsh Point transfer compound should be limited to standard hours;
- recommended that the Department consider the cumulative impact of night-berthing, discharging and the Mayfield Port Concept Plan Approvals that recommends consideration of shore-power for new berths in any future environmental assessment to limit night noise and air emissions;
- no information regarding the stockpile leachate odour management is provided and recommended the proposed site specific stockpile management plan include a quantitative odour impact assessment, based on finalised stockpile locations.

The **OEH** stated that additional information would be required before it could assess the impacts of the proposal, including:

- details and locations of bunded areas and stockpiles;
- clarification of the use of turbidity curtains and their efficacy;
- additional data on the distribution of contaminated sediments in the proposed dredging areas and a more thorough assessment of the potential impacts of mobilised toxic materials;
- further detail on the potential impact of increased tidal inundation upon the distribution and extinction threat of Saltmarsh upstream of the project site and the estuarine environments of the Hunter Wetland National Park; and
- request that no stockpile be placed in the vicinity of Walsh Point Reserve which should be retained for its conservation value, mainly for shorebirds and other marine species using that area.

The **Heritage Branch (OEH)** stated that the EIS did not address issues raised in previous correspondence and also recommended various conditions with respect to the management of potential historical items, including:

- all heritage items, including crane bases, should be recorded to engineering and architectural standards before removal;
- the potential for remains of the historical former Dykes seawall to be present within the project area, including the measures to be implemented should such remains be found, have not been explained;
- the applicability of the Commonwealth Historic Shipwrecks Act 1976 (with respect to any potential impacts on shipwrecks) should be considered by the Proponent;

- additional investigation of heritage significance and development of management measures for the underwater historical sites identified in the EIS by side scan imagery in the vicinity of Kooragang Island/Walsh Point should be undertaken prior to any disturbance;
- clarification of any potential influences on changed hydrodynamics which would consequently impact on historic maritime infrastructure in the Hunter River, specifically Macquarie Pier and the Dyke Sea Wall.

Trade & Investment has stated it has no concerns with respect to the project and encouraged the implementation of re-use options rather than sea disposal, where appropriate.

DPI (Crown Lands) noted that the proposal is not on Crown land, but noted negotiations to authorise dumping of dredged material offshore (on Crown land). Any dumping of material offshore would need to be in accordance with the separately required Sea Dumping Permit from the Commonwealth (refer **Section 3.6**). **NSW Office of Water** advised that it has no objection to the project subject to the implementation of the Proponent's Statement of Commitments and listed mitigation measures in the EIS. **NSW Fisheries** advised it has no objection to the proposal noting that:

- the Hunter River estuary is highly modified due to past dredging and industrial activities, including ongoing port related activities, therefore, the overall impacts of are likely to be no worse than those from routine maintenance dredging operations; and
- the Statement of Commitments appear to be adequate for the purpose of managing and mitigating any potential environmental impacts with respect to fisheries.

The **Hunter-Central Rivers CMA** noted that:

- the cumulative impact of dredging in the Hunter River has increased the tidal prism resulting in increased tidal inundation of saltmarsh and mangrove colonisation. This has not been appropriately addressed;
- it would be an ideal opportunity for the Proponent to initiate the implementation of Strategy No. 4 of the Hunter Estuary Coastal Zone Management Plan (2009), which outlines the development of an integrated predictive model of the Hunter Estuary, incorporating hydrodynamics, which could be used to determine the cumulative environmental impacts of dredging and associated activities on the Hunter River estuary and recommend estuary wide management measures;
- the proposal does not consider the Hunter-Central Rivers Catchment Action Plan, which is an overarching, whole of State Government regional natural resource management strategy; and
- stated that the predicted sea level rise of 90cm by 2100 (NSW Chief Scientist, 2012 would significantly change the hydrology of the Hunter River estuary increasing tidal inundation of existing intertidal areas and favour the establishment of mangroves over areas currently comprising coastal saltmarsh.

RMS notes that the majority of contaminated spoil material not suitable for reuse or sea dumping will be transported by road. The RMS raised no objections and recommended the Proponent prepare a Traffic Management Plan to outline project vehicle movements and to minimise the impact of heavy vehicle movements on classified road network.

Newcastle City Council identified a desire for dredged material to be used for Stockton beach nourishment in preference to sea dumping. Other issues raised included:

- the construction of the Newcastle harbour breakwaters and the ongoing dredging of the harbour entrance has effectively stopped the northerly transport of sand, leading to the continued erosion of Stockton Beach. The council requests that a minimum allocation of 40% of clean sand (1,045,000m^3) be allocated for beach nourishment and included in any Project Approval;
- disagrees that a separate and subsequent approval for dredging and using sand for beach nourishment is required and this be approved as part of the subject application;
- identifying sea dumping as the preferred option for disposal when beach nourishment at Stockton Beach is a known option is inconsistent with the National Assessment Guidelines for Dredging (NAGD);

- the area of proposed land excavation and construction of a vertical retaining structure is located adjacent to land subject to an Agreement (Area No 3334. Agreement No: 26025.14/9/05) with the EPA under the Contaminated Land Management Act 1997. The EIS has not specifically addressed potential impacts (if any) that the project may have on this agreement;
- noted that the proposal would impact on listed maritime heritage sites and potential archaeological sites resulting in incremental loss of artefacts and items which represent the history of the working harbour and that demolition of heritage items should be the option of last choice. Council questioned the local heritage significance of these bases which are afforded state heritage significance and considers the proposed mitigation measures inadequate, requesting that one of the crane bases be moved to a suitable display location and an interpretation plan prepared; and
- requests a dilapidation survey for Selwyn Street to ensure Council roads and any road pavement deterioration during the project works is repaired and a Construction Traffic Management Plan to address likely traffic impacts.

4.3. Public Submissions

Submissions were received from Incitec Pivot Limited and Hunter Bird Observers Club.

Incitec Pivot Limited (IPL) stated support for the project and believes it is justified given its importance to the regional, state and national economy however it requested that the matters listed below be considered by the Department to ensure that any affects to Walsh point are understood and would not affect the company's current or future operations:

- Cumulative impacts with IPL's proposed ammonium nitrate facility at Kooragang Island (SSD 4986), exhibited in September 2012. This proposal by IPL should be considered cumulatively with the subject project;
- Disagrees with the statement that high nutrient levels in the Hunter River are due to point sources;
- the noise assessment has not considered industrial offices near Walsh Point;
- traffic impacts on Kooragang Island with particular reference to Cormorant Road; and
- potential air quality impacts from sediment stockpile areas on local business employees and delivery drivers.

Hunter Bird Observers Club stated that the EIS fails to address upstream impacts of dredging and stated that previous deepening of the Hunter River has caused significant upstream increases in the tidal range by as much as 100mm at Stockton Bridge and 250mm at Hexham Bridge. This has caused significant loss of Coastal Saltmarsh due to mangrove colonisation and is threatening the stability of the Kooragang Dykes, an important high-tide shorebird roosting area.

4.4. Proponent's Response to Submissions

The Department required the Proponent to prepare a Submissions Report to address the issues raised in those submissions. The Proponent prepared a Submissions Report, which was accepted on 26 September 2013.

Given some of the submissions raised specific concerns with respect to the disposal options for the dredged material outlined in the EIS, and noting Council's specific request that suitable sand material be allocated for beach nourishment, the Submissions Report provided clarification on the key components for which it is seeking approval.

The key features of the project are detailed in **Section 2** of this report and include:

- dredging of river sediment for 12 proposed berths in the South of the Hunter River;
- construction of 12 berths and associated foreshore improvements works;
- landside excavations adjacent at the Mayfield berths;

- stockpiling, dewatering, treatment and transport for reuse or disposal to an approved landfill of up to approximately 30,000m^3 of potentially contaminated sediments at Walsh Point, if required; and
- stockpiling, dewatering, treatment and transport for reuse or disposal to an approved landfill of up to approximately 2500m^3 of potentially contaminated landside material at Mayfield (adjacent to berths M1 and M2), if required.

The application does not seek approval for any other land based transport or disposal options, including beach nourishment and the disposal of dredged material at sea. This will be subject to a separate application and approval process (refer **Section 3.6**). The Director-General's environmental assessment requirements for the application required the EIS to provide information on spoil disposal and reuse options, including identification and description of potential disposal locations. Whilst the EIS provided options for all types of material to be dredged (spoil, contaminated sediment and clean sand), the application is limited to the above components (refer to **Section 5.4**).

5. ASSESSMENT

The Department has identified the following key environmental issues associated with the project:

- water quality and hydrology impacts;
- landside and riverside contamination;
- flora and fauna impacts; and
- non-indigenous heritage impacts.

The Department has also identified other issues associated with the project, including:

- noise impacts;
- traffic and transport impacts;
- spoil reuse options; and
- air quality impacts.

All other issues are considered adequately addressed in the EIS, Submissions Report, Statement of Commitments and the recommended conditions of approval.

5.1. Water Quality and Hydrology

The Hunter River is 300 km long, rising in the Liverpool Range and reaching the Tasman Sea at Newcastle. The proposal falls within the South Arm of the lower reaches of the Hunter River, which is a significant estuarine tributary. Turbidity in the river fluctuates significantly due to flows from the upper catchment and tidal influences of the harbour. It is noted that Coastal Saltmarsh is sensitive to alterations in hydrology and salinity regimes. The closest saltmarsh areas to the project site are located approximately 500 metres upstream from the Tourle Street Bridge and immediately adjacent to that bridge (refer **Figure 5**).

The port area and its surrounds has been extensively modified from past and current industrial activities, and is known to contain contaminated sediment and potential acid sulphate soils. The key factors that will influence water quality due to the dredging and excavation are:

- suspension of sediment into the water column and subsequent turbidity;
- potential exposure of acid sulfate soils; and
- hydrodynamics (tidal and salinity impacts).

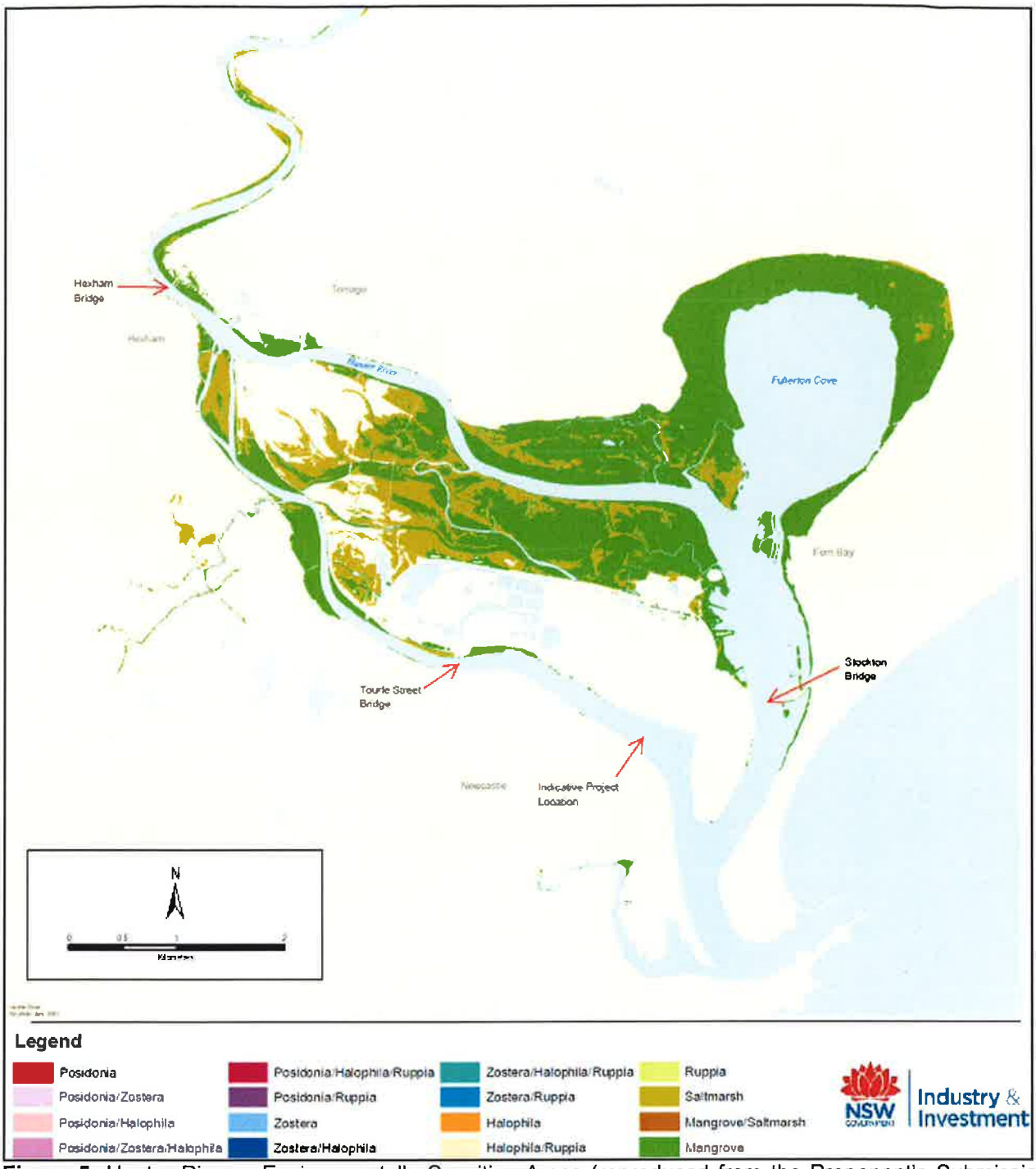

Figure 5: Hunter River – Environmentally Sensitive Areas (reproduced from the Proponent's Submissions Report)

Sediment Loading and Turbidity

Mean turbidity of water in the South Arm was found to be 15 Nephelometric Turbidity Units (NTU), which is above the ANZECC/ ARMCANZ (2000) Marine Water Quality Objectives for aquatic ecosystem health (being between 0.5 and 10 NTU), and comprises high levels of nutrients.

The type of dredger to be used, the sediment to be dredged and the hydrodynamics of the South Arm would highly influence the likely extent of sediment suspension in the water column and subsequent dispersion and deposition of sediment. A trailer suction hopper dredge method was modelled to determine the potential effects of dredging on suspended solid volumes and concentrations through a 29 day tidal cycle. This method is one of three methods that may used for the project (others being a backhoe dredge and a cutter section dredge) and produces the most turbidity. Therefore, the modelling provided a worst case scenario for potential turbidity impacts.

Modelling of sediment deposition indicated that most suspended sediment would deposit in the existing port area of the South Arm (in the order up to 150 millimetres deep for non-cohesive sediments and 16 millimetres depth for cohesive sediments) and would not travel upstream beyond Tourle Street bridge. Downstream deposition would be confined to the area upstream of Dyke Berth 3. Suspended sediment concentrations would be in the range of 30 to 70 mg/l near dredging operations.

The Department notes that whilst potential turbidity/suspended sediment will be generated in the area immediately surrounding dredging at concentrations ranging between 30 to 70 mg/l (modelled assuming use of a trailer suction hopper which produces the most turbidity), the predicted impacts are not significantly higher than the range of turbidity recorded in the South Arm (the mean being 40 mg/L at Hexham). It is also noted that the Proponent has committed to include turbidity curtains around land-based excavators, cutter suction dredges and back-hoe dredges as these are stationary and curtains can be more easily placed around them to minimise dispersal outside of the immediate area. The Proponent has also committed to investigate the use of a heavy-duty turbidity curtain around some of the environmentally sensitive areas upstream on the South Arm if trailing suction hopper dredges using overflows are employed.

The Department and the Environment Protection Authority is supportive of the use of a backhoe dredge or cutter suction dredge in preference to a trailer suction hopper dredge as these methods can easily incorporate turbidity curtains which would allow the confinement of turbidity within the dredging areas. It is also noted that the backhoe dredge method would use a specifically designed grab or bucket that minimises turbidity in the water column by reducing the amount of material put into suspension. The Department however further notes that the dredging method for each berth would be confirmed after the detailed design stage of the project. Therefore it is recommended that a condition be imposed requiring the use of a backhoe or cutter suction dredge equipment, unless it can be demonstrated that a trailer suction hopper is the only feasible and reasonable option or that turbidity impacts will be no worse than using backhoe or cutter suction dredging.

The Department notes that in order to minimise water quality impacts, the Proponent has committed to preparing a Soil and Water Management Plan before the commencement of construction. The plan would relate to landside and waterside management measures to minimise the potential for soil erosion and impacts to water quality. Notwithstanding, the Department recommends a condition requiring the preparation of a Water Quality Management Protocol, which outlines how turbidity and other potential contaminants will be monitored and managed during dredging. Amongst other specified matters, the protocol would include the identification of trigger levels to actively manage dredging, such as changes to the operations to ensure that turbidity and suspended sediment remains within acceptable and manageable limits. The protocol would be prepared in consultation with the EPA and OEH; require approval from the Director-General prior to the commencement of works within the Hunter River; and be included in the Soils and Water Quality Management Plan.

Overall the Department considers that the proposed dredging works are acceptable as sediment would not travel upstream past the Tourle Street Bridge, thereby limiting potential impacts on sensitive upstream environments. It is also noted that the predicted sediment loads would not be significantly higher than current recordings in the river. Further, the Department is satisfied that the recommended conditions would adequately mitigate turbidity impacts outside of the dredging areas.

Potential Acid Sulfate Soils

No actual acid sulfate soils were found to be present in sediments in the South Arm, however sediment samples off Walsh Point were found to be potential acid sulfate soils, indicating they could form acid sulfate soils once they are exposed to oxygen. The Proponent stated that in the event that stockpiling is required, an Acid Sulfate Soil Management Plan would be prepared to manage and treat any acid sulphate soils.

Given the potential presence of acid sulfate soils, the Department considers it appropriate that the recommended Soil and Water Quality Management Plan should include a contingency plan, consistent with the *Acid Sulfate Soils Manual* (Acid Sulfate Soil Management Advisory Committee, 1998) to manage the discovery of actual or potential acid sulphate soils, with specific consideration to the Walsh Point berths 1 to 3.

Tidal Hydrodynamics (and salinity)

Hydrodynamics modelling of the lower reaches of the Hunter River, with the project (refer to **Figure 1** above for monitoring points), assuming all proposed berths would be dredged in one single campaign, showed that:

- changes in water levels in the estuary under tidal conditions would be negligible (with the maximum and minimum changes in water levels at Tourle Street Bridge, the Railway Bridge and the entrance to Ironbark Creek being 3mm, 2mm and 2mm respectively);
- the project would result in negligible changes to tidal water velocities (generally less than 0.01 m/s or 0.02 knots);
- average flow rates through the estuary would not change noticeably, with maximum decreases of $2m^3/s$ at the downstream entrance to the South Arm and at the ocean entrance; and
- maximum overall flow rate over the tidal period would decrease by $7m^3/s$ at the main channel confluence with Throsby Creek on the incoming tide.

Modelling of salinity intrusion demonstrated that changes would likely be concentrated around the dredge footprint, where this averaged less than 0.5 parts per thousand higher over a 29 day tidal cycle after dredging and was negligible outside of the Walsh Point to Ironbark Creek reach, upstream of the dredging area.

The Department notes the concerns of the Hunter Bird Observers Club, OEH and the Hunter-Central Rivers CMA that increased tidal inundation due to the project could increase and accelerate mangrove incursion into remaining up-river areas of Coastal Saltmarsh present in the estuary. Coastal Saltmarsh is listed as an Endangered Ecological Community under the *Threatened Species Conservation Act 1995* and **Figure 5** above shows the extent of these communities in the estuary.

The Department notes that at Tourle Street Bridge, where a large area of saltmarsh remains, the maximum and minimum change in water levels during tidal conditions were found to be 3mm (with the average change being effectively zero). Whilst this change is negligible in terms of the potential alteration to the water levels throughout the Hunter estuary, saltmarsh is highly sensitive to changes to inundation by the tide and has been subject to a continuous decrease in distribution as a result of the cumulative effects of development of the port and surrounds. Of particular note is the widespread colonisation by mangroves of areas previously inhabited by saltmarsh. The Department also notes that the *Best Practice Guidelines for Coastal Saltmarsh* (DECC, 2008) recognises that whilst the factors driving mangrove encroachment on saltmarsh areas are yet to be ascertained, it is believed to be primarily due to increases in tidal inundation.

OEH has also stated that the Proponent should undertake a detailed assessment of potential impacts on upstream estuarine communities as a result of changes to tidal inundation. OEH has also acknowledged that the Proponent has agreed to participate in the development of the Hunter Estuary Hydrodynamic Model, which proposes development of a new overarching hydrodynamic model for the Hunter Estuary to assist in decision-making for a range of water users. The Model is a NSW government initiative under the Estuary Management Program where the NSW Government provides estuary management grants to support local government to improve the health of NSW estuaries. However, OEH has stated that as the model would not be available for some time, the Proponent should use an alternative model to quantify the effect of dredging on tidal regimes and the impact of any changes on saltmarsh and the Hunter Wetlands National Park.

The Department accepts the incremental impacts of development within the estuary and its surrounds appear to have had significant impact on the distribution of saltmarsh. However, it is

considered that monitoring in the Hunter Wetlands National Park is not appropriate in this instance as greater effects to tidal inundation are expected to occur in the South Arm, upstream of the proposed berths. Given this, it is considered that monitoring of changes to tidal inundation should occur where maximum potential change coincides with extant areas of saltmarsh, being Ironbark Creek and Tourle Street Bridge.

Therefore, the Department has recommended a condition which requires the Proponent to employ monitoring and where relevant, management mechanisms for potential effects of changes in tidal inundation on upstream Coastal Saltmarsh, including changes to salinity, temperature and dissolved oxygen levels which can be attributed to the project. The monitoring is also required to have regard to the *Best Practice Guidelines for Coastal Saltmarsh* (DECC, 2008). The recommended monitoring would ensure the predictions made in the EIS are verified and would enable the implementation of responsive mitigation measures where the results show actual impacts.

It should also be noted that whilst the model assumed that all 12 berths would be dredged in a single campaign, the staging of dredging is yet to be determined and will be dependent on individual proponents seeking to develop landside facilities at each of the berths. The modelling was therefore based on a worst case scenario, which itself showed that there would be effectively no change in tidal planes due to dredging.

Based on its consideration of each of the above key factors the Department is satisfied that water quality impacts due to the project are likely to be limited to the immediate vicinity of the project site and would be temporary in nature. The Department is also satisfied that the impacts can be adequately monitored and managed, subject to the implementation of the recommended conditions.

5.2. Landside and Riverside Contamination

The former BHP Steelworks site (BHPB site) and the Carrington area have been subject to historical filling from land reclamation and industrial activities. Fill within the BHPB site includes dredged river sediments and contaminant waste from BHPB operations, including slag, coal washery reject, flyash, oils and acids. Fill at Carrington includes black slag and ballast waste. Soil contamination is also known to be present on Kooragang Island, including at Walsh Point (located on the eastern end of the island) as a result of former reclamation activities and industrial activities. As a result of historical and current industrial activities on the South Arm of the Hunter River, contaminants have also been introduced to river sediments. Therefore, the proposed land excavation and dredging activities have the potential to encounter contaminated land and river sediments respectively.

Landside Contamination
Landside excavation of approximately 1,250m^2 is required at Mayfield berths 1 and 2, located adjacent to the BHPB site. Soils and groundwater at the BHPB site are known to be contaminated.

Approximately 20,600m^3 of landside material (consisting of fill, dredged mud and sands) would be excavated. The average depth of fill material is between 1.3 and 2 metres, but may be deeper in areas reclaimed from the Hunter River, as dredged sand is similar in appearance to estuarine sediments. Therefore, assuming contaminated sediments are present within the top two metres of fill, 2,500m^3 would require disposal to a landfill licensed to accept such material.

Riverside Contamination
Contaminated sediments were historically known near proposed M5, M6 and M7 berths. These were remediated under the Hunter River Remediation Project (HRRP) to the depth of contamination (soft silty clays) and a further 0.5 metres into underlying sands and has been tested, validated and signed off by an EPA accredited contaminated lands site auditor. It is unlikely that contaminated sediments remain.

Contaminated sediments are also known at Mayfield 1 and 2, Kooragang 1 and Dyke 3 berths. The Proponent proposes using a vertical retaining structure at Mayfield berths 1 and 2 which would minimise any unnecessary disturbance to adjoining contaminated fill material. Sediments in these locations have been sampled in accordance with the Australian Government *National Assessment Guidelines for Dredging 2009* (NAGD) as part of an application for a Sea Dumping Permit for the dredged material. The Director-General's Requirements for the proposal required sampling to take into account the *Sediment Quality Guidelines* (CSIRO Handbook, 2000). These have been superseded by the *Handbook for Sediment Quality Assessment* (CSIRO, 2005), which includes low and high threshold values (interim sediment quality guidelines (ISQG)) based on those in the *Guidelines for Fresh and Marine Water Quality* (ANZECC/ARMCANZ 2000). Trigger levels, used to assess the risk to an environmental value, differ for some organics between the NAGD SQG and the ANZECC Interim Sediment Quality Guideline (ISQG). The Department notes that visual and odour observations made during field investigations indicated potential contamination at some locations. Hydrocarbon odours were reported at Mayfield berths 1 and 2, Walsh Point berth 1 and Dyke 3 berth; and the presence of coal fragments at Walsh Point berth 1 and Kooragang 1 berth and slag fragments at Walsh Point berths 1 and 2 were noted.

The laboratory results found metal concentrations exceeded the sediment quality trigger values. The 95 per cent upper confidence limit (UCL) for lead and mercury exceeded the respective low criteria, while nickel and zinc exceeded the high criteria. No exceedances at Kooragang 1 berth were found.

Elutriate testing (mixing the contaminated sediment samples with seawater) for lead, mercury, nickel and zinc was undertaken to determine the potential impacts of elevated concentrations of metals in sediment. The results found that concentrations of mercury, lead and nickel were below the nominated ANZECC trigger values, indicating that the metals demonstrate a low propensity to leach into solution. Zinc concentrations of 22 µg/L and 17 µg/L were reported at levels marginally above the ANZECC trigger value (being 15 µg/L).

Concentration of total PAH in sediments adjacent to Mayfield 1 and 2 berths, Walsh Point 1 to 3 berths, Kooragang 1 and Dyke 3 berths ranged from below levels reliably detected in the laboratory to 8.6 mg/kg. All samples tested had total PAH and tributyltin (TBT) concentrations below the respective low trigger values.

Contaminated Landside Sediment - Mayfield berths 1 and 2

Contaminated material to be dredged is likely to be classified as either Hazardous or Restricted waste in accordance with the *Environmental Guidelines: Assessment, Classification & Management of Liquid & Non-liquid Waste* (DECC, 2008) as shown by concentrations and thresholds in **Table 2**.

Contaminant	*Restricted Waste Threshold*	*Sample Concentration*
polycyclic aromatic hydrocarbons	800 mg/kg	319-932 mg/kg
benzo(a)pyrene	23 mg/kg	24-55 mg/kg
benzene	72 mg/kg	14.9 mg/kg

Where the reported levels exceed the restricted waste threshold, the material is classified as hazardous waste. The material will therefore require treatment to render it safe before its disposal.

NPC proposes to stockpile, separate, dewater and treat (where required) potentially contaminated landside material close to the excavation area, adjacent to Mayfield berths 1, and 2. The area surrounding the excavation site is industrial land, which would be a suitable location for stockpiling given its proximity to the excavation area. Once treated, the material would be transported for reuse or disposal to an approved landfill. It is proposed to treat hazardous material by a cement stabilisation process, where the contaminated material is mixed with cement or other immobilisation agents before disposal. Kemps Creek Landfill in Sydney is currently the only landfill within NSW licensed to accept restricted and treated hazardous material.

A Specific Immobilisation Approval is required for proposed cement stabilisation under the provisions of Section 50 of the *Protection of the Environment Operations (Waste) Regulation 2005* from the Environment Protection Authority prior to commencing any handling and/or treatment of the material. The Environment Protection Authority is of the opinion that the EIS contains limited information on the proposed cement stabilisation process and has advised that the process for obtaining a Specific Immobilisation Approval may be lengthy as detailed information on the treatment process would be required and treatment trials may need to be undertaken. The Proponent is aware of this process and would need to verify the contamination prior to developing (and seeking relevant approvals for) the management procedures for the material.

The area for excavation at Mayfield berths 1 and 2, including the proposed full depth vertical retaining structure (such as a sheet piled wall), is immediately adjacent to the Former BHP Steelworks site (refer **Section 1.2** above and **Figure 6**). That land is the subject of a Voluntary Agreement issued to the Regional Land Management Corporation (RLMC) under the *Contaminated Land Management Act 1997.* The functions of the RLMC are now fulfilled by the Hunter Development Corporation.

The aims of the Voluntary Agreement include the containment of contaminated soils to a standard that allows industrial use of that site and the management of associated environmental impacts in the Hunter River. There is a risk that excavation at Mayfield berths 1 and 2 could adversely affect any land management requirements of that agreement due to its proximity. Whilst the Proponent has stated that it would prepare a Soil and Water Management Plan to identify specific measures to be implemented for the proposed works that could interact with the former BHP Steelworks site and any management plans developed for the remediation of that site, specific information on these measures has not been provided.

Therefore, the Department has recommended a project limiting condition which states that the approval for this project (if approved), does not limit or affect the requirements of that Voluntary Remediation Agreement issued to the RLMC (refer to recommended Condition C1). Other recommended conditions require the Proponent to engage a suitably qualified and independent auditor, accredited under the *Contaminated Land Management Act 1997* to ensure excavation at Mayfield berths 1 and 2, including the handling and processing of contaminated material, is undertaken in accordance with relevant management plans for the former BHP Steelworks site. Once work at this site is complete, the auditor must provide a written statement to the EPA and the Director-General outlining whether the landside excavation and spoil handling works have satisfied the objectives and commitments of the Voluntary Remediation Agreement and any existing associated management plans.

In the event dredging or the construction of the foreshore treatment works at Mayfield berths 1 to 7 inclusive cause disturbance to the remediated areas of the former BHP Steelworks site, it is also recommended that a suitably qualified and independent auditor, accredited under the *Contaminated Land Management Act, 1997*, be engaged to:

(a) investigate the level of disturbance caused through surveys of the affected areas and a review of the *Contaminated Site Management Plan(s)* for the Former BHP Steelworks site;
(b) determine compliance or otherwise with the Voluntary Remediation Agreement referred to in Condition 1; and
(c) where non-compliance is found, ensure the implementation of rectification measures in consultation with EPA and at the full cost of the Proponent.

The Department also recommends a condition requiring the Proponent to prepare and implement a Stockpile Management Plan as part of the required CEMP. The Stockpile Management Plan must be prepared in consultation with EPA and identify the stockpile locations for contaminated landside and contaminated dredge material (see below section for details). The plan is to include feasible and reasonable options for the management, reuse and/or disposal of contaminated material to be stockpiled, including cement stabilisation and an assessment of the relevant environmental and human amenity impacts with respect to each option, having regard to the limits and requirements of the subject application and recommended conditions.

The Department is satisfied that subject to the implementation of the above key recommendation conditions, contaminated landside material to be excavated can be adequately handled and managed to meet acceptable environmental and human health standards.

Contaminated River Sediment

Sediment sampling found concentrations of mercury, lead, nickel and zinc which exceeded sediment quality guidelines at Walsh Point, Dyke Berth 3 and Mayfield 1 and 2 berths. Concentrations were generally consistent across the sampling areas, the metals are not likely to leach into the water column during dredging, and that these levels were expected due to known contamination in the area.

Sampled polycyclic aromatic hydrocarbons (PAH) concentrations did not exceed the sediment quality trigger values, however, a potential hotspot of PAH contamination adjacent to the foreshore of Walsh Point has previously been reported within the proposed Walsh Point berth pocket (refer to **Figure 6** below). That investigation found concentrations of total PAH of 83 mg/kg and 101 mg/kg in sediments at two locations. The results could not be compared with relevant guidelines (as they were not normalised to Total Organic Carbon values), however it is likely that these concentrations would exceed the CSIRO guideline level of 15 mg/kg. The origin of this hotspot has not been ascertained, however it is noted that evidence of slag and coal fragments were found at locations off Walsh Point and therefore the potential for PAH contamination in surrounding sediments at Walsh Point berth 1 and 2 cannot be discounted.

Given the above, including that PAH contamination may be encountered at Walsh Point, the Department recommends that the Water Quality Monitoring Protocol (referred to in **Section 5.1**) include monitoring of potential contaminants, with specific consideration to heavy metals at Walsh Point berths 1 to 3, Dyke 3 and Mayfield berths 1 and 2; and PAH at Walsh Point berths 1 and 2. The protocol should include details on the frequency and procedures for water quality monitoring, including the trigger levels to actively manage dredging operations, such as when operations are to be slowed down or ceased, or other measures to mitigate the suspension of contaminants into the water column. In the event dredging works are required to cease due to exceedances of trigger levels, the Proponent would need to implement measures to mitigate significant turbidity or the resuspension of contaminants into the water column, before works can recommence.

Groundwater Interception

The EPA has stated that dredging at Walsh Point and Kooragang 1 berths may intersect known contaminated groundwater at the Orica facility (which the EPA states was identified to be significant enough to warrant EPA regulation in October 2001). The EPA sought clarification on whether the proposed retaining structures, such as sheet pile walls, would be installed along these areas to minimise disturbance to groundwater. The EPA had also recommended that groundwater quality monitoring should be undertaken to identify any impacts and associated management measures with respect to that contamination. The Proponent proposes the use of vertical retaining structures at these berths, subject to the final design stage of the project. The Department concurs with EPA. The proposal does not identify the factors or circumstances that would be considered in determining whether structures are required. Therefore it is recommended that a condition requiring the installation of vertical retaining structures at Walsh Point berths 1 to 3 and Kooragang 1 berth (subject to detailed design and unless otherwise agreed by the Director-General), to minimise the potential for disturbance of contaminated material and impacts to and from groundwater.

Figure 6: potential hotspot of PAH contamination adjacent to the foreshore of Walsh Point (reproduced from the Proponent's Environmental Impact Statement)

NPC has clarified that Orica is currently monitoring the groundwater movement of its contaminants in conjunction with EPA through a network of groundwater wells. Data on that monitoring is readily available and shows that a contamination plume extends from Orica to the north of the Walsh Point berth pocket and at the northern end of the proposed Kooragang 1 berth. Given this, the Department recommends that the Water Quality Monitoring Protocol include groundwater monitoring for works related to Kooragang 1 berth. The aim of this monitoring is to ensure the potential intersection of groundwater contamination at the Orica facility is monitored and managed (where detected). As the Water Quality Monitoring Protocol is to be prepared in consultation with EPA (and OEH), the Department is satisfied that any results of groundwater monitoring undertaken

by Orica, as overseen by the EPA, could inform the recommended Water Quality Monitoring Protocol.

The Department considers the proposed dredging can be undertaken in a manner that avoids significant contamination impacts in the Hunter River, subject to the implementation of the above recommended monitoring and management conditions.

5.3. Flora and Fauna Impacts

Walsh Point supports largely introduced flora species, with some limited native vegetation species, comprising of Grey Mangrove trees (*Avicennia marina* ssp. *australasica*), Marine Couch (*Sporobolus virginicus* var. *minor*) and Native Couch Grass (*Cynodon dactylon*). OEH has noted that the proposed stockpile site at Walsh Point has limited habitat value due to its high level of human disturbance and includes exotic groundcover species and nutrient influx from the neighbouring Orica ammonium nitrate facility. Notwithstanding, OEH in its submission stated that the area has potential to be rehabilitated for ecological outcomes. A preference for no stockpiles at Walsh Point was stated but if approved, tree planting of suitable species around the foreshore should be undertaken to mitigate contamination from surface runoff.

OEH also raised concerns regarding potential impacts of mobilised contaminants and changes to tidal inundation on upstream Coastal Saltmarsh areas (supported by the HCRCMA), other threatened estuarine areas and on aquatic fauna (the Loggerhead Turtle, Green Turtle, Leatherback Turtle, Dugong, New Zealand Fur-seal, Australian Fur-seal, Southern Right Whale, Blue Whale, Humpback Whale and the Sperm Whale).

The Department is of the opinion that Walsh Point is a highly degraded, vacant industrial lot dominated by grasses and weeds of low ecological value. NPC has advised that the area is actively mown and that a few small mangroves have colonised the foreshore which would need to be removed however stockpiling would be located away from native vegetation and the Proponent would utilise areas dominated by grasses and weeds. It is further noted that the use of Walsh Point for stockpiling of material would be short term prior to its transportation. In its current condition, it Walsh Point does not support substantial or key habitats of relevance to shorebirds or other terrestrial fauna, despite any anecdotal records or potential future habitat values.

The area may provide marginal foraging habitat for some common and widespread bird species that are typical of urban environments, including the native Australian Raven (*Corvus coronoides)*, Little Black Cormorant (*Phalacrocorax carbo),* Magpie Lark (*Grallina cyanoleuca)* and Richard's Pipit (*Anthus novaeseelandiae*). The Masked Lapwing (*Vanellus miles*) may also use the area for nesting, however the species was not recorded at the site. It is known to occupy playing fields and has adapted to urbanised environments. The Masked Lapwing is a ground-dwelling bird but it is not a threatened species and even if present is not considered sufficiently significant to avoid the use of the area for stockpiling.

Notwithstanding the above, it is recommended that conditions limiting the use of the Walsh Point area be imposed. These limitations would include a requirement that the Proponent must ensure appropriate measures are implemented to ensure the stockpile is located in an area dominated by non-native or weedy species. The required Soil and Water Quality Management Plan must also include stockpile runoff or dewatering management and if relevant, treatment measures. The Department does not consider tree planting necessary in this area due its current condition and proposed use, noting that stockpiling would only be required if contaminated material from dredging at Walsh Point is encountered.

Potential impacts of changes to hydrodynamics/tidal inundation, including changes to chemical parameters such as dissolved oxygen and salinity are discussed in **Section 5.1** as they relate to Coastal Saltmarsh.

No endangered ecological communities or threatened or migratory species are known to permanently inhabit the project site or its immediate surrounds, though aquatic fauna may be transitory visitors to the Port due to the highly modified local environment and the high level of activity. Aquatic fauna, such as turtles and seals, are known to visit the harbour, often arriving on ship rudders. Therefore, the Department recommends a condition which requires the Proponent to implement measures to keep watch for aquatic reptile and mammal species during dredging and where necessary, encourage their movement back to sea. These should be included in the Construction Environmental Management Plan.

Subject to the implementation of the above recommended management conditions, the Department considers potential impacts on flora and fauna would not be significant and the impacts, if realised, could be adequately managed to acceptable environmental standards.

5.4. Non-Indigenous Heritage Impacts

The remains of two crane bases and the base of the former McMyler Hoist located within the proposed Dyke 3 berth area would be demolished as they are located in the envelope of the proposed berth. The items are of local heritage significance and listed on Newcastle Port Corporation's s170 Heritage and Conservation Register.

The former McMyler Hoist base is also identified as a heritage item on the *State Environmental Planning Policy (Major Development) 2005* (Part 20 of Schedule 3). Clauses 21(1) and 21(3) of that Part respectively state that development consent is required for the demolition of the item and that the consent authority must consider the effect of the proposed development on the significance of the heritage item concerned.

Proposed Walsh Point 3 berth and Kooragang 1 berth are located immediately adjacent to a former ship building yard. Potential in-water relics from the yard near the berth pocket include the remains of a slipway, platform, possible jetty and a pontoon (collectively known as the Walsh Point Potential Heritage Items). These potential items were not located but if found within the berth envelope would be removed to enable the safe use of the berths. The heritage significance of these items was not assessed, however, if present, they are likely to be of local historical significance and may be associated with the Walsh Point Dockyard and Engineering Works. The Proponent has stated that if and when dredging at these berths occurs, these potential underwater remains will be subject to a heritage investigation to determine their presence and significance prior to the demolition of any potential items within the berth areas.

OEH also sought clarification on whether the Macquarie Pier and Dyke Point Landform and any former sea walls associated with this landform, all of which are historic maritime infrastructure in the Hunter River, would be impacted by the project. It is noted that the Macquarie Pier is near the entrance to the harbour and is covered by the Nobbys Beach breakwall. The Dyke Point Landform (and any former sea walls if present) is on reclaimed land encompassing Dyke Point and the occupied industrial lands immediately to the north.

The Department accepts that the two crane bases and the former McMyler Hoist base must be removed as an alternate configuration of Dyke 3 berth to protect these three items is not possible. The size of the berth is the minimum possible for the class of vessels that will use it (approximately 65 metres wide). The location of the berth cannot be moved outward to retain these three items as the berth will enter into the designated shipping channel within the port and the wash from displaced water from a passing vessel may cause moored vessels to break free from high tension mooring lines, posing a safety risk to persons on the wharf or vessel.

The Proponent has stated that there are currently a total of 16 crane bases in the Port of Newcastle, of which 12 are remnants of the crane hydraulic system that was installed on the dyke for loading coal onto ships (and included Cranes 14 and 15). The remaining crane bases are remnants of the steam cranes that were also used for coal loading.

The Department notes that the foundation of the McMyler Hoist base has the potential to yield information relating to the construction of the hoist on the former dyke wharf which will contribute to an understanding of the history of the local area. It is also noted that the OEH does not object to the demolition of the two crane bases and the former McMyler Hoist base but has recommended a range of conditions which relate to the review, verification and management of their removal, including the need for photographic and archival recording of the items to an appropriate engineering standard. The Department concurs with this position and recommends a condition requiring the Proponent to commission an appropriately qualified maritime archaeologist to undertake archaeological and engineering recording of the Dyke 3 Crane Bases 14 and 15 and the base of the former McMyler Hoist base, prior to the commencement of construction activities associated with Dyke 3 berth. Prior to the removal and/or demolition of these items, the recordings must be submitted to relevant agencies and heritage management organisations.

The presence of underwater remains in the Walsh Point berth 3 and Kooragang 1 berth pockets is yet to be confirmed. Underwater items were identified by side scan imagery in the vicinity of the berths but verification and detailed investigation of their significance has not been undertaken. The OEH has recommended that standard underwater investigations of these berth pocket areas occur to determine their presence and heritage significance prior to works commencing. The Department concurs with this position and recommends a condition be imposed to this effect. Where any items are identified, the Proponent must confirm the heritage significance of the finds in consultation with the OEH. A strategy for the recording and removal of these finds, consistent with the archaeological and engineering recording standards stipulated for the Crane Bases 14 and 15 and the former McMyler Hoist base, as outlined above is also required.

Other standard conditions relating to previously unidentified heritage object(s) are also recommended and relevant works are not to commence until written authorisation from the Heritage Council of NSW is received by the Proponent.

It is to be noted that the Proponent has clarified that there will be no impacts on the Macquarie Pier and Dyke Point Landform and any former sea walls associated with this landform identified by OEH and located downstream of the project.

The Department is satisfied that subject to the implementation of the above recommended conditions, the project would not have significant impacts on non-indigenous heritage items.

5.5. Other Issues

Other issues raised in the assessment are addressed in **Table 3** below.

Table 3: Consideration of Other Issues

Issue	Department's consideration
Noise	The nearest sensitive receivers to the project site are in Mayfield, Carrington and Stockton. Project noise criteria were developed in accordance with the *Interim Construction Noise Guidelines* (DECC, 2009). Exceedances of project noise goals were identified at Carrington and Stockton during sheet piling works (using a vibratory pile driver) at Dyke 3 and Walsh Point berths (with exceedances of 8dB(A) and 1dB(A) at Carrington and Stockton respectively). The internal noise level (45dB(A)) is predicted to be exceeded at the Carrington Catholic Church by 2dB(A). It is generally accepted that exceedances of up to 2dB(A) are indistinguishable from the general noise environment, however, an 8dB(A) exceedance is more problematic and appropriate management procedures should be adopted. To this end, the Department recommends that piling only occurs between 9:00am and 5:00pm (Mondays to Fridays) and 9:00am to 1:00pm (Saturdays), while all other construction (except for dredging) can occur during standard construction hours (7:00am to 6:00pm Mondays to Fridays and 8:00am to 1:00pm on Saturdays).

Issue	Department's consideration
	Dredging at night may also cause exceedances of the noise goal at Dyke 3. The modelling predicted that noise levels at Dyke 3 at night would reach 51dB(A), whereas the noise goal is 44dB(A). The Department notes that in predicting the potential noise levels generated by the project, the Proponent assumed the worst case scenario in which all 12 berths would be constructed simultaneously. It is noted that the predictions are therefore conservative as it is unlikely the worst case scenario will be realised, with berths being constructed to meet demand by individual developers. Therefore, whilst the Department has recommended a condition permitting dredging to occur 24 hours a day, 7 days a week, it is recognised that the project will be delivered in a staged manner to meet demand. It is therefore recommended that a staging report be prepared prior to commencing each stage to identify which conditions of approval will apply, how they will be managed and to ensure cumulative impacts of any stages being constructed simultaneously are addressed. Further, given the noise assessment assumed simultaneous construction of all 12 berths, the Department considers it appropriate that the noise management levels be revised to address the actual construction staging. Where lower noise levels are expected due to fewer berths being constructed (or for any other reason), the lower noise management level shall be adopted for that stage. The Department has also recommended a condition requiring the preparation of a Noise and Vibration Management Plan to detail all feasible and reasonable noise mitigation measures to be applied for the project in order to meet the noise criteria.
Traffic and Transport	At the time of this assessment, the Proponent had assumed that all dredged and excavated material of suitable quality would be dumped at sea. This is subject to a separate approval application to the Commonwealth. However, contaminated material may need to be transported to the Kemps Creek landfill by road which will generate road traffic. The key roads for haulage will be: Cormorant Road (the access road from Walsh Point across the Kooragang Island network); Tourle Street linking Cormorant Road; and Industrial Drive, which links with the Pacific Highway at Maitland. The total estimated traffic generated by the project (assuming all berths are dredged during a single campaign), inclusive of spoil haulage and construction personnel required for dredging operations are minimal (approximately 74 two-way truck trips per day and 19 two-way car trips per day). The Department considers the volume of traffic generated would be minimal as the share of project generated haul trips on Cormorant Road/Tourle Street and Industrial Drive would be 0.31% and 0.24% respectively (with share of construction personnel trips being up to 0.08% on Cormorant Road/Tourle Street). The Department also considers that the traffic generated by the project can be managed, subject to the Proponent preparing and implementing the recommended Traffic and Access Management Plan for the project. This plan is to be included as part of the Construction Environmental Management Plan and is to detail the final traffic routes for heavy vehicles and the measures to be employed to ensure the safety of motorists and pedestrians using the roads required for construction. This sub-plan is to be prepared in consultation with Council and RMS. The Department has also recommended a condition which requires the Proponent to commission an independent and qualified person (or team) to undertake road dilapidation surveys of all local and private roads proposed

Issue	Department's consideration
	to be used for construction material haulage, and prepare staged Pre-Construction Road Dilapidation Report. The Report is to include an assessment of the current structural conditions of the roads, identify upgrades required to enable their use by the project and describe mechanisms to restore any damage that may result due to traffic and transport related to the project. A Post-Construction Dilapidation Report must also be prepared within three weeks after the date of the completion of haulage. The Report would detail any damage that may have resulted from the project and how that damage will be rectified by the Proponent.
Spoil Reuse Options	Council has requested that any suitable sand dredged be used for Stockton Beach nourishment. The subject application is limited to the dredging of the berths and the haulage of contaminated spoil only (refer to **Section 2.1**). The Department notes that the EIS provides disposal options for all types of material to be dredged (with beach nourishment using clean sand as one option). Notwithstanding, the subject application does not extend to the implementation of these options but that the application to the Commonwealth for sea disposal includes consideration of any other options available for the material, such as reuse. Whilst the Department and other agencies agree that beneficial reuse is the preferred option, it cannot specify any proportion be set aside for beach nourishment or for any other option. Currently there is not sufficient information to determine whether the material will be suitable for the identified options. Further, should proponents of other projects wish to accept material of suitable quality, it is the responsibility of those proponents to ensure that the appropriate approvals are in place to do so, and not the Newcastle Port Corporation's responsibility. This could result in timing issues given that no current approvals are in place and the timing and order of dredging each berth/stage is not known. Despite this, the Department considers that the Proponent should not dispose the dredged material at sea if it is of quality suitable for its beneficial reuse and other developments in the local region wish to accept that material. To this end, the Department has recommended that the Proponent provide this material to other such developments in the area if they are able to accept the material but any such arrangement is subject to the user of that material having all relevant planning and environmental consents in place at the time of the proposed dredging activities and the location of reuse does not result in additional costs to the Proponent.
Air Quality Impacts from Stockpiling of Contaminated Material	Sediment stockpiling has the potential to generate local odour impacts, particularly with respect to polycyclic aromatic hydrocarbons as they contain odorous compounds). Although the Proponent has proposed to cover stockpiles (where feasible) and cover all sediment being taken off the site by trucks, EPA has noted that this would unlikely be adequate to prevent offensive odour and has therefore recommended that a site specific stockpile management plan be required to detail odour specific mitigation measures to be used. The Department concurs with EPA and recommends a condition to that effect. The Plan would form part of the Construction Environmental Management Plan and must be prepared in consultation with EPA. The Plan is also required to identify the contaminated material stockpile locations and include a methodology for monitoring and managing odour emission rates having regard to *Technical notes: assessment and management of odour from stationary sources in NSW* (DEC 2006).

The Department is satisfied that all other matters have been adequately addressed in the Proponent's EIS and Statement of Commitments. The recommended conditions also provide for

general management and oversight of the project, including regular auditing, compliance tracking, complaints response and the maintenance of publicly available information about the project.

6. RECOMMENDATION

The Department has assessed the infrastructure application, EIS, submissions on the project, NPC's response to submissions, in accordance with the objects of the EP&A Act and the principles of ecologically sustainable development.

The assessment has found that the project may impact on the water quality in areas within and immediately surrounding the dredging sites. The changes to water quality outside of the project footprint however, including hydrodynamic changes (tidal changes and salinity structure) are unlikely to occur. Notwithstanding, the Department has adopted a precautionary approach and has recommended relevant conditions to ensure the project is designed and undertaken (such as using turbidity curtains) in a manner that avoids significant water quality impacts. The recommended conditions would also ensure appropriate monitoring and management measures are in place to respond to actual water quality impacts, where identfied. All other identified impacts are considered to be manageable.

Subsequently, the Department is satisfied that the project can be carried out in a manner which avoids unacceptable environmental and human amenity and health impacts, subject to the implementation of a number of key recommended conditions. These include:

- the implementation of a comprehensive water quality management protocol, which would include ongoing monitoring of water quality and groundwater quality in the context of river health outcomes;
- adherence to required recording standards for undertaker non-indigenous heritage items to be removed as a result of the project; and
- the preparation of a comprehensive Construction Environmental Management Plan.

The Department is also satisfied that the project is required to address broad strategic trade aims for the port. The project would assist NPC in increasing port capacity in the non-coal sector and expand and diversify trade in non-coal commodities.

On balance, the Department considers that the project's benefits would outweigh its residual impacts, it is in the public interest and it should be approved, subject to conditions.

Endorsed by:

Karen Jones 24.12.13
Director
Infrastructure Projects

24.12.13

Chris Wilson
Executive Director,
Development Assessment Systems and Approvals

APPENDIX A ENVIRONMENTAL IMPACT STATEMENT

See the Department's website at
http://majorprojects.planning.nsw.gov.au/index.pl?action=view_job&job_id=5779

APPENDIX B SUBMISSIONS

See the Department's website at
http://majorprojects.planning.nsw.gov.au/index.pl?action=view_job&job_id=5779

APPENDIX C PROPONENT'S RESPONSE TO SUBMISSIONS

See the Department's website at
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APPENDIX D RECOMMENDED CONDITIONS OF APPROVAL