



# Patrick Stevedores Operations No. 2

Section 75W Modification - Port Botany Container Terminal  
Project (DA-453-12-2002-i MOD 7)  
Environmental Assessment  
June 2013





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Section 75W Modification - Port Botany Container  
Terminal Project (DA-453-12-2002-i MOD 7)  
Environmental Assessment**

June 2013

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# Submission of environmental assessment

This Environmental Assessment has been prepared in accordance with Section 75W of the *Environmental Planning and Assessment Act 1979*.

|                                       |                                                                                                                                                                                                                                                                                                                                                                                                                         |                                                                                                |
|---------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------|
| Environmental assessment prepared by: | Name:                                                                                                                                                                                                                                                                                                                                                                                                                   | Sophy Townsend                                                                                 |
|                                       | Qualifications:                                                                                                                                                                                                                                                                                                                                                                                                         | BEnvSci (Honours)                                                                              |
|                                       | Address:                                                                                                                                                                                                                                                                                                                                                                                                                | GHD Pty Ltd<br>Level 15, 133 Castlereagh Street<br>Sydney NSW 2000                             |
|                                       | In respect of:                                                                                                                                                                                                                                                                                                                                                                                                          | Modification to the Port Botany Container Terminal Project                                     |
| Applicant:                            | Applicant name:                                                                                                                                                                                                                                                                                                                                                                                                         | Patrick Stevedores Operations No. 2                                                            |
|                                       | Applicant address:                                                                                                                                                                                                                                                                                                                                                                                                      | Level 2<br>4B Lord Street<br>Botany NSW 2019                                                   |
|                                       | Land to which modification application applies:                                                                                                                                                                                                                                                                                                                                                                         | Lots 1-6, 8-14 and 16-19, DP 452236;<br>Lots 1 and 2, DP 1009870 Lot 1, 2, 3 and 4, DP 1126332 |
|                                       | Modification sought:                                                                                                                                                                                                                                                                                                                                                                                                    | As described in Chapter 3 of this document                                                     |
| Environmental assessment:             | An environmental assessment is attached.                                                                                                                                                                                                                                                                                                                                                                                |                                                                                                |
| Certificate:                          | I certify that I have prepared the contents of this Environmental Assessment and to the best of my knowledge:                                                                                                                                                                                                                                                                                                           |                                                                                                |
|                                       | <ul style="list-style-type: none"><li>It is in accordance with the requirements of Section 75W of the <i>Environmental Planning and Assessment Act 1979</i>.</li><li>It contains all available information that is relevant to the environmental assessment of the activity to which this EA applies.</li><li>That the information contained in the environmental assessment is neither false nor misleading.</li></ul> |                                                                                                |
|                                       | Signature                                                                                                                                                                                                                                                                                                                                                                                                               |            |
|                                       | Name                                                                                                                                                                                                                                                                                                                                                                                                                    | Sophy Townsend                                                                                 |
| Date                                  | 3 June 2013                                                                                                                                                                                                                                                                                                                                                                                                             |                                                                                                |



# Executive summary

## Introduction

Patrick Stevedores Operations No. 2 (Patrick) proposes to conduct a range of demolition and construction activities within its existing Port Botany Container Terminal (referred to as the “existing terminal”) located on the northern side of Brotherson Dock in Port Botany, New South Wales (NSW). The demolition and construction activities (described as “the proposal”) require approval from the NSW Minister for Planning and Infrastructure (the Minister) in the form of a Section 75W Modification to the *Patrick Stevedores Port Botany Container Terminal Project* (DA-453-12-2002-i) under the *NSW Environmental Planning and Assessment Act 1979* (EP&A Act).

This environmental assessment has been prepared by GHD Pty Ltd (GHD) on behalf of Patrick to accompany the application for approval to modify the existing development consent. The environmental assessment has been prepared in accordance with the Director General’s Requirements (DGRs) issued by the NSW Department of Planning and Infrastructure (DP&I) on 19 December, 2012.

## Description of the proposal

The proposal would involve a range of demolition and construction works at the existing terminal as well as the replacement of manually-operated straddle carriers with automated straddle carriers. The key features of the proposal, which are described further in Chapter 2, include:

- Removal of the temporary demountable administration building in the southeastern corner of the site and replacement with a permanent administration and control building. The new building would include a single-storey administration building and a control tower which would be approximately 43 metres in height.
- Construction of a new undercover maintenance building and workshop designed to accommodate the new automated straddle carriers.
- Removal of the existing optical character recognition (OCR) building and construction of a new OCR structure and traffic lanes at the entrance to the terminal.
- Construction of a new, single-storey demountable Australian Quarantine Inspection Service (AQIS) building adjacent to the new OCR structure.
- Relocation of the existing truck grids and weighbridges.
- Removal of an existing substation building.
- Construction of new straddle carrier parking and fuelling bays.
- Construction of two new car parks for visitors and employees.
- Pavement improvement works.
- Modernisation of terminal lighting including re-positioning of existing lights and installation of more energy efficient lighting within the container stacking yard.
- Replacement of the existing manually-operated straddle carriers with automated straddle carriers.

Other infrastructure and environmental improvements including the installation of: gross pollutant traps, upgraded drainage and pumps, light poles, new water and sewerage services, boundary fencing and walls, weighbridge and associated equipment and landscaping works in accordance with the relevant statutory and port code requirements.

Subject to approval, construction of the proposal is proposed to commence in the second half of 2013. The construction program and activities would be planned to ensure that the existing terminal remains operational during the works and that worker safety is maintained throughout.

## Key benefits and impacts of the proposal

Proceeding with the proposal would result in the following significant benefits:

- **Improved safety performance at the terminal.** Straddle driving is a significant cause of injuries at the terminal. The introduction of automated straddle carriers would significantly improve safety at the terminal by physically separating staff from the straddle carriers. There would be no manually operated straddle carriers operating underneath the quay cranes or in and around the container stacking areas. Removal of manual straddle carriers would significantly decrease the risk to staff at the terminal. This has been demonstrated by previous implementation of the technology at the Brisbane AutoStrad™ Terminal.
- **A better place to work.** There would be a new, architecturally designed administration and control building which would house permanent, higher quality first aid rooms, training facilities and amenities for workers.
- **Improved environmental performance.** The proposal would result in improved environmental conditions at the terminal including:
  - Noise. There would be less operational noise because the straddle carriers would be automated and would not require reversing alarms. There would also be less noise associated with shifting gears. Additionally, there is reduced idle time as the automated straddle carriers shut down when not in use.
  - Air. There would be less idling time associated with the introduction of the automated straddle carriers. The automated straddle carriers would be turned off when not in use rather than sitting idle as is the case presently.
  - Water quality. Stormwater quality at the site would be improved with the installation of an undercover (all-weather) maintenance building and workshop, the construction of a new fuel storage area with appropriate bunding, improved stormwater infrastructure and upgrades to the dangerous goods containment area.
  - Energy efficiency and savings. All buildings would be designed to achieve a Green Star Rating of 4.0. Power factor correction would be applied to the electrical power systems at the site to increase energy efficiency and to reduce electricity costs. In addition, existing lighting within the site would be replaced with more energy efficient lighting. Since the automated straddle carriers do not need light in which to operate, lighting intensity would also be able to be reduced or increased at the site, as required. This would result in a reduction in energy usage. Yard lighting would also have power factor correction.
- **Operating cost reductions and improved competitiveness.** The introduction of the automated straddle carriers would reduce the operating costs of the terminal, significantly improving the competitive position. Automation would result in a cost savings of around \$50 million per annum.

The proposal would also result in some adverse impacts. Chapter 6 presents the assessment of all environmental issues while the key adverse impacts are outlined below:

- **Increased noise levels during construction.** The increase in noise levels would be temporary and are predicted to comply with the recommended noise management levels at all residential and sensitive receivers.

- **Increased traffic during construction.** The increase in traffic would be temporary and is predicted not to adversely affect intersection performance or road safety in the vicinity of the site.
- **Visibility of some building elements.** The administration and control building and maintenance building and workshop would be visible from a limited number of locations. Given the context of the surrounding industrial landscape, this impact would be minimal. All buildings and structures would be constructed in accordance with the *Sydney Ports Corporation Port Botany Development Code 2012* and the *Sydney Ports Corporation Green Port Guidelines 2006*.
- **Dust nuisance during construction.** Dust impacts would be temporary and are predicted to be below the established air quality criteria at all residential and sensitive receivers.

## Justification and conclusion

The proposed building and infrastructure improvements, including the replacement of temporary buildings with permanent buildings, modernisation of the terminal facilities and upgrade of equipment with current technologies are required to ensure the operation of the terminal remains viable and competitive. The proposal would significantly improve the safety performance and environmental performance at the terminal. The proposal would also result in a significant reduction in the operating costs of the terminal.

Environmental investigations were undertaken to assess the potential environmental impacts from the construction and operation of the proposal in accordance with relevant environmental legislation, and relevant guidelines and procedures established by regulatory agencies. Based on the findings of the environmental investigations, the proposal would result in some minor adverse impacts on the environment and community. These impacts would be mitigated by implementing the existing conditions of consent and the various mitigation measures outlined in this environmental assessment. The environmental performance of the proposal would be managed through the implementation of the construction and operational environmental management plans and monitoring programs. This would also help to ensure compliance with relevant legislation and any conditions of approval.

It is considered that the proposal is justified on the basis of its environmental acceptability and is in accordance with the five principles of sustainability.

Based on this environmental assessment, it is considered that the long term operational benefits of the proposal would outweigh the minor, short term impacts of the proposal.



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## Attachments

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# Glossary

| Term                            | Definition                                                                                                                                                                                                                                                                                                                                                 |
|---------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Asciano Ltd                     | The parent company of Patrick Stevedores.                                                                                                                                                                                                                                                                                                                  |
| Acid sulfate soils              | Soils containing Pyrite which produces sulphuric acid when exposed to oxygen.                                                                                                                                                                                                                                                                              |
| Australian Height Datum         | Elevation above sea level expressed in metres.                                                                                                                                                                                                                                                                                                             |
| Berth                           | A ship's allotted place at a wharf or dock, or to moor (a ship) in its allotted place.                                                                                                                                                                                                                                                                     |
| Cumulative impact               | An impact created by accumulation or successive additions of individual impacts.                                                                                                                                                                                                                                                                           |
| Decibels (dB)                   | A measure of noise relating to pressure fluctuations in the air, measures on a logarithmic scale. It is usually weighted to the frequency sensitivity of the human ear and expressed as dBA.                                                                                                                                                               |
| dB(A)                           | Decibel expressed with the frequency weighting filter used to measure 'A-weighted' sound pressure levels, which conforms approximately to the human ear response, as our hearing is less sensitive at low and high frequencies.                                                                                                                            |
| Director-General's Requirements | Outlines the requirements for an environmental impact assessment in accordance with the <i>Environmental Planning and Assessment Act 1979</i> .                                                                                                                                                                                                            |
| Emission                        | The release of material into the atmosphere (e.g. gas, noise).                                                                                                                                                                                                                                                                                             |
| Environmental management plan   | A document setting out the management, control and monitoring measures to be implemented during construction (a construction environmental management plan) and/or operation (operational environmental management plan) of a development, to avoid or minimise the potential environmental impacts identified during an environmental assessment process. |
| Estuary                         | Tidal mouth of a river.                                                                                                                                                                                                                                                                                                                                    |
| Groundwater                     | Water found below the surface, usually in porous rock or soil or in underground aquifers (natural underground formations that contains sufficient saturated, permeable material to yield significant quantities of water).                                                                                                                                 |
| Knuckle                         | An area of approximately 17 ha of land to the west of the existing Patrick container terminal which was reclaimed as part of the Port Botany Expansion Project by Sydney Ports Corporation and is currently under construction. The reclaimed land has been vested to Patrick and in the future will operate in conjunction with the existing terminal.    |
| $L_{Aeq(period)}$               | Equivalent sound pressure level: the steady sound level that, over a specified period of time, would produce the same energy equivalence as the fluctuating sound level actually occurring.                                                                                                                                                                |

| Term                                                                   | Definition                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
|------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| L <sub>A10</sub> (period)                                              | The sound pressure level that is exceeded for 10% of the measurement period.                                                                                                                                                                                                                                                                                                                                                                                          |
| L <sub>A90</sub> (period)                                              | The sound pressure level that is exceeded for 90% of the measurement period.                                                                                                                                                                                                                                                                                                                                                                                          |
| Luminaire                                                              | Complete lighting unit, consisting of one or more lamps (bulbs or tubes that emit light), along with the socket and other parts that hold the lamp in place and protect it, wiring that connects the lamp to a power source, and a reflector that helps direct and distribute the light.                                                                                                                                                                              |
| Noise sensitive receiver                                               | Noise sensitive receiver means any of the following: <ul style="list-style-type: none"> <li>• A residential dwelling.</li> <li>• An educational institution, library, childcare centre or kindergarten.</li> <li>• A hospital, surgery or other medical institution.</li> <li>• An active (e.g. sports field, golf course) or passive (e.g. national park) recreational area.</li> <li>• Commercial or industrial premises.</li> <li>• A place of worship.</li> </ul> |
| Obstacle limitation surface                                            | The lowest surface and is designed to provide protection for aircraft flying into or out of the airport when the pilot is flying by sight.                                                                                                                                                                                                                                                                                                                            |
| Procedures for Air Navigational Services - Aircraft Operations surface | Generally above the OLS and is designed to safeguard an aircraft from collision with obstacles when the aircrafts flight may be guided solely by instruments, in conditions of poor visibility.                                                                                                                                                                                                                                                                       |
| Power factor correction                                                | Applied to electrical power systems to increase energy efficiency and to reduce electricity costs.                                                                                                                                                                                                                                                                                                                                                                    |
| Quay crane                                                             | Lifting apparatus used to load and unload material from vessels moored alongside a wharf.                                                                                                                                                                                                                                                                                                                                                                             |
| Rating background level                                                | The overall single-figure background level representing each assessment period (day/evening/night) over the whole monitoring period.                                                                                                                                                                                                                                                                                                                                  |
| Reefer container                                                       | Refrigerated container.                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| Spoil                                                                  | Material removed from and under the ground during construction, usually as a result of excavation.                                                                                                                                                                                                                                                                                                                                                                    |
| Stevedoring                                                            | Loading and unloading of cargo.                                                                                                                                                                                                                                                                                                                                                                                                                                       |

# Abbreviations

|                 |                                                                              |
|-----------------|------------------------------------------------------------------------------|
| AADT            | Average Annual Daily Traffic                                                 |
| AHD             | Australian Height Datum                                                      |
| AHIMS           | Aboriginal Heritage Information Management System                            |
| Airports Act    | <i>Airports Act 1996</i>                                                     |
| ANZECC          | Australian and New Zealand Environment and Conservation Council              |
| APA Regulations | <i>Airports (Protection of Airspace) Regulations 1996</i>                    |
| AQIS            | Australian Quarantine and Inspection Services                                |
| ARTC            | Australian Rail Track Corporation Ltd.                                       |
| AS              | Australian Standard                                                          |
| ASSMAC          | Acid Sulfate Soils Management Advisory Committee                             |
| BS              | British Standards                                                            |
| CCC             | Port Botany Expansion Community Consultative Committee                       |
| CBD             | Central Business District                                                    |
| CEMP            | Construction Environmental Management Plan                                   |
| CO              | Carbon Monoxide                                                              |
| CTMP            | Construction Traffic Management Plan                                         |
| dB              | Decibels                                                                     |
| DEC             | Department of Environment and Conservation (now OEH)                         |
| DECC            | NSW Department of Environment and Climate Change (now OEH)                   |
| DECCW           | NSW Department of Environment, Climate Change and Water (now OEH)            |
| DGRs            | Director General's Requirements                                              |
| DoP             | Department of Planning (now DP&I)                                            |
| DoTARS          | Department of Transport and Regional Services                                |
| DP&I            | NSW Department of Planning and Infrastructure                                |
| DPI             | NSW Department of Primary Industries                                         |
| DSEWPaC         | Department of Sustainability, Environment, Water, Population and Communities |

|                        |                                                                       |
|------------------------|-----------------------------------------------------------------------|
| DUAP                   | Department of Urban Affairs and Planning (now DP&I)                   |
| EA                     | Environmental Assessment                                              |
| EP&A Act               | <i>NSW Environmental Planning and Assessment Act, 1979</i>            |
| EP&A Regulation        | <i>NSW Environmental Planning and Assessment Regulation</i>           |
| EPA                    | Environmental Protection Authority                                    |
| EPBC Act               | <i>Environment Protection and Biodiversity Conservation Act, 1999</i> |
| EPL                    | Environmental Protection License                                      |
| FM Act                 | <i>NSW Fisheries Management Act 1994</i>                              |
| GHD                    | GHD Pty Ltd                                                           |
| Hutchison              | Hutchison Port Holdings                                               |
| ICNG                   | <i>Interim Construction Noise Guideline (DECC 2009)</i>               |
| INP                    | Industrial Noise Policy                                               |
| LEP                    | Local Environmental Plan                                              |
| LGA                    | Local Government Area                                                 |
| Major Development SEPP | <i>State Environmental Planning Policy (Major Development) 2005</i>   |
| NES                    | National Environmental Significance                                   |
| NLG                    | Neighbourhood Liaison Group                                           |
| NO <sub>x</sub>        | Nitrogen Oxides                                                       |
| NSW                    | New South Wales                                                       |
| OCR                    | Optical Character Recognition                                         |
| OEH                    | NSW Office of Environment and Heritage                                |
| OEMP                   | Operational Environmental Management Plan                             |
| OLS                    | Obstacle Limitation Surface                                           |
| OSHA                   | U.S. Department of Labor Occupational Safety & Health Administration  |
| PANS-OPS               | Procedures for Air Navigational Services—Aircraft Operations          |
| Patrick                | Patrick Stevedores Operations No. 2                                   |
| PB                     | Parsons Brinckerhoff                                                  |
| PHA                    | Preliminary Hazard Analysis                                           |
| PM <sub>10</sub>       | Particulate Matter                                                    |
| POEO Act               | <i>Protection of the Environment Operations Act 1997</i>              |

|                         |                                                                                  |
|-------------------------|----------------------------------------------------------------------------------|
| RMS                     | NSW Roads and Maritime Authority (formerly Roads and Traffic Authority)          |
| RNP                     | <i>NSW Road Noise Policy</i>                                                     |
| Roads Act               | <i>Roads Act 1993</i>                                                            |
| SEPP                    | State Environmental Planning Policy                                              |
| SEPP 33                 | <i>State Environmental Planning Policy No. 33</i>                                |
| SEPP 55                 | <i>State Environmental Planning Policy No. 55</i>                                |
| SICTL                   | Sydney International Container Terminal Limited                                  |
| SKM                     | Sinclair Knight Merz Pty Ltd                                                     |
| SO <sub>2</sub>         | Sulphur Dioxide                                                                  |
| SPC                     | Sydney Ports Corporation                                                         |
| SSD                     | State Significant Development                                                    |
| State and Regional SEPP | <i>State Environmental Planning Policy (State and Regional Development) 2011</i> |
| SWMP                    | Soil and Water Management Plan                                                   |
| TECs                    | Threatened Ecological Communities                                                |
| TEU                     | Twenty-foot Equivalent Unit                                                      |
| TSC Act                 | <i>NSW Threatened Species Conservation Act 1995</i>                              |
| TSP                     | Total Suspended Particulates                                                     |
| WMP                     | Waste Management Plan                                                            |
| WQO                     | Water Quality Objectives                                                         |



# 1. Introduction

*This chapter introduces the proposal and the proponent. It also provides a description of the proposal site, background and strategic context of the proposal and outlines the consultation activities undertaken for the proposal. The structure of the environmental assessment is also provided.*

## 1.1 Overview

Patrick Stevedores Operations No. 2 (Patrick) proposes to conduct a range of demolition and construction activities within its existing Port Botany Container Terminal (referred to as the “existing terminal”) located on the northern side of Brotherson Dock in Port Botany, New South Wales (NSW). The demolition and construction activities (described as “the proposal”) require approval from the NSW Minister for Planning and Infrastructure (the Minister) in the form of a Section 75W Modification to the *Patrick Stevedores Port Botany Container Terminal Project* (DA-453-12-2002-i) under the *NSW Environmental Planning and Assessment Act 1979* (EP&A Act).

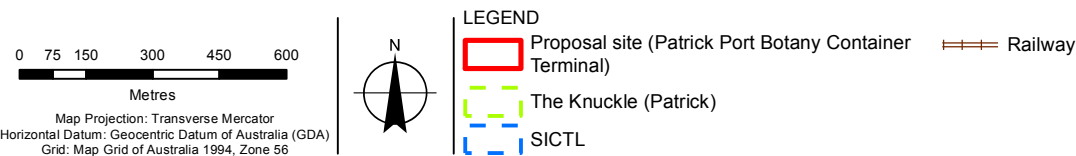
This environmental assessment has been prepared by GHD Pty Ltd (GHD) on behalf of Patrick to accompany the application for approval to modify the existing development consent. The environmental assessment has been prepared in accordance with the Director General's Requirements (DGRs) issued by the NSW Department of Planning and Infrastructure (DP&I) on 19 December, 2012. The DGRs are included as Attachment A.

## 1.2 Location

The proposal site (referred to as “the site”) is located entirely within the existing terminal on Lots 1-6, 8-14 and 16-19, DP 452236; Lots 1 and 2, DP 1009870 and Lot 1, 2, 3 and 4, DP 1126332 at Brotherson Dock in Port Botany, as shown in Figure 1-1. Brotherson Dock is situated approximately 12 kilometres south of Sydney's Central Business District (CBD), in the suburb of Banksmeadow and in the local government area (LGA) of Botany Bay. The land is owned by Sydney Ports Corporation (SPC) and is currently leased by Patrick. Land transport operations beyond the terminal gates are the responsibility of separate rail and road transport operators.

Land immediately north of the existing terminal is leased by Sydney International Container Terminals Limited (SICTL) from SPC. Land to the west and northwest of the terminal is currently being developed by both Patrick (referred to as “the Knuckle”) and SICTL. The Botany Freight Rail Line lies approximately 1 kilometre to the north and northeast of the terminal. The railway is used to transport freight to and from Port Botany. Road access to the terminal is provided by several major arterial roads including Foreshore Road, Botany Road, Southern Cross Drive, General Holmes Drive and the M5 East.

The major land uses in the vicinity of the terminal include industrial developments (predominantly in the east and northeast); special purpose land uses (including Port Botany and Sydney Airport); the Caltex Oil Refinery (located on the southern side of Botany Bay); residential areas (located in the suburbs of Botany, Banksmeadow, Matraville, Hillsdale, La Perouse, and Phillip Bay); commercial uses (mainly along the western shores of Botany Bay); nature reserves on the southwestern side of Botany Bay (Towra Point Nature Reserve); and recreational uses (such as fishing, swimming, boating, walking, golf, cycling, and bird watching).



Patrick Stevedores Operations No 2  
Section 75W Modification  
- Port Botany Container Terminal Project  
(DA-453-12-2002-i MOD 7)

Job Number 21-21961  
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Date 22 Apr 2013

Site location

Figure 1-1

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### 1.3 Proposal need and background

The facilities at Port Botany were constructed on reclaimed land over thirty years ago in the late 1970s. Since then, Sydney's container throughput has grown from about 175,000 Twenty-foot Equivalent Units (TEUs) in 1970 to 1.62 million TEUs in 2007. Conservative forecasts suggest that by 2020 the facilities at Port Botany will be moving over 3 million TEUs per annum (Aurecon, 2012).

Multiple factors affect the ability of the facilities at Port Botany to meet the forecast increase in demand. Availability of land, age and efficiency of infrastructure, berth numbers, and the capacity of the land and seaside transport networks all have an effect on port capacity.

Over the past 10 years, a number of redevelopment and expansion projects have sought to address these issues and to ensure that Port Botany continues to operate efficiently into the future.

In 2003, Patrick obtained approval to modify the layout and operation of the existing terminal including the demolition and removal of structures; the construction of new road, rail and wharf infrastructure; and the installation of new operational equipment. One of the consent conditions was to submit a separate development application for the terminal operations building. A series of incremental improvements to modernise and improve the efficiency of the terminal were also implemented between 2004 and 2007 (refer to Section 2.5).

In 2005, SPC obtained approval to reclaim and develop approximately 63 hectares of land to construct additional container handling facilities at Port Botany (known as the Port Botany Expansion Project). The reclamation has recently been completed and construction of the operating infrastructure has commenced. Once operational, the expanded container facilities will provide significant additional capacity to meet the projected long-term container demand.

In July 2012, the Asciano Board (the parent company of Patrick) approved a \$348 million capital investment program to:

- Develop the Knuckle area (approximately 17.5 hectares of land to the west of the existing terminal reclaimed as part of the Port Botany Expansion Project). Development of the Knuckle will provide an additional berth and container storage area which will be incorporated into the existing terminal at a later date. This project has been the subject of a separate environmental approval and is not focused upon in this environmental assessment (except in considering potential cumulative environmental impacts).
- Comprehensively redevelop the facilities within the existing terminal (the subject of this environmental assessment). The proposed building and infrastructure improvements, including the replacement of temporary buildings with permanent buildings; modernisation of the terminal facilities and upgrade of equipment with current technologies are required to ensure the operation of the terminal remains viable and competitive.

The development of the Knuckle and the redevelopment of the existing terminal are collectively referred to by Patrick as the Port Botany Redevelopment Project.

### 1.4 Strategic context

The proposal would be consistent with a number of government policies including:

- **State Infrastructure Strategy 2012-2032.** The *State Infrastructure Strategy 2012-2032* identifies that Port Botany is the principal container port catering for the majority of container movements in NSW. It also identifies that Port Botany has the capacity to significantly increase movements and efficiency to meet future growth. The strategy identifies that focus is needed on meeting the landside infrastructure demand of the port.

The proposal seeks to improve the efficiency of operations within the existing terminal, so that it can operate to meet the future demand and growth at the port as identified in the strategy.

- **NSW 2021.** *NSW 2021*, is the NSW State governments strategic business plan that sets out the agenda for the next 10 years to to rebuild the economy, return quality services, renovate infrastructure, restore accountability to government, and strengthen the local environment and communities.

As part of Goal 19 – Invest in Critical Infrastructure, a key target is to enhance rail freight movement. One of the key priority actions to achieve this target involves developing and delivering the *NSW Freight Port Strategy*, and to prioritise the delivery of the *Port Botany Landside Improvement Strategy to Improve the efficiency of Port Botany*.

The proposal seeks to improve the efficiency of its operations as a container terminal and the movements of containers by road and rail. Through increasing its efficiency in operations, the proposal is working towards achieving the aims of the strategies being developed by the NSW government as part of NSW 2021.

- **Draft NSW Freight and Port Strategy.** The *Draft NSW Freight and Ports Strategy* supports the goals identified in *NSW 2021*. The draft strategy identifies key strategic action areas, under which there are a number of actions to achieve the strategic action. Strategic Action Area 1 relates to network efficiency and it is noted that in order to achieve an efficient transport network:

*“The NSW Government will support the efforts of industry to improve supply chain performance and coordination. This is central to delivering improved productivity and economic benefits through efficient freight transport”*

The proposal seeks to improve efficiency of its operations, which down that line would aid the efficient delivery of goods. Overall, the proposal is consistent with the aims of the draft strategy.

## 1.5 Key elements of the proposal

The proposal would involve a range of demolition and construction works at the existing terminal as well as the replacement of manually-operated straddle carriers with automated straddle carriers. The key features of the proposal, which are described further in Chapter 2 include:

- Removal of the temporary demountable administration building in the south eastern corner of the site and replacement with a permanent administration and control building. The new building would include a single-storey administration building and a control tower which would be approximately 43 metres in height.
- Construction of a new undercover maintenance building and workshop designed to accommodate the new automated straddle carriers.
- Removal of the existing optical character recognition (OCR) building and construction of a new OCR structure and traffic lanes at the entrance to the terminal.
- Construction of a new, single-storey demountable Australian Quarantine Inspection Service (AQIS) building adjacent to the new OCR structure.
- Relocation of the existing truck grids and weighbridges.
- Removal of an existing substation building.
- Construction of new straddle carrier parking and fuelling bays.
- Construction of two new car parks for visitors and employees.

- Pavement improvement works.
- Modernisation of terminal lighting including re-positioning of existing lights and installation of more energy efficient lighting within the container stacking yard.
- Replacement of the existing manually-operated straddle carriers with automated straddle carriers.

Other infrastructure and environmental improvements including installation of: gross pollutant traps, upgraded drainage and pumps, light poles, new water and sewerage services, boundary fencing and walls, weighbridge and associated equipment and landscaping works in accordance with the relevant statutory and port code requirements.

## 1.6 The proponent

Patrick Stevedores is the proponent and is part of Asciano Ltd, one of Australia's largest infrastructure owners. Patrick's principal operations include container terminals, container parks, container packing (consolidation) and unpacking (de-consolidation); and transport services.

Patrick operates container terminals in Sydney, Brisbane, Melbourne and Fremantle with the capacity to handle 3.9 million TEUs annually. Patrick is a leader in the provision of container services for ship and landside customers and assists in the movement of containers by road and rail. Patrick also provides rail-land bridging services between Melbourne and Adelaide. Patrick's container terminal at Port Botany is approximately 45 hectares in size and the container throughput is approximately 1.15 million TEUs.

## 1.7 Document structure

This document is structured as follows:

- **Chapter 1 – Introduction.** This chapter provides an overview of the statutory framework for the proposal. It includes consideration of the permissibility of the proposal and the requirements of relevant environmental legislation and other planning instruments.
- **Chapter 2 – Proposal description.** This chapter provides a detailed description of the existing terminal, the key building and infrastructure changes proposed and the construction method and processes to be used. No changes to the terminal operations are proposed except for the replacement of straddle equipment. A comparison between the approved development and the proposed modifications is also provided.
- **Chapter 3 – Statutory framework.** This chapter provides information on the approval pathway and assessment requirements under relevant legislation and environmental planning instruments.
- **Chapter 4 – Consultation.** This chapter provides a description of the government and community consultation activities undertaken and outlines the key issues identified and where they are addressed in this document.
- **Chapter 5 – Environmental risk analysis.** This chapter provides an environmental risk analysis of the proposal. It identifies and ranks potential environmental risks with the aim of identifying an appropriate level of assessment to be included in this document.
- **Chapter 6 – Environmental impact assessment.** This chapter examines impacts on matters including noise and vibration, traffic, surface water and drainage, soils and groundwater, design and visual amenity, hazards and risks, air quality, ecology, heritage, waste generation and social amenity. Mitigation measures are identified to reduce potential impacts and a cumulative impact assessment is made in relation to the existing environment and other proposed developments in the same locality.

- **Chapter 7 – Environmental management.** This chapter provides a framework for the required environmental management plans that would be prepared and implemented for the proposal. This chapter also lists measures that would be implemented to manage potential impacts during construction and operation of the proposal.
- **Chapter 8 – Justification and conclusion.** This chapter provides the justification for the proposal. It provides a summary of the benefits of the proposal and the consequences of not proceeding. The environmental impacts are summarised and the principles of ecologically sustainable development are considered.
- **Chapter 9 – References.** This chapter presents a list of references cited in the environmental assessment.

The attachments contain information related to the environmental assessment including detailed technical reports related to the key environmental issues.

## 2. Proposal description

*This chapter provides a description of the existing terminal, the key building and infrastructure changes proposed and the construction method and processes to be used. No changes to the terminal operations are proposed except for the replacement of straddle equipment. A comparison between the approved development and the proposed modifications is also provided.*

### 2.1 Description of the existing terminal

The existing terminal occupies approximately 45 hectares with a quay length of 1,000 metres (3 berths) and has a current estimated capacity of 1.3 million TEUs. The current throughput is estimated to be 1.15 million TEUs per annum. The terminal operates 24 hours per day, seven days a week, with a total staff of approximately 511. This includes operational staff, maintenance staff, management staff and administrative personnel.

Trucks enter and exit the terminal from Penrhyn Road. Access for visitors and personnel is also via the Penrhyn Road. Security personnel guard these entry and exit points. Two rail tracks (approximately 600 metres in length) run along the northern extent of the terminal.

Operations at the terminal include:

- Stevedoring.
- Container stacking and cargo transfer.
- Terminal vehicle and equipment maintenance.

Table 2-1 summarises the key operations and facilities at the terminal. The existing terminal facilities are shown in Figure 2-1.

### 2.2 The proposal

The proposal would involve a range of building and infrastructure upgrades to the existing container terminal including:

- The removal or demolition of redundant buildings and infrastructure.
- Construction of new buildings (including a new administration and control building, maintenance building and workshop, and AQIS building) and the installation of associated infrastructure (including an OCR structure, straddle parking and refuelling bays, car parks, truck grids, weighbridges, waiting shelters, light poles, radar poles and fencing).
- Pavement improvement works.
- Modifications to a range of utilities and services.

The key aspects of the proposal are discussed below and shown on Figure 2-2 and Figure 2-3. Construction of the proposal is discussed in Section 2.3 and operation of the proposal is discussed in Section 2.4.

Table 2-1 Existing terminal operations and facilities

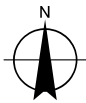
| Operations/facilities                                                                      | Description                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
|--------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>OCR building, truck processing and container exchange, truck grids and weighbridges</b> | Trucks enter the terminal from Penrhyn Road at the truck gate and are processed at the OCR for registration. Truck grids provide for the orderly queuing and exchange of containers from cranes to trucks (and vice versa). Weighbridges facilitate the weighing of trucks prior to leaving the terminal. Trucks are weighed in accordance with the NSW Roads and Maritime Service's (RMS) "Chain of Responsibility" provisions in the <i>Road Transport (General) Regulation 2005</i> .                                                                                                                                                                                                                                                                                                                                                                                                 |
| <b>Quay cranes, loading/unloading wharf</b>                                                | The stevedoring operations involve the loading and unloading of shipping containers on and off container ships berthed at Brotherson Dock. This task is carried out by nine quay cranes along the wharf.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| <b>Straddle operating area</b>                                                             | <p>The straddle operating area (or "yard") is primarily used for the transport and storage of containers. This includes loading and unloading containers from vessels, trucks and railway carriages, container stacking (including dangerous goods stacking), straddle operations, crane operations, and straddle parking.</p> <p>Containers are stacked in marked blocks. They are then transferred by straddle carriers to and from the truck and rail exchange areas. Five thousand and five hundred ground slots are currently available for container stacking and an additional 650 slots provide reefer facilities for refrigerated containers.</p> <p>Manual straddle carriers (approximately 14 metres in height) carry containers between the cranes and the container stacking areas. Thirty-seven manually-operated straddle carriers currently operate at the terminal.</p> |
| <b>Maintenance area and workshop</b>                                                       | The maintenance and workshop area includes the workshop and stores, workshop forecourt, refuelling area, fuel farm and stormwater treatment plant. Maintenance of the operational vehicles and equipment is currently undertaken in this area.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| <b>Temporary administration building</b>                                                   | A temporary demountable building in the southeastern portion of the site is used to house offices and amenities. Access to the building is off Penrhyn Road.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| <b>Staff and visitor car park</b>                                                          | The visitor and staff car park is located adjacent to the administration building. Vehicles enter and exit the car park from Penrhyn Road.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| <b>Rail mounted gantries</b>                                                               | Seven rail mounted gantries are located in the northern portion of the site. These are currently not in use and will be removed under an existing approval.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| <b>Substation E</b>                                                                        | The substation at the terminal provides for electrical generation, transmission and distribution.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |





0 25 50 100 150 200  
Metres

Map Projection: Transverse Mercator  
Horizontal Datum: Geocentric Datum of Australia (GDA)  
Grid: Map Grid of Australia 1994, Zone 56



#### LEGEND

- Demolition locations
- Proposal site
- Railway



Job Number 21-21961  
Revision A  
Date 22 Apr 2013

## Proposed demolition and removal works Figure 2-2

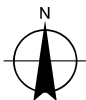
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0 25 50 100 150 200  
Metres



#### LEGEND

- Constuction locations
- Proposal site
- Railway



Job Number 21-21961  
Revision 1  
Date 22 Apr 2013

Proposed construction works **Figure 2-3**

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### 2.2.1 Demolition and removal of buildings and infrastructure

The proposal would involve the removal of the following existing buildings and infrastructure:

- Demountable administration building located in the southeastern portion of the site.
- Partial demolition of the existing workshop and maintenance building located in the northeastern portion of the site.
- OCR building located in the northwestern portion of the site.
- AQIS demountable building located in the northern portion of the site.
- Substation E located in the northwestern portion of the site.
- Weighbridges located in the northwestern portion of the site.
- Truck grids located in the western portion of the site.
- Redundant light towers, fencing and crash barriers.

The weighbridges would be retained for re-use within the site.

The proposed demolition/ removal works are shown in Figure 2-2.

### 2.2.2 Construction of new buildings and infrastructure

The proposal would involve the construction of new buildings and associated infrastructure. All buildings and structures would be constructed in accordance with the *Sydney Ports Corporation Port Botany Development Code 2012* and the *Sydney Ports Corporation Green Port Guidelines 2006*. A compliance checklist against the *Port Botany Development Code 2012* is provided as Attachment B.

A brief description of the proposed buildings and infrastructure is described below. Key elements of the proposed construction works are shown in Figure 2-3.

#### **Administration and control building**

A new administration and control building would be constructed in the southeastern portion of the site to replace the existing, temporary demountable administration building. The new administration and control building would occupy an area of approximately 2,000 square metres and would include:

- A single-storey administration building. The administration building would house office space, first aid rooms, store rooms, training facilities and amenities (including a locker area, lunch room, showers, barbecue area and court yard). The administration building would have silver metal cladding and a saw-tooth roof. It would be approximately 6 metres in height.
- A control tower connected to the administration building. The control tower would be approximately 43 metres high. The control tower would comprise a concrete core with two levels of office space providing oversight across the terminal operations. Windows would be sloping and treated to reduce glare and heat gain. An external walkway around the tower would be provided to facilitate window cleaning.



*Proposed administration and control building (concept)*

The proposed concept design and internal layout of the administration and control building are provided in Attachment C. The administration and control building would be similar in appearance to the administration and control building at Patrick's AutoStrad™ facility at Fisherman Islands in Brisbane which have been honoured at the Brisbane Regional Architecture Awards and the Queensland Architecture Awards.

The existing demountable administration building would be removed following construction of the new administration and control building.

### **Maintenance building and workshop**

Sections of the existing maintenance building and workshop would be demolished and replaced with a new workshop to include five straddle bays and a new spreader workshop. The new straddle bays would be a replication of the existing straddle bays located onsite. A support building would also be constructed to house amenities, stores, an electrical workshop and space for sub-contract maintenance providers. The new maintenance building and workshop would occupy an area of approximately 6,900 square metres.



*Proposed maintenance building and workshop showing automated straddle carriers (concept)*

The new maintenance building and workshop would include:

- Workshop area with service bays, associated workshops and store rooms. This would comprise a steel portal structure with silver non-reflective metal cladding. Natural light and ventilation would be provided using glazed fold-up doors. The height of the structure would be approximately 22 metres and designed to house the automated straddle carriers. A roof would provide protection from adverse weather and, therefore, facilitate maintenance to be undertaken under all-weather conditions.
- A new two-storey amenity building providing office space for service engineers and technical staff. This building would have a yellow compressed cement-fibre cladding with silver aluminium frame windows. The amenity building would be approximately 11 metres in height.
- A new single-storey main store building. This building would have a silver non-reflective metal cladding with a mono-pitch roof. The main store building would be approximately 13 metres in height. A Patrick sign would be mounted on the south elevation of this building.

A plan of the proposed extended maintenance and workshop building is provided in Attachment C.

### **Australian Quarantine and Inspection Service building**

A new, single-storey demountable AQIS building would be constructed adjacent to the new OCR structure at the truck exit point of the terminal to replace the existing building. The new building would occupy approximately 60 square metres and would be approximately 3 metres in height. The new AQIS building would be used for quarantine inspections, as required.

## Infrastructure

The proposal would include the following upgrades to infrastructure and utilities within the site:

- **Optical character recognition facility.** The existing OCR building would be replaced with a new and improved OCR structure. The new OCR structure would occupy approximately 500 square metres and be located at the new truck entry point. Approximately five traffic lanes would be constructed at the truck entry and exit points to tie into the new OCR structure. The OCR structure would be used to scan and validate shipping containers.
- **Straddle carrier parking and refuelling bays.** A new straddle carrier parking area, fuel storage and refuelling bays would be constructed to the west of the new maintenance building and workshop. The refuelling bay facility would be fenced and gated from the operations area. The facility would consist of a bunded area where the automated straddle carriers are refuelled and a self-bunded fuel storage cell with a capacity of approximately 210,000 litres of diesel. The storage cell and refuelling bay would be designed and manufactured in accordance with Australian Standards (AS) 1940— 2004 *The Storage and Handling of Flammable and Combustible Liquids* and AS 1692— 2006 *Steel tanks for flammable and combustible liquids*, which includes the construction of appropriate bunding and containment structures, construction requirements for pipework and dispensing points, and other aspects of installation which would reduce the occurrence of spills and leaks. The old fuel storage tank would be decommissioned and removed.
- **Car parks.** A new car park with approximately 329 car parking spaces would be constructed south of the new administration and control building. The car park would occupy an area of approximately 9,585 square metres. A second car park with approximately 136 car parking spaces would be constructed southeast of the extended maintenance building and workshop. This car park would occupy an area of approximately 4,165 square metres. Both car parks would be accessed via Penrhyn Road and would cater for employees, contractors and visitors. The number of car parking spaces would be sufficient to cater for all employees at the terminal during operation. The car parks would be designed to comply with AS 2890.1-1993 *Parking facilities – Off-Street Car Parking*.
- **Truck grids and weighbridges.** Existing truck grids and weighbridges would be relocated from the western portion of the terminal to the northern portion of the terminal (south of the rail line).
- **Rail exchange grids.** New rail exchange grids would be constructed on the northern side of the rail line instead of the southern side. The operation of the rail line would remain unchanged.
- **Realignment of terminal roadways.** The existing terminal roadways would be repositioned to accommodate for the new terminal layout. The proposed new internal road layout is shown in Attachment C.

- **Truck driver amenities.** A new demountable toilet block would be constructed in a centrally-located position within the relocated truck grids. The toilet block would be connected to the existing sewerage system.
- **Light and radar poles.** Existing light poles within the terminal would be re-positioned and replaced with more energy efficient lighting. Light poles in the internal terminal areas would be either 20 metres or 35 metres high with up to 10 luminaires per light pole. Perimeter light poles would be approximately 10 metres high with luminaires pointing inwards toward the terminal. Lighting would be the minimum level of illumination necessary and would comply with *AS/NZS 1680.5:2012 Interior and Workplace Lighting*, *AS/NZS 1158.3.1:2005 Lighting for Roads and Public Spaces – Pedestrian Area*, *AS 4282-1997 Control of Obtrusive Effects of Outdoor Lighting* and *CASA Manual of Standards Part 139 - Aerodromes, Chapter 9, Section 9.21 "Lighting in the Vicinity of Aerodromes"*. Radar reflectors would be mounted on light poles located in the internal terminal areas. Additional radar poles approximately 14 metres high would be installed within the site, as needed. Details of the proposed light and radar pole arrangements are provided in Attachment C.
- **Electrical works.** The existing high and low voltage distribution systems in the terminal would be repositioned and connected to existing Substation A/B. This would include the installation of new conduits, pits and cabling. New distribution networks would be installed for secure electrical supplies to the new administration building, workshops, lighting, security systems, weighbridges, and truck interchange areas.
- **Stormwater upgrades.** Gross pollutant traps would be installed at the end of existing and new stormwater outlets prior to the discharge points to improve the quality of surface water runoff. Details of the proposed stormwater upgrades are provided in Attachment C.
- **Water and sewerage services.** Building connections to the existing water and sewerage systems would be provided and upgrades would be undertaken, where required.
- **Perimeter fencing.** New perimeter fencing would be installed around the straddle operating area to separate the automated straddle carriers from the manual crane area. The straddle operating area would have a boundary fence of galvanised fence posts, top hat sections and approximately 2.6-metre-high, colour bond cladding. Straddle fencing parallel to container stacks (not roadways) would be similar but constructed to a height of approximately 1.8 metres.
- **Other.** Data pits and conduits would be installed to accommodate communications and information technology distribution throughout the site. New fire hydrants, fire mains/valves and booster connections would be installed at various locations within the site in accordance with relevant legislation and guidelines. New boundary security fencing would be installed around the terminal in accordance with Sydney Ports Corporation's *Port Botany Development Code 2012*. Landscaping would be placed at the entrance to the terminal, within the car parking area and on the perimeters of the site as per Sydney Ports Corporation's *Port Botany Development Code 2012*. The existing reefer facility would be upgraded to include a repair bay with a new fence and access gate.

### 2.2.3 Pavement improvement works

Pavement strengthening works are proposed to be undertaken at various locations in the terminal to support the upgraded equipment and the new terminal layout. This would be undertaken on approximately 8.4 hectares or 20 per cent of the terminal area (refer to Attachment C).

#### 2.2.4 Sustainability measures

A number of sustainability measures would be incorporated into the design of the proposal. These include:

- **Green star rating on buildings.** All buildings would be designed to have a Green Star Rating of 4.0.
- **Power factor correction.** Power factor correction would be applied to the electrical power systems at the site to increase energy efficiency and to reduce electricity costs.
- **Lighting design.** Existing lighting within the site would be replaced with more energy efficient lighting. This would result in a reduction in energy usage. All lights would have a power factor correction. Lighting intensity at the site would be reduced (refer to Section 6.5.1).
- **Rainwater tanks.** Rainwater tanks would be installed adjacent to the administration and control building. Water collected in the rainwater tanks would be used for various non-drinking uses such as toilet flushing and landscaping.

### 2.3 Construction

This section describes the general construction program, methodology, construction compounds, list of typical equipment and machinery that would be used, workforce and proposed working hours, and general environmental management.

#### 2.3.1 Construction program

Subject to obtaining planning approval, it is anticipated that construction of the proposal would commence in the second half of 2013 and would be completed within approximately 16 months. The proposed construction program is presented in Figure 2-4. The construction program and activities would be planned to ensure that the existing terminal remains operational during the works and that worker safety is maintained at satisfactory levels throughout.

#### 2.3.2 Construction methodology

As the construction works would be undertaken in parallel with terminal operations, detailed construction planning would be required. The general construction approach would include:

- Site preparation.
- Demolition works.
- Pavement upgrades and installation of other infrastructure.
- Building construction.

A brief description of the different activities is described below. The proposed scheduling of these activities is provided in Figure 2-4.

Figure 2-4 Construction program



### **Site preparation**

Prior to the commencement of construction works, environmental controls would be installed throughout the proposed worksites in accordance with the Construction Environmental Management Plan (CEMP) and conditions of approval including:

- Installation of erosion and sediment controls (including temporary tarpaulins, booms, silt screens and barriers, as required).
- Traffic management measures.
- Installation of fencing and signage to delineate work boundaries from operational areas.
- Installation of any necessary drainage diversions.
- Establishment of temporary work compounds for the storage of materials and equipment.
- Delineation of parking areas for construction vehicles.

### **Demolition works**

Demolition works would comprise the removal of a number of existing temporary buildings, site sheds and other infrastructure and the isolation of existing services e.g. water, electricity, etc.

Buildings would be removed and/or demolished in a controlled manner by a specialist contractor in accordance with the *Australian Standard 2601-2001 Demolition of Structures*. Demolition methods would include craning/ forklifting onto trucks, demolition using construction machinery e.g. hydraulic excavators, jackhammers, cranes and demolition/ dismantling using hand tools. No explosives would be used for the demolition works.

The resulting waste materials such as excess spoil/fill, bitumen, concrete, metal, brick, wood, glass etc. would be loaded by excavator and temporarily stored onsite in designated waste storage areas for potential recycling/ reuse, where appropriate. If recycling/ reuse are not possible, then waste would be classified in accordance with the *Waste Classification Guidelines* (DECCW 2009) prior to disposal at an Environmental Protection Authority (EPA) licensed facility.

### **Pavement works and installation of other infrastructure**

Pavement works would require the excavation and removal of asphalt surface materials and sub-grade materials to a depth of up to approximately 1 metre. Excavated material would be replaced with cement-treated rockfill subgrade and approximately 150-200 millimetres of asphalt to form the new terminal surface. Reinforced concrete and/or concrete pavers may be used in other locations as the running surface depending on the loading conditions and traffic duty required.

Additional infrastructure would also be installed or upgraded including:

- Installation of gross pollutant traps and improvements to stormwater drainage.
- Installation of light poles and radar poles.
- Upgrades to water and sewerage services.
- Installation of weighbridges and truck grids, etc.
- Installation of boundary and perimeter fencing.

### Building construction

As described in Section 2.2.2, a number of permanent buildings would be constructed as part of the proposal including a new administration and control building, maintenance and workshop building, and AQIS building.

Construction of the buildings would generally involve:

- Preparation and construction of foundations.
- Superstructure works (for the control building).
- Connections to utilities.
- Installation of surface structures and internal fit out, including placing and welding floor and wall sheets and installing final supporting and connecting structures including roof support columns, beams, fittings, stairs, windows and access doors.

All buildings would be constructed in accordance with relevant provisions of the *Building Code of Australia*, *Sydney Ports Corporation Port Botany Development Code 2012* and *Sydney Ports Corporation Green Port Guidelines 2006* and other relevant standards and codes of practice. An architect would be engaged to provide services in relation to the design of buildings including wall and roof treatments, internal fit-out and landscaping within the site.

#### 2.3.3 Construction compounds

Construction works would be generally undertaken in three zones:

- Building construction zone.
- Truck grids construction zone.
- Workshop construction zone.

Minor works such as the installation of light poles and fencing would also be undertaken in the yard stacking area.

Four temporary construction compounds (located in the general vicinity of each construction zone) would be established during construction for crew parking, deliveries, site sheds and storage of equipment, materials and demolition waste. Temporary amenities buildings would also be set up in the construction compounds to ensure compliance with worker health and safety requirements. Fences would be placed around construction/demolition areas and construction compounds to ensure safety during construction works. The proposed locations of construction zones and compounds are shown in Figure 2-5.

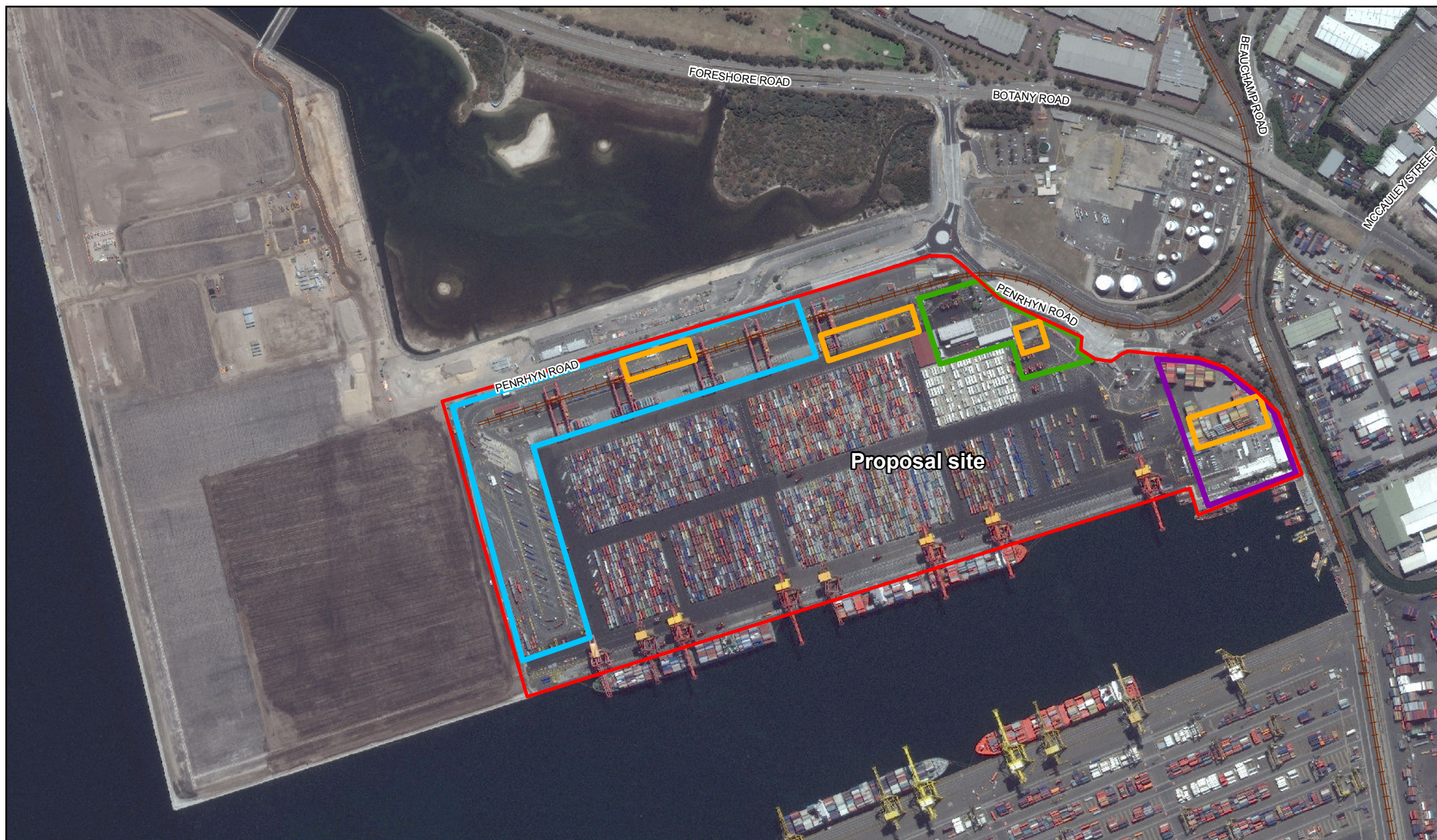
The bulk supplies of material would likely be delivered to the construction compounds via semi-trailers (tipping semis in the case of spoil delivery and removal). Materials would be stockpiled on sealed surfaces away from stormwater inlets and standard erosion and sediment controls would be implemented to suppress dust and avoid sediment laden runoff.

#### 2.3.4 Parking

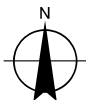
Sufficient parking would be provided for the construction equipment/machinery and vehicles (including delivery vehicles and construction crew vehicles) within the construction compounds to prevent off-site parking and queuing on public roads.

#### 2.3.5 Construction site office

A temporary, demountable site office would be located adjacent to the existing administration building. The office would be approximately 60 square metres and would be removed on completion of the construction works.



0 25 50 100 150 200  
Metres



#### LEGEND

  Proposal site

  Building construction zone

  Proposed construction compounds

  Truck grids construction zone

  Workshop construction zone

Railway



Job Number 21-21961  
Revision 1  
Date 22 Apr 2013

Proposed construction compounds **Figure 2-5**

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### 2.3.6 Equipment and machinery

The equipment likely to be used for the proposal would include:

- Backhoe.
- Trip trucks and trailers.
- Low-loaders and semi-trailers.
- Concrete truck.
- Concrete pump.
- 15 and 40 tonne mobile cranes.
- Various 12 and 20 tonne compaction equipment.
- Grader.
- Dozer.
- Bobcat.
- Hydraulic excavator.
- Front end loader.
- Articulated water cart.
- Boom lift.
- Piling rig.
- Moxey truck.
- Moxey watercart.
- Hand tools.

### 2.3.7 Workforce and working hours

Construction of the proposal is expected to require approximately 100 full-time equivalent jobs.

Hours of construction would be in accordance with the existing consent conditions:

- Between 7:00 AM to 6:00 PM Monday to Friday.
- Between 8:00 AM to 2:00 PM Saturdays.
- At no time on Sundays or public holidays.

### 2.3.8 Water use and energy consumption

#### **Water use**

Current water use on site is estimated at 1,500 kilolitres per month. Water is supplied by Sydney Water mains and is primarily used for the following activities:

- Operation of the straddle wash bay facility.
- Site cleaning applications (i.e. workshop forecourt and straddle parking area scrubbing).
- Office and small workshop applications.

Stormwater processed in the stormwater treatment plant is temporarily stored in a 9,000 litre above ground tank. This water is not currently reused onsite and is released to the environment via the site's Environmental Protection License (EPL) discharge point.

During construction, water use is expected to increase by approximately 50 per cent. Construction water would primarily be used for:

- Cleaning and wash down of machinery and equipment.
- Dust suppression.
- Potable water for domestic applications.

During operations, water use is expected to be similar to existing volumes as site operational practices will remain generally unchanged.

### **Energy consumption**

Approximately 10 gigawatt hours of electricity would be used during construction of the proposal. In addition, approximately 4 million litres of diesel is expected to be used by onsite plant and equipment. Use of petrol would be limited to portable equipment such as pumps and generators which are not expected to be significant.

#### **2.3.9 Services and utilities**

Various services and utilities are located at the site which may be impacted during construction. These services and utilities are owned by various providers such as AusGrid, Sydney Water, Optus and/or Telstra. The exact location of the services and utilities would be determined during detailed design. Discussions with the relevant providers would also be undertaken to determine the methods of relocation and protection of any services and utilities that would be impacted.

No offsite connections would be required as part of the proposal.

#### **2.3.10 Construction environmental management plan**

A CEMP would be prepared to include specific work details and safeguards to be implemented during construction of the proposal to reduce identified environmental impacts and other risks to the environment. The CEMP is discussed in Chapter 8.

## **2.4 Operation**

The proposal would not result in any change to the operating capacity or throughput of the existing terminal and no changes to:

- The size of the existing terminal.
- The number of quay cranes operating at the existing terminal.
- The volume of containers processed through the existing terminal.
- The length of rail line.
- Truck volumes.
- Hours of operation.
- Site access from Foreshore Road.

Table 2-2 summarises the key operating parameters before and after completion of the proposal.

Table 2-2 Comparison of pre- and post-operating parameters

| Existing operations                   |                             | Proposed operations                    |                                |
|---------------------------------------|-----------------------------|----------------------------------------|--------------------------------|
| <b>Terminal size</b>                  | 45 hectares                 | <b>Terminal size</b>                   | 45 hectares                    |
| <b>Operation</b>                      | 37 manual straddle carriers | <b>Operation</b>                       | 44 automated straddle carriers |
| <b>TEU per annum</b>                  | 1.15 million                | <b>TEU per annum</b>                   | 1.15 million                   |
| <b>Quay line (Berths)</b>             | 1000 metres (3 berths)      | <b>Quay line (Berths)</b>              | 1000 metres (3 berths)         |
| <b>Crane<br/>(Existing Quay line)</b> | 9                           | <b>Cranes<br/>(Existing Quay line)</b> | 9                              |
| <b>Rail length (lines)</b>            | 650 metres (2 lines)        | <b>Rail length (lines)</b>             | 650 metres (2 lines)           |
| <b>Operations buildings</b>           | Demountable                 | <b>Operations Buildings</b>            | Permanent                      |
| <b>Maintenance</b>                    | External facilities         | <b>Maintenance</b>                     | All-weather                    |
| <b>Staff numbers</b>                  | 511                         | <b>Staff numbers</b>                   | 241                            |
| <b>Hours of operation</b>             | 24 / 7                      | <b>Hours of operation</b>              | 24 / 7                         |
| <b>Vehicles per hour</b>              | ~70 at peak                 | <b>Vehicle per hour</b>                | ~70 at peak                    |
| <b>Access</b>                         | Via Penrhyn Rd and Ramp C   | <b>Access</b>                          | Via Penrhyn Rd and Ramp D      |

The existing 37 manually-operated straddle carriers, which are used to load and unload containers from ships and trucks and move them to and from the container stacking area, would be replaced with 44 automated straddle carriers. The automated straddle carriers would have the same dimensions as the existing straddle carriers but would be fitted with radar-based navigation and automatic motion-control systems, which would enable the control of speed, steering and container hoisting. Once installed, an exclusion fence would be erected around the stacking yard to physically separate personnel and machinery.

As indicated in Table 2-2, staff numbers would decrease by approximately 270 as a result of the proposal. Patrick has been undertaking extensive consultation with employees and their representatives, which will assist with decision making for employees. Impacted employees have been given two years' notice to consider and prepare for the change. Patrick will accommodate voluntary redundancy where practicable. The first focus for impacted employees is redeployment within the business. Where employees cannot be redeployed, a comprehensive package of support will be in place including: training, financial planning, career transition and counselling. Redundancy payments will be available for those employees leaving the business.

An updated Operational Environmental Management Plan (OEMP) would be prepared to replace the existing OEMP. The updated OEMP would also incorporate the additional Knuckle area and is further described in Chapter 7.

## 2.5 Comparison of approved development with the proposed modifications

On 27 October 2003, the Minister granted approval with conditions for the Patrick Stevedore Port Botany Container Terminal Upgrade (DA-453-12-2002-i). The consent was for modification to the layout and operation of the container terminal, including:

- Demolition and removal of structures.
- Construction of new road, rail and wharf infrastructure.
- Installation of new operational equipment.
- Construction of exceptions and administrations office.
- Relocation of the road access to the public boat ramp to the north of Penrhyn Road.

Further to this consent, a number of Section 96(1A) applications have been granted approval as follows:

- **Modification 1** MOD-56-6-2004-i (27 October, 2003) to revise the entry and exit configuration at the terminal, remove the proposed administration building and amend the site working hours for the construction of pavements.
- **Modification 2** MOD-83-8-2004-i (27 October, 2003) to permit the addition of prefabricated buildings for amenities and offices during construction of other facilities.
- **Modification 3** MOD-156-10-2005-i (3 November, 2005) for the construction of a two-storey administration building in the northeastern corner of the site.
- **Modification 4** MOD-38-3-2006-i (16 March, 2006) for the addition of a third storey on the two-storey administration building.
- **Modification 5** MOD 38-4-2007-i (10 May, 2007) for the construction and use of a temporary staff amenities building.
- **Modification 6** MOD-76-9-2007-i (13 November, 2007) for the construction and use of a truck and train checking facility.

Table 2-3 provides a comparison between the approved development and the proposed modifications.

Table 2-3 Comparison of approved development with proposed modifications

| Item                                                   | Approved development including Modifications 1-6                                                                                                                                                                                                                                                                                                                                                         | Proposed modifications (Modification 7)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
|--------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Removal of various buildings and infrastructure</b> | <ul style="list-style-type: none"> <li>Administration and control building in northern portion of the terminal.</li> <li>Security gatehouse building at the western end of Penrhyn Road.</li> <li>Steel workshop.</li> <li>Truck entry gate house office.</li> <li>Cargolink storage shed in southeastern portion of the terminal.</li> <li>Fuel station in northeastern portion of terminal.</li> </ul> | <ul style="list-style-type: none"> <li>Demountable administration building located in the southeastern portion of the site.</li> <li>OCR building located in the northwestern portion of the site.</li> <li>AQIS building located in the northern portion of the site.</li> <li>Substation E located in the northwestern portion of the site.</li> <li>Weighbridges located in the northwestern portion of the site.</li> <li>Truck grids located in the western portion of the site.</li> <li>Redundant light towers, fencing and crash barriers.</li> </ul> |
| <b>Administration building</b>                         | <ul style="list-style-type: none"> <li>Construction of two-storey administration building in the northeastern corner of the terminal.</li> <li>Addition of a third storey on the two-storey administration building.</li> <li>Construction and use of a temporary staff amenities building.</li> </ul>                                                                                                   | Construct a permanent administration and control building in the southeastern portion of the site with car park. The building would include a one storey administration building and a control tower.                                                                                                                                                                                                                                                                                                                                                         |
| <b>Maintenance building and workshop</b>               | Not proposed.                                                                                                                                                                                                                                                                                                                                                                                            | Demolish and replace sections of the existing maintenance building and workshop with a new workshop to include five straddle bays and a new spreader workshop. A support building would also be constructed to house amenities, stores, an electrical workshop and space for sub-contract maintenance providers. The new maintenance building and workshop would occupy an area of approximately 6,900 square metres.                                                                                                                                         |
| <b>AQIS building</b>                                   | Relocate AQIS to the north-eastern end of the terminal along the internal truck road (diversion from Penrhyn Road).                                                                                                                                                                                                                                                                                      | Construct a new, single-storey demountable AQIS building adjacent to the new OCR structure at the truck exit point of the terminal to replace the existing building.                                                                                                                                                                                                                                                                                                                                                                                          |

| Item                                                | Approved development including Modifications 1-6                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | Proposed modifications (Modification 7)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
|-----------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>OCR structure</b>                                | Not proposed.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | Construct a new OCR structure occupying an area of approximately 500 square metres at the new truck entry point. Approximately five traffic lanes would be constructed at the truck entry and exist points to tie into the new OCR structure.                                                                                                                                                                                                                                                                                                               |
| <b>Straddle carrier parking and refuelling bays</b> | Not proposed.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | A new straddle carrier parking area and straddle refuelling bays would be constructed to the west of the new maintenance building and workshop.                                                                                                                                                                                                                                                                                                                                                                                                             |
| <b>Car parks</b>                                    | Provision of a car park that would provide 230 spaces for staff, visitors and deliveries.                                                                                                                                                                                                                                                                                                                                                                                                                                       | <ul style="list-style-type: none"> <li>A new car park with approximately 329 car parking spaces would be constructed south of the new administration and control building.</li> <li>A second car park with approximately 136 car parking spaces would be constructed southeast of the extended maintenance building and workshop.</li> </ul>                                                                                                                                                                                                                |
| <b>Truck grids</b>                                  | Provision of up to 199 truck parking and/or exchange slots within the terminal.                                                                                                                                                                                                                                                                                                                                                                                                                                                 | Relocate existing truck grids to the northern section of the site.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| <b>Lighting</b>                                     | <ul style="list-style-type: none"> <li>New administration building exterior lighting to consist of car park lighting, 400 watt metal halide luminaires on 10 m poles.</li> <li>Repositioning of five existing high mast lights and several road lights along Penrhyn Road and truck exchange area.</li> <li>Repositioning of some existing streetlights along the proposed boat ramp access road.</li> <li>The existing and new reefer areas would have local task floodlights installed at power bollard locations.</li> </ul> | Existing light poles within the terminal would be re-positioned and replaced with more energy efficient lighting. Light poles in the internal terminal areas would be either 20 metres or 35 metres high with up to 10 luminaires per light pole. Perimeter light poles would be approximately 10 metres high with luminaires pointing in towards the terminal. Radar reflectors would be mounted on light poles located in the internal terminal areas. Additional radar poles approximately 14 metres high would be installed within the site, as needed. |

| Item                                | Approved development including Modifications 1-6                                                                                                                                                                                                                                                                                                                                                                  | Proposed modifications (Modification 7)                                                                                                                                                                                                                    |
|-------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Stormwater drainage upgrades</b> | Modifications to the stormwater management systems were approved including the installation of stormwater treatment devices and/or several spill containment pits as required to meet the Pollution Reduction Program Commitments.                                                                                                                                                                                | Gross pollutant traps would be installed at the end of the existing and new stormwater outlets prior to the discharge points to improve the quality of surface water runoff.                                                                               |
| <b>Reefer facilities</b>            | New reefer facility in the eastern section of the terminal.                                                                                                                                                                                                                                                                                                                                                       | The existing reefer facility would be upgraded to include a repair bay with a new fence and access gate.                                                                                                                                                   |
| <b>Rail</b>                         | Trains would be serviced along the rail sidings by rail mounted gantries.                                                                                                                                                                                                                                                                                                                                         | New rail exchange grids would be constructed on the northern side of the rail line. The operation of the rail line would remain unchanged, however, reachstackers would operate from the northern side of the rail line only instead of the southern side. |
| <b>Access</b>                       | <ul style="list-style-type: none"> <li>Truck entry point via a gate house along Penrhyn Road.</li> <li>Access (off Penrhyn Road) for entry to maintenance building.</li> <li>Access to the empty storage area (off Penrhyn Road).</li> <li>Entry to the terminal operations building and car park.</li> </ul>                                                                                                     | No proposed changes to access.                                                                                                                                                                                                                             |
| <b>Pavements</b>                    | <p>Construction of new pavements in the following areas:</p> <ul style="list-style-type: none"> <li>Area in the southwestern corner of the terminal.</li> <li>The area of northern extension of the terminal yard including the area around the existing administration building (previous).</li> <li>The area of the proposed western extension of the terminal yard designated oversized containers.</li> </ul> | Pavement strengthening works are proposed to be undertaken at various locations in the terminal to support the upgraded equipment and the new terminal layout. This would be undertaken on approximately 8.4 hectares (20 per cent) of the site.           |

| Item                      | Approved development including Modifications 1-6                                                                                     | Proposed modifications (Modification 7)                                                                                    |
|---------------------------|--------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------|
| <b>Equipment upgrades</b> | Phased installation of new operational equipment including 11 new manual straddle carriers (bringing total to 37 straddle carriers). | Replacement of existing 37 manual straddle carriers with 44 automated straddle carriers.                                   |
| <b>Operations</b>         | Various operational changes including changes to truck entry and processing, container exchange, and container storage.              | No proposed changes to operations except for the replacement of manual straddle carriers with automated straddle carriers. |

## 3. Statutory framework

*This chapter provides an overview of the statutory framework for the proposal. It includes consideration of the permissibility of the proposal and the requirements of relevant environmental legislation and other planning instruments.*

### 3.1 Approval under the Environmental Planning and Assessment Act 1979

#### 3.1.1 The Environmental Planning and Assessment Act

The EP&A Act and the *Environmental Planning and Assessment Regulation 2000* (the Regulation) provide the statutory basis for planning and environmental assessment in NSW. The Minister for Planning and Infrastructure, statutory authorities and local councils are responsible for implementing the EP&A Act. The EP&A Act provides the framework for environmental planning and development approvals and includes provisions to ensure that the potential environmental impacts of a development are assessed and considered in the decision making process.

In 2002, Patrick sought approval to modify the layout and operation of facilities at the site. This development, which substantially forms the existing facility at the site, received consent from the (then) Minister for Infrastructure and Planning in 2003. The current proposal, which is permissible with consent (refer Section 3.2), is considered to be a modification to the 2003 consent. As outlined in the following sections, because the 2003 consent is taken to be an approval under (the now repealed) Part 3A, Section 75W of the EP&A Act applies to the modification application.

#### 3.1.2 Application of Part 3A and Section 75W

The 2002 proposal was considered to be State significant development in accordance with the State significant development provisions of the EP&A Act at that time (Section 76A(7)). The State significant development designation was confirmed by the Assessment Report for the 2002 development application (Department of Infrastructure, Planning and Natural Resources, 2003). Approval of the 2002 proposal was granted on 27 October 2003.

Part 3A of the EP&A Act was repealed in October 2011. The transitional arrangements for the repeal of Part 3A are set out in Section 6A of the EP&A Act and Clause 8J of the Regulation. According to Clause 8J(8) of the Regulation, for modification applications, development consents granted by the Minister before 1 August 2005 under the (then) State significant development provisions are taken to be an approval under Part 3A:

*(8) For the purposes only of modification, the following development consents are taken to be approvals under Part 3A of the Act and section 75W of the Act applies to any modification of such a consent ... (c) a development consent granted by the Minister under Part 4 of the Act (relating to State significant development) before 1 August 2005 or under clause 89 of Schedule 6 to the Act*

Further, Clause 8J(8A) of the Regulation states:

*Subclause (8), as in force before its substitution by the Environmental Planning and Assessment Amendment (Miscellaneous) Regulation 2010, applies to any development consent for which approval for the treatment of the consent as an approval for the purposes of section 75W of the Act:*

*(a) was given before that substitution, or*

*(b) is given after that substitution, but where the application for the approval was made before that substitution.*

Clause 12 of Schedule 6A of the EP&A Act relates to the continued application of Part 3A to modifications of certain development consents. It states:

*Section 75W of Part 3A continues to apply to modifications of the development consents referred to in clause 8J(8) of the Environmental Planning and Assessment Regulation 2000, and so applies to whether an application for modification is made before or after the commencement of this clause.*

Therefore, in accordance with Section 75W and Clause 12 (Schedule 6A) of the EP&A Act, and Clause 8J of the Regulation:

- The 2003 development consent is taken to be an approval under Part 3A, as the current application is for the purposes of a modification to this consent.
- Section 75W applies to an application to modify this development consent.
- The current proposal is subject to approval by the Minister under Section 75W.
- The application for approval may be subject to environmental assessment requirements.

The Director-General of the DP&I confirmed, by letter dated 19 December 2012 (refer copy in Attachment A), that

*...the proposed modification can be progressed under section 75W of the Environmental Planning and Assessment Act 1979 (EP&A Act). Pursuant to section 75W(3) of the EP&A Act, the Director General requires that the modification application address the matters set out in the attached Director General's requirements (DGRs.)*

## **3.2 Permissibility of the proposal under relevant environmental planning instruments**

### **3.2.1 Local environmental plan**

Although the site is located within the City of Botany Bay LGA, the local environmental plan does not apply to the site, as it falls within land subject to a State significant site designation under *State Environmental Planning Policy (Major Development) 2005* (the Major Development SEPP).

### **3.2.2 State Environmental Planning Policy (Major Development) 2005**

The site is located within land described as the 'Three Ports Site' in Schedule 3 (Part 20) of the Major Development SEPP. According to clause 7(2) of the Major Development SEPP 'The provisions in Schedule 3 relating to the carrying out of development on a State significant site have effect.

Part 20 of Schedule 3 provides the planning controls for the Three Ports Site area. The site is subject to the 'SP1 Special Activities' zonings. The proposal meets the definition of 'port facilities' provided in Clause 2 of Part 20. Development for the purposes of 'port facilities' is permissible with consent in this zone.

### 3.3 Consideration of other relevant legislation and environmental planning instruments

#### 3.3.1 NSW legislation – approvals under other Acts

##### *Approvals that do not apply*

Section 75U(1) of the EP&A Act specified certain authorisations which are not required for an 'approved project' under Part 3A. These included the following authorisations, which may otherwise have been relevant to this proposal:

- *Fisheries Management Act 1994* – permit for work or structures within a waterway.
- *Heritage Act 1977* – approval to disturb an item or an excavation permit.
- *National Parks and Wildlife Act 1974* – a section 87 research permit or a section 90 consent to destroy.
- *Native Vegetation Act 2003* – consent to clearing native vegetation.
- *Rural Fires Act 1997* – a bush fire safety authority under section 100B.
- *Water Management Act 2000* – water use approval, water management work approval or activity approval.

These approvals would not be required if the Minister grants approval for the proposal.

##### *Approvals legislation to be applied consistently*

Under section 75V(1) of the EP&A Act, the following authorisations cannot be refused if necessary for the carrying out of an 'approved project' and are to be substantially consistent with an approval to carry out the project given under Part 3A:

- *Protection of the Environment Operations Act 1997* – an environment protection licence under Chapter 3 of the Act.
- *Roads Act 1993* - a permit under s138 to impact on public roads.

##### *Protection of the Environment Operations Act 1997*

The *Protection of the Environment Operations Act 1997* (POEO Act) establishes, amongst other things, the procedures for issuing of licences for environmental protection on aspects such as waste, air, water and noise pollution control. Environment protection licences are generally issued for scheduled activities or scheduled development work.

The proponent's existing operations are regulated by the EPA under EPL No. 6962 for the scheduled activity 'chemical storage'.

An amendment to the existing EPL would be sought, as appropriate, in conjunction with this modification application.

##### *Roads Act 1993*

Under Section 138, Part 9, Division 3 of the *Roads Act 1993*, a person must not impact or carry out work on or over a public road otherwise than with the consent of the appropriate roads authority. As the proposal would not impact on any public roads, no approvals would be required under this Act.

### 3.3.2 Consideration of requirements under other State environmental planning policies

#### **State Environmental Planning Policy No. 33**

*State Environmental Planning Policy No. 33* (SEPP 33) provides definitions for hazardous and offensive industries. It also aims to ensure that in considering any application to carry out a potentially hazardous or offensive development, the consent authority has sufficient information to assess whether the development is hazardous or offensive, and to impose conditions to minimise any adverse impact. It also requires that any application to carry out a potentially hazardous or potentially offensive development be supported by a preliminary hazard analysis and be advertised for public comment.

A preliminary hazard analysis has been carried out for the proposal and the results are provided in Section 6.6. The results indicate that the proposal would not present an increased overall risk to the surrounding land uses, and the proposal is not considered to be potentially hazardous.

#### **State Environmental Planning Policy No. 55**

*State Environmental Planning Policy No. 55* (SEPP 55) aims to promote the remediation of contaminated land with the objective of reducing the risk of harm to human health or other aspects of the environment. Section 7 of the policy specifies that a consent authority must not consent to the carrying out of a development on land unless:

- (a) *it has considered whether the land is contaminated, and*
- (b) *if the land is contaminated, it is satisfied that the land is suitable in its contaminated state (or will be suitable, after remediation) for the purpose for which the development is proposed to be carried out, and*
- (c) *if the land requires remediation to be made suitable for the purpose for which the development is proposed to be carried out, it is satisfied that the land will be remediated before the land is used for that purpose.*

Consideration of contamination and potential exposure of acid sulfate soils is documented in Section 6.4. A soil and groundwater contamination assessment would be undertaken in the proposed excavation footprints prior to the commencement of construction. Analysis would include a range of potential contaminants including the potential for acid sulfate soils to determine the need for any specific management measures that may be required. Management measures would be incorporated into the CEMP, if necessary.

#### **State Environmental Planning Policy (State and Regional Development) 2011**

*State Environmental Planning Policy (State and Regional Development) 2011* (State and Regional SEPP) identifies development:

- To which the State significant development assessment and approval process under Part 4 of the EP&A Act applies.
- That is State significant infrastructure and critical State significant infrastructure where the approval process is under Part 5.1.

Development that is specified in Schedule 1 or Schedule 2 is declared to be State significant development. Clause 18 of Schedule 1 includes:

*Development for the purpose of port facilities or wharf or boating facilities (not including marinas) that has a capital investment value of more than \$30 million.*

While the proposal has a capital investment value greater than \$30 million, it is being undertaken as a modification to an existing State significant development for which consent was granted in 2003.

### 3.4 Commonwealth legislation

#### 3.4.1 Airports Act 1996

The site is located in close proximity to Sydney Airport. The airspace in this area is subject to Part 12 of the *Airports Act 1996* and the *Airports (Protection of Airspace) Regulations 1996* (APA Regulations).

Controlled activities in relation to a prescribed airspace are defined by Section 182 of the Airports Act, and require approval under Section 183 of the Act. Controlled activities include (Section 182(1):

- (a) constructing a building, or other structure, that intrudes into the prescribed airspace;*
- (b) altering a building or other structure so as to cause the building or structure to intrude into the prescribed airspace.*
- (c) any other activity that causes a thing attached to, or in physical contact with, the ground to intrude into the prescribed airspace.*
- (d) operating a source of artificial light, where:*
  - (i) the intensity of the light emitted exceeds the level ascertained in accordance with the regulations; and*
  - (ii) the light is capable of blinding or confusing pilots of aircraft operating in the prescribed airspace.;*
- (e) operating prescribed plant, or a prescribed facility, that reflects sunlight, where:*
  - (i) the intensity of the reflected sunlight exceeds the level ascertained in accordance with the regulations; and*
  - (ii) the reflected sunlight is capable of blinding pilots of aircraft operating in the prescribed airspace."*

The proposal has been designed and would be constructed and operated such that it does not meet any of the definitions of controlled activities under Section 182(1). No structures would penetrate the Obstacle Limitation Surface (OLS) or Procedures for Air Navigational Services—Aircraft Operations (PANS-OPS) surface for Sydney Airport (refer to Section 6.5.2). The proposal has also been designed to ensure there would be no light reflectivity to aircraft operating within the prescribed airspace.

As a result, the proposal would not require a controlled activity approval under Section 183 of the Airports Act.

#### 3.4.2 Environment Protection and Biodiversity Conservation Act 1999

Under the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act), any 'actions' which are likely to have a significant impact on matters of national environmental significance ('NES matters'), or a significant impact on Commonwealth land, require approval from the Commonwealth Minister for Sustainability, Environment, Water, Population and Communities Environment and Heritage.

A search of the EPBC Act protected matters online search tool was undertaken on 29 September 2012 for an area within a 10 kilometre radius of the site. The search results indicate that:

- There are no world heritage properties in the vicinity of the site.
- There are four national heritage places in the search area; however none are listed within the site or the immediate vicinity of the site.
- The site is within the catchment area of one wetland of international significance (Ramsar listed wetlands), Towra Point Nature Reserve.
- There are no listed Commonwealth marine areas in the vicinity of the site.
- There is the potential for three threatened ecological communities to occur within search area, however, none have been mapped within the site.
- There is the potential for 64 threatened species to occur in the search area. However, none are likely to occur within the highly modified site.
- There is the potential for 70 migratory species to occur in the search area. However, none are likely to occur within the highly modified site.
- 28 parcels of Commonwealth owned lands recorded in the search area; however the site is not located within Commonwealth owned land.

As the proposal would not impact on any NES matters, approval under the EPBC Act would not be required.

### 3.5 Other policies that apply to development at Port Botany

SPC is committed to ensuring that the Port Botany precinct is developed and managed in line with SPC's strategic vision to be a *leader of world class, efficient, sustainable ports and logistics networks*. To this end, SPC has developed the *Sydney Ports Corporation Port Botany Development Code 2012*.

The overall objective of the *Sydney Ports Corporation Port Botany Development Code 2012* is to promote sustainable development at Port Botany. This is to be achieved by:

- *facilitating the future development of Port Botany in an efficient manner;*
- *minimising the impacts of activities at Port Botany on the surrounding environment and community;*
- *ensuring the ongoing security of Port Botany;*
- *minimising risks associated with both construction and operations at Port Botany; and*
- *enhancing the visual amenity of Port Botany through a consistent and coordinated approach to development.*

As discussed in Section 2.2, all buildings and structures would be constructed in accordance with the *Sydney Ports Corporation Port Botany Development Code 2012*. A compliance checklist against the *Port Botany Development Code 2012* is provided as Attachment B.

## 4. Consultation

*This chapter provides a description of the government and community consultation activities undertaken and outlines the key issues identified and where they are addressed in this document.*

### 4.1 Government consultation

#### 4.1.1 Formal procedures for consultation

In preparing this environmental assessment, the requirements of the Director-General of the DP&I were sought. The matters raised by the Director-General for consideration, and the chapter/section of the environmental assessment that addresses them, are outlined in Table 4-1. A copy of the DGRs is provided in Attachment A.

**Table 4-1 Director Generals Requirements**

| Issue category       | Requirement                                                                                                                                                                                                                                                                                                                                                                                                                  | Location in environmental assessment                            |
|----------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------|
| General requirements | An <b>executive summary</b>                                                                                                                                                                                                                                                                                                                                                                                                  | Page iv.                                                        |
|                      | A <b>detailed description</b> of the original development, as approved, and the proposed changes to that approval including figures that illustrate the footprint of the approved development and the proposed changes to the approved development.                                                                                                                                                                          | Chapter 2, Section 2.1, Section 2.3 and Section 2.4.            |
|                      | The environmental assessment should include:                                                                                                                                                                                                                                                                                                                                                                                 | Chapter 1, Section 1.5 and Chapter 2, Section 2.2.              |
|                      | <ul style="list-style-type: none"> <li>Key components of the project including proposed demolition and construction activities.</li> </ul>                                                                                                                                                                                                                                                                                   |                                                                 |
|                      | <ul style="list-style-type: none"> <li>The modified site layout.</li> </ul>                                                                                                                                                                                                                                                                                                                                                  | Chapter 2, Section 2.2.                                         |
|                      | <ul style="list-style-type: none"> <li>Infrastructure/service requirements.</li> </ul>                                                                                                                                                                                                                                                                                                                                       | Chapter 2, Section 2.3.                                         |
|                      | <ul style="list-style-type: none"> <li>Staging and timing of construction and operational activities.</li> </ul>                                                                                                                                                                                                                                                                                                             | Chapter 2, Section 2.3.                                         |
|                      | Identification of the <b>conditions that are required to be modified</b> by the application.                                                                                                                                                                                                                                                                                                                                 | Chapter 7, Section 7.1.                                         |
|                      | <b>Justification</b> for the proposed modification, including the strategic need and objectives for the modification. Justification for the proposed modification should take into consideration consistency with the aims and objectives of relevant State policies and plans (e.g. NSW 2021, the <i>State Infrastructure Strategy 2012-2032</i> , and <i>draft NSW Freight and Port Strategy</i> ) and project objectives. | Chapter 1, Section 1.3 and Section 1.4; Chapter 8, Section 8.1. |
|                      | An <b>assessment of the key issues</b> , with the following aspects considered for each key issue (where relevant):                                                                                                                                                                                                                                                                                                          | Chapter 6, Section 6.1 through Section 6.11.                    |
|                      | <ul style="list-style-type: none"> <li>Description of the existing environment.</li> </ul>                                                                                                                                                                                                                                                                                                                                   |                                                                 |
|                      | <ul style="list-style-type: none"> <li>Assessment of the potential impacts of the modification for both construction and operation stages, in accordance with relevant policies and guidelines. Direct, indirect and cumulative impacts must be considered (including regard to other existing and proposed developments and activities on the site and in the locality).</li> </ul>                                         |                                                                 |

| Issue category   | Requirement                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | Location in environmental assessment                   |
|------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------|
|                  | <ul style="list-style-type: none"> <li>Identification of how relevant planning, land use and development matters (including relevant strategic and statutory matters) have been considered in the impact assessment and/or in developing management/mitigation measures.</li> </ul>                                                                                                                                                                                                            |                                                        |
|                  | <ul style="list-style-type: none"> <li>Documentation on whether any additional activities will require licensing and how licensing will be applied under relevant legislation.</li> </ul>                                                                                                                                                                                                                                                                                                      |                                                        |
|                  | <ul style="list-style-type: none"> <li>Description of the measures to be implemented to avoid, minimise, manage, mitigate, offset and/or monitor new impacts, or increased levels of impact from the modification.</li> </ul>                                                                                                                                                                                                                                                                  |                                                        |
|                  | <ul style="list-style-type: none"> <li>Any residual impacts.</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                        |                                                        |
|                  | <b>Certification</b> by the author of the environmental assessment that the information contained in the document is neither false nor misleading.                                                                                                                                                                                                                                                                                                                                             | Page ii.                                               |
| <b>Key Issue</b> | <b>General Construction Impacts</b> - an assessment of the potential impacts associated with the construction of the modification application where the nature and potential impact of construction activities associated with the modification application differ to those assessed for the approved development.                                                                                                                                                                             | Chapter 6, Section 6.1 through Section 6.11.           |
|                  | <b>Noise Impacts</b> - an assessment of the construction and operational noise impacts of the development on adjoining land uses and sensitive receivers. The environmental assessment shall detail how the site will continue to meet its existing operational noise limits during the construction and operational phases. The environmental assessment shall consider the <i>Interim Construction Noise Guidelines</i> (DECC, 2009) and the <i>NSW Industrial Noise Policy</i> (EPA, 2000). | Chapter 6, Section 6.1 and Attachment D.               |
|                  | <b>Traffic and Transport Impacts</b> - an assessment of the potential for traffic disruption, increase in traffic movements and interaction with existing port operations during construction, including impacts to the overall road transport logistics for Port Botany and the interaction with the construction phase of the adjoining development of Terminal 3. The environmental assessment shall consider the <i>Guide to Traffic Generating Development</i> (RTA, 2002).               | Chapter 6, Section 6.2, Section 6.12 and Attachment E. |
|                  | In particular, the following must be considered:                                                                                                                                                                                                                                                                                                                                                                                                                                               |                                                        |
|                  | <ul style="list-style-type: none"> <li>Vehicular access/egress and routes.</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                          |                                                        |
|                  | <ul style="list-style-type: none"> <li>Daily peak traffic movements generated and changes to type/level of traffic.</li> </ul>                                                                                                                                                                                                                                                                                                                                                                 |                                                        |
|                  | <ul style="list-style-type: none"> <li>Cumulative impacts on the surrounding road network.</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                          | Chapter 6, Section 6.3 and Section 6.4.                |
|                  | <b>Soil and Water</b> - an assessment of the potential soil, groundwater and surface water impacts, including impacts on Botany Bay and Penrhyn Estuary.                                                                                                                                                                                                                                                                                                                                       |                                                        |
|                  | The following must be considered: <ul style="list-style-type: none"> <li>Water supply including options for reuse of process water.</li> </ul>                                                                                                                                                                                                                                                                                                                                                 |                                                        |

| Issue category                     | Requirement                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | Location in environmental assessment                             |
|------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------|
|                                    | <ul style="list-style-type: none"> <li>Proposed erosion and sedimentation controls (during construction) and the proposed stormwater management system (for operation).</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |                                                                  |
|                                    | <ul style="list-style-type: none"> <li>An assessment of contaminated groundwater and soils and proposed mitigation and management measures, consistent with <i>State Environmental Planning Policy No. 55 - Remediation of Land</i>.</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                             |                                                                  |
|                                    | <b>Design and Visual Amenity Impacts</b> - a visual impact assessment of the proposed development on surrounding sensitive visual receivers.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | Chapter 6, Section 6.5, Chapter 2, Section 2.2 and Attachment F. |
|                                    | The assessment should consider:                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                                                                  |
|                                    | <ul style="list-style-type: none"> <li>View sheds and identify potentially affected receivers.</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                                                                  |
|                                    | <ul style="list-style-type: none"> <li>Design elements of each component with a focus on highly visible elements.</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                                                  |
|                                    | <ul style="list-style-type: none"> <li>Potential lighting impacts on affected receivers.</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                                                                  |
|                                    | <ul style="list-style-type: none"> <li>Landscaping and sustainability elements and measures; and flight path and obstacle surface limits.</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |                                                                  |
|                                    | <b>Hazards and Risks</b> - an assessment of the changes to the existing hazards and risk scenario due to the relocation and construction of new facilities and the temporary storage/use of additional hazardous materials. The assessment should demonstrate that the proposed changes do not increase the overall risk of the facility.                                                                                                                                                                                                                                                                                                                                   | Chapter 6, Section 6.6.                                          |
|                                    | <b>Air Quality Impacts</b> - a dust emissions impact assessment for the construction phase.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | Chapter 6, Section 6.7.                                          |
| <b>Environmental Risk Analysis</b> | The environmental assessment must include an environmental risk analysis to identify potential environmental impacts associated with the development (construction and operation), proposed mitigation measures and potentially significant residual environmental impacts after the application of proposed mitigation measures. Where additional key environmental impacts are identified through this environmental risk analysis, an appropriately detailed impact assessment of this additional key environmental impact must be included in the EA.                                                                                                                   | Chapter 5, Section 5.1 through Section 5.3.                      |
| <b>Consultation Requirements</b>   | <p>An appropriate and justified level of consultation must be undertaken with the following parties during the preparation of the environmental assessment:</p> <ul style="list-style-type: none"> <li>Environment Protection Authority.</li> <li>Office of Environment and Heritage.</li> <li>Council of the City of Botany Bay.</li> <li>Randwick City Council.</li> <li>Sydney Ports Corporation.</li> <li>Department of Primary Industries (Fisheries and Office of Water).</li> <li>Roads and Maritime Services.</li> <li>NSW Fire and Rescue.</li> <li>Sydney Airport Corporation.</li> <li>Civil Aviation Safety Authority.</li> <li>The local community.</li> </ul> | Chapter 4, Section 4.1 and Section 4.2.                          |

| Issue category | Requirement                                                                                                                                                                                                                                                                           | Location in environmental assessment    |
|----------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------|
|                | The environmental assessment must describe the consultation process and the issues raised, and identify where the design of the development has been amended in response to these issues. Where amendments have not been made to address an issue, an explanation should be provided. | Chapter 4, Section 4.1 and Section 4.2. |

#### 4.1.2 Consultation with statutory agencies

In February 2013, statutory agencies were contacted by letter and provided with a description of the proposal and an invitation to comment. The following agencies were contacted:

- NSW Office of Environment and Heritage.
- NSW Environment Protection Authority.
- NSW Roads and Maritime Services.
- Botany Bay City Council.
- Randwick City Council.
- Sydney Ports Corporation.
- Department of Primary Industries (Fisheries and Office of Water).
- NSW Fire and Rescue.
- Sydney Airport Corporation.
- Civil Aviation Safety Authority.

#### 4.1.3 Key issues raised by the statutory agencies

Each of the issues raised by statutory agencies is provided in Table 4-2, together with the relevant chapter/section of the environmental assessment which addresses that issue. Copies of the letters received are provided in Attachment A.

Table 4-2 Issues raised by statutory agencies

| Agency                                        | Issues raised                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | Location in environmental assessment                                                                                         |
|-----------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------|
| <b>NSW Office of Environment and Heritage</b> | <p>The environmental assessment should address the following issues:</p> <ul style="list-style-type: none"> <li>• The heritage significance of the site and any impacts the development may have upon this significance. Include consideration of the wider heritage impacts in the area surrounding the site.</li> <li>• Non-Aboriginal heritage items in the area affected should be identified. A statement of significance and an assessment of the impact of the proposal on the heritage significant of identified items should be undertaken. Any policies/measures to conserve their heritage significant should be identified.</li> <li>• The proposal should have regard to any impacts on places, items or relics of significant to Aboriginal people.</li> </ul> | Chapter 6, Section 6.9.                                                                                                      |
| <b>NSW Environment Protection Authority</b>   | The EPA recommends that consideration of noise, air and water quality impacts, as well as details of changes to water management and treatment and Environment Protection Licence 6962, be incorporated into the environmental assessment.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | Chapter 6, Section 6.1, Section 6.3 and Section 6.7.                                                                         |
|                                               | <p>A noise impact assessment should be prepared and should include an assessment of:</p> <ul style="list-style-type: none"> <li>• Construction noise using the Interim Construction Noise Guidelines (EPA, 2009).</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | <p>Chapter 6, Section 6.1.</p> <p>Refer to Attachment A for correspondence with EPA regarding methodology of assessment.</p> |
|                                               | <ul style="list-style-type: none"> <li>• Vibration impacts using Assessing Vibration: Technical Guideline (EPA, 2006).</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |                                                                                                                              |
|                                               | <ul style="list-style-type: none"> <li>• If blasting is required, the impacts should demonstrate compliance with the Australian and New Zealand Environment Council – Technical Basis for Guidelines to Minimise Annoyance Due to Blasting Overpressure and Ground Vibration (ANZECC,1990).</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                                                                                                                              |
|                                               | Operational noise from using the NSW Industrial Noise Policy (EPA, 2000) and Industrial Noise Policy Application Notes.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                                                                                                                              |
|                                               | <ul style="list-style-type: none"> <li>• Noise on public roads from any increased road traffic using the NSW Road Noise Policy (EPA, 2011).</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                                                                                                                              |
|                                               | <ul style="list-style-type: none"> <li>• Noise from any new or upgraded public roads should be assessed using the NSW Road Noise Policy (EPA, 2011).</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                                                                                                                              |
|                                               | <p>An air quality assessment should be prepared and should:</p> <ul style="list-style-type: none"> <li>• Assess the risk associated with potential discharges of emissions.</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | Chapter 3, Section 3.3.1, Chapter 6, Section 6.7 and Chapter 6,                                                              |

| Agency | Issues raised                                                                                                                                                                                                                                          | Location in environmental assessment                                                                                     |
|--------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------|
|        | <ul style="list-style-type: none"> <li>Justify the level of assessment undertaken on the basis of risk factors, including proposal location, characteristics of the receiving environment, and the type and quantity of pollutants emitted.</li> </ul> | Section 6.12.2.<br><br>Refer to Attachment A for correspondence with EPA regarding methodology of assessment.            |
|        | <ul style="list-style-type: none"> <li>Describe the receiving environment in detail.</li> </ul>                                                                                                                                                        |                                                                                                                          |
|        | <ul style="list-style-type: none"> <li>Include a detailed description of the proposal. All processes that could result in air emissions must be identified and described.</li> </ul>                                                                   |                                                                                                                          |
|        | <ul style="list-style-type: none"> <li>Account for cumulative impacts associated with existing emission sources.</li> </ul>                                                                                                                            |                                                                                                                          |
|        | <ul style="list-style-type: none"> <li>Include air dispersion modelling where there is a risk of adverse air quality impacts, or where there is sufficient uncertainty to warrant a rigorous numerical impact assessment.</li> </ul>                   |                                                                                                                          |
|        | <ul style="list-style-type: none"> <li>Demonstrate the proposal's ability to comply with the relevant regulatory framework, specifically the POEO Act and POEO (Clean Air) Regulation (2010).</li> </ul>                                               |                                                                                                                          |
|        | <ul style="list-style-type: none"> <li>Detail emission control techniques/practices that will be employed.</li> </ul>                                                                                                                                  |                                                                                                                          |
|        | With respect to water: <ul style="list-style-type: none"> <li>Describe the position of any intakes and discharges, volumes, water quality and frequency of all water discharges.</li> </ul>                                                            | Comment noted. No new intakes or discharges identified.<br><br>Chapter 2, Section 2.3.3 and Chapter 6, Section 6.3.5.    |
|        | <ul style="list-style-type: none"> <li>Demonstrate that all practical options to avoid discharge have been implemented.</li> </ul>                                                                                                                     | Chapter 2, Section 2.2.4 and Chapter 6, Section 6.3.5.                                                                   |
|        | <ul style="list-style-type: none"> <li>Where relevant, include a water balance for the development including water requirements and proposed storm and wastewater disposal.</li> </ul>                                                                 | Comment noted. A water balance was not prepared as the operational water sources and volumes are not expected to change. |
|        | <ul style="list-style-type: none"> <li>Describe existing surface and groundwater quality and undertake an assessment if water resources are likely to be affected.</li> </ul>                                                                          | Chapter 6, Section 6.3.3 and Chapter 7, Section 6.4.2.                                                                   |
|        | <ul style="list-style-type: none"> <li>State the water quality objectives for receiving waters relevant to the proposal.</li> </ul>                                                                                                                    | Chapter 6, Section 6.3.2.                                                                                                |
|        | <ul style="list-style-type: none"> <li>State the indicators and associated trigger values or criteria for the identified environmental values from the ANZECC (2000) Guidelines for Fresh and Marine Water Quality.</li> </ul>                         | Chapter 6, Section 6.3.2.                                                                                                |
|        | <ul style="list-style-type: none"> <li>State any locally specific objectives, criteria or targets which have been endorsed by the NSW Government.</li> </ul>                                                                                           | Chapter 6, Section 6.3.2.                                                                                                |

| Agency                                 | Issues raised                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | Location in environmental assessment                                              |
|----------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|
|                                        | <ul style="list-style-type: none"> <li>Describe the nature and degree of impact that any proposed discharges will have on the environment.</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                 | Chapter 6, Section 6.3.4 and Section 6.3.5.                                       |
|                                        | <ul style="list-style-type: none"> <li>Modelling, monitoring, or both may need to be undertaken to assess the potential impact of discharges on the receiving environment.</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                 | Chapter 6, Section 6.3.6.                                                         |
|                                        | <ul style="list-style-type: none"> <li>Assess impacts against the relevant ambient water quality outcomes.</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                 | Chapter 6, Section 6.3.6.                                                         |
|                                        | <ul style="list-style-type: none"> <li>Where a discharge is proposed that includes a mixing zone, the proposal should demonstrate how wastewater discharged to waterways will ensure ANZECC (2000) water quality criteria for relevant chemical and non-chemical parameters are met.</li> </ul>                                                                                                                                                                                                                                                                       | Chapter 6, Section 6.3.6.                                                         |
|                                        | <ul style="list-style-type: none"> <li>Assess impacts on groundwater and groundwater dependant ecosystems.</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                 | Chapter 6, Section 6.4.3 and Section 6.4.4.                                       |
|                                        | <ul style="list-style-type: none"> <li>Describe how stormwater will be managed both during and after construction.</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                         | Chapter 6, Section 6.3.4, Section 6.3.5 and Section 6.3.6.                        |
|                                        | <ul style="list-style-type: none"> <li>Describe how predicted impacts will be monitored and assessed over time.</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                            | Chapter 6, Section 6.3.6.                                                         |
|                                        | <ul style="list-style-type: none"> <li>The Pollution Reduction Program (PRP) requires Patrick to undertake a Stormwater Risk Assessment to identify risks to stormwater or local marine receiving environments and provide recommendations for addressing the risks. As the proposal involves improvements to the stormwater management system, the environmental assessment should address the requirements of the PRP.</li> </ul>                                                                                                                                   | Chapter 6, Section 6.3.3.                                                         |
|                                        | <ul style="list-style-type: none"> <li>The proposal will require changes to be made to the EPL to incorporate Schedules Development Works provisions for the construction stage of the project. The environmental assessment will need to detail proposed construction hours, construction and operational noise criteria, and identify the need for changes to water discharge and discharge points on site. Please note that an application to vary the EPL will be required to be submitted to the EPA prior to the commencement of construction works.</li> </ul> | Comment noted. There would be no changes to the scheduled activities at the site. |
| <b>NSW Roads and Maritime Services</b> | No additional matters raised (provided all works are within SPC lands).                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | Comment noted.                                                                    |
| <b>Botany Bay City Council</b>         | No additional matters raised (satisfied that all requirements were included in the DGRs).                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | Comment noted.                                                                    |

| Agency                                                         | Issues raised                                                                                                                                                                                                                                                                                                              | Location in environmental assessment                |
|----------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------|
| <b>Randwick City Council</b>                                   | Ensure adequate and suitable environmental protection measures are provided to ensure no environmental pollution results from the proposed works. Take into consideration cumulative impacts arising from other construction works currently occurring at Terminal 3. With specific regards to:                            | Chapter 6, Section 6.1 through Section 6.12.        |
|                                                                | <ul style="list-style-type: none"> <li>Prevention of water borne pollution.</li> </ul>                                                                                                                                                                                                                                     | Chapter 6, Section 6.3.                             |
|                                                                | <ul style="list-style-type: none"> <li>Prevention/mitigation of noise disturbance to the surrounding environment. An acoustic assessment of the current operation would assist with assisting identifying measures required for improving the environmental performance of the site.</li> </ul>                            | Chapter 6, Section 6.1.                             |
|                                                                | <ul style="list-style-type: none"> <li>Vehicle movements and stacking/parking of vehicles during construction and impact on local road network.</li> </ul>                                                                                                                                                                 | Chapter 6, Section 6.2.                             |
|                                                                | <ul style="list-style-type: none"> <li>Monitoring of dust levels during demolition and construction works.</li> </ul>                                                                                                                                                                                                      | Chapter 6, Section 6.7.                             |
|                                                                | <ul style="list-style-type: none"> <li>Impact on the local community from the works and measures to minimise/mitigate these i.e. consultation / communication plan so the community know what is to happen, when it is to happen and for how long; especially in relation to other adjacent construction works.</li> </ul> | Chapter 4, Section 4.2 and Chapter 6, Section 6.11. |
|                                                                | <ul style="list-style-type: none"> <li>Acid Sulphate Soils Assessment and if relevant associated management plan.</li> </ul>                                                                                                                                                                                               | Chapter 6, Section 6.4.                             |
|                                                                | <ul style="list-style-type: none"> <li>Impact on migratory birds.</li> </ul>                                                                                                                                                                                                                                               | Chapter 6, Section 6.8.                             |
| <b>Sydney Ports Corporation (Planning Application Meeting)</b> | The planning application documentation is to include:                                                                                                                                                                                                                                                                      |                                                     |
|                                                                | <ul style="list-style-type: none"> <li>An assessment of all works that need to be constructed as part of the proposal, including ancillary works such as fencing and services (both on-site services and any required off-site service connections).</li> </ul>                                                            | Chapter 2, Section 2.2.                             |
|                                                                | <ul style="list-style-type: none"> <li>An assessment of the provision of any temporary structures as part of the staging of works.</li> </ul>                                                                                                                                                                              | Chapter 2, Section 2.3.                             |
|                                                                | <ul style="list-style-type: none"> <li>An assessment of the removal of any structures (such as the existing administration building and other built elements) as part of the works (and how this relates to previous approvals for the site).</li> </ul>                                                                   | Chapter 2, Section 2.2 and Section 2.5.             |
|                                                                | <ul style="list-style-type: none"> <li>Details of the impacts of construction, including the space required for construction site storage and lay-down, on on-going terminal operations.</li> </ul>                                                                                                                        | Chapter 2, Section 2.2.                             |
|                                                                | <ul style="list-style-type: none"> <li>Provide details of any proposed modifications to the existing terminal stormwater system.</li> </ul>                                                                                                                                                                                | Chapter 2, Section 2.2.                             |

| Agency | Issues raised                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | Location in environmental assessment                                                                                                                                                                                                           |
|--------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|        | <ul style="list-style-type: none"> <li>Address truck access via Ramps B and D to ensure Super B-Doubles are able to enter Ramp D from Ramp B without needing to circle the roundabout.</li> </ul>                                                                                                                                                                                                                                                                                                                                | Chapter 6, Section 6.2 and Section 6.12.                                                                                                                                                                                                       |
|        | The planning application documentation is to:                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                                                                                                                                                                                                                                                |
|        | <ul style="list-style-type: none"> <li>Include an assessment of the construction and operational impacts and how the works will be managed to mitigate any impacts on the environment. This is to include, but not necessarily be limited to, noise (including beeping from reversing plant) and vibration, stormwater and drainage, contamination and potential acid sulfate soils (including details of excavation depths), air quality and dust and waste management and disposal (including approximate volumes).</li> </ul> | Chapter 5 and Chapter 6.                                                                                                                                                                                                                       |
|        | <ul style="list-style-type: none"> <li>Include an assessment of construction impacts (e.g. noise and vibration, dust) on nearby Port staff, including SPC staff based at SPOC, including mitigation measures to minimise adverse impacts.</li> </ul>                                                                                                                                                                                                                                                                             | Chapter 6, Section 6.1 and Section 6.7. A specific health impact assessment for noise or dust was not undertaken given the scale of the proposed construction works and the predicted impacts (below the relevant noise/air quality criteria). |
|        | <ul style="list-style-type: none"> <li>Include an assessment of impacts on Penrhyn Estuary from the proposal (e.g. light spill, noise, stormwater).</li> </ul>                                                                                                                                                                                                                                                                                                                                                                   | Chapter 6, Section 6.8. Penrhyn Estuary would not be affected by the proposal as all works would be confined within the boundaries of the existing site.                                                                                       |
|        | <ul style="list-style-type: none"> <li>Address any implications of the proposal on the need for Federal approvals under the Environment Protection and Biodiversity Conservation Act 1999 (EPBC Act), with particular reference to Penrhyn Estuary and listed migratory shorebirds.</li> </ul>                                                                                                                                                                                                                                   | Chapter 3, Section 3.4.                                                                                                                                                                                                                        |
|        | <ul style="list-style-type: none"> <li>Clarify if and what Green Star rating is being sought for the proposed buildings.</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                              | Chapter 2, Section 2.2.                                                                                                                                                                                                                        |
|        | <ul style="list-style-type: none"> <li>Consider how the community will be consulted about the proposal.</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                               | Chapter 4.                                                                                                                                                                                                                                     |
|        | <ul style="list-style-type: none"> <li>Include a completed SPC Green Port Guidelines checklist available on the Sydney Ports website.</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                 | Comment noted. Completed Green Port Guideline checklist will be provided to SPC independent of this assessment.                                                                                                                                |

| Agency | Issues raised                                                                                                                                                                                                                                                                                                                                                                                                    | Location in environmental assessment                   |
|--------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------|
|        | <ul style="list-style-type: none"> <li>Include any existing or proposed mitigation measures for the development.</li> </ul>                                                                                                                                                                                                                                                                                      | Chapter 6 and Chapter 7, Section 7.3.                  |
|        | <ul style="list-style-type: none"> <li>There is to be an assessment of construction and operational traffic impacts of the development for the Patrick terminal and the Port precinct. The assessment of operational traffic impacts is to consider the increase in terminal truck traffic associated with commencement of operations on the Knuckle as well as the changes to staff vehicle numbers.</li> </ul> | Chapter 6, Section 6.2, Section 6.12 and Attachment E. |
|        | <ul style="list-style-type: none"> <li>The assessment of construction and operational traffic impacts of the development for the Patrick terminal and the Port precinct is to include impacts on existing truck queuing and arrangement for truck queuing once Port Botany infrastructure works (e.g. grade separation) are complete.</li> </ul>                                                                 | Chapter 6, Section 6.2, Section 6.12 and Attachment E. |
|        | <ul style="list-style-type: none"> <li>A Construction Traffic Management Plan and an Operational Traffic Management Plan in accordance with SPC's Traffic Management Plan Guidelines 2007 will be required.</li> </ul>                                                                                                                                                                                           | Chapter 6, Section 6.2.                                |
|        | <ul style="list-style-type: none"> <li>Provide details of the expected impact on the rail network, including proposed periods of rail closure due to construction works.</li> </ul>                                                                                                                                                                                                                              | Chapter 6, Section 6.2.                                |
|        | <ul style="list-style-type: none"> <li>Construction and operational lighting for the development, in particular the observation tower and new terminal light poles, are not to interfere with safe navigation.</li> </ul>                                                                                                                                                                                        | Chapter 6, Section 6.5.                                |
|        | <ul style="list-style-type: none"> <li>Provide details / contingency plans of how spills from mobile plant (e.g. Autostrads) and from containers will be managed and how any leaks from mobile plant will be identified given the proposed automation of the terminal and that people will not normally be present in the container yard.</li> </ul>                                                             | Chapter 6, Section 6.3.                                |
|        | <ul style="list-style-type: none"> <li>The planning application documentation is to address any impacts on existing Port Radar and Port (VTS) radio frequencies from the proposed automation of the Terminal.</li> </ul>                                                                                                                                                                                         | Chapter 6, Section 6.5.                                |
|        | <ul style="list-style-type: none"> <li>The proposed observation tower must not interfere with the line of sight microwave link of the VTS.</li> </ul>                                                                                                                                                                                                                                                            | Chapter 6, Section 6.5.                                |
|        | The planning application documentation is to include an assessment:                                                                                                                                                                                                                                                                                                                                              |                                                        |
|        | <ul style="list-style-type: none"> <li>Against the Sydney Ports Port Botany Development Code July 2012 and a justification for any proposed elements that do not conform to the code.</li> </ul>                                                                                                                                                                                                                 | Chapter 2, Section 2.2 and Attachment B.               |
|        | <ul style="list-style-type: none"> <li>Of cumulative impacts with approved developments in proximity to the site, particularly construction impacts such as noise and traffic.</li> </ul>                                                                                                                                                                                                                        | Chapter 6, Section 6.12.                               |

| Agency | Issues raised                                                                                                                                                                                                                                                                                                                                                                                       | Location in environmental assessment                                                                                                                                                                                                                                                               |
|--------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|        | <ul style="list-style-type: none"> <li>Of the proposed development's impact on local heritage items (being the Old Government Wharf Remains).</li> </ul>                                                                                                                                                                                                                                            | Chapter 6, Section 6.9.                                                                                                                                                                                                                                                                            |
|        | <ul style="list-style-type: none"> <li>The documentation is to make clear what is included and what is excluded from the SSD application.</li> </ul>                                                                                                                                                                                                                                                | Chapter 2.                                                                                                                                                                                                                                                                                         |
|        | <ul style="list-style-type: none"> <li>Construction and operational impacts of the project need to be considered in the context of the Patrick terminal operations, Port Botany operations and infrastructure developments under way in the Port precinct.</li> </ul>                                                                                                                               | Chapter 6.                                                                                                                                                                                                                                                                                         |
|        | <ul style="list-style-type: none"> <li>Patrick is to consider options for ultimately operating under one set of conditions of approval, should the proposal obtain development consent, as opposed to operating under a new set of conditions for the existing terminal area and the existing conditions associated with the Port Botany Expansion Approval over the Knuckle and Ramp D.</li> </ul> | Comment noted. This issue has been discussed further and agreed not to be pursued at this time. If approved, an updated OEMP which would apply to both the existing terminal and the Knuckle would be developed.                                                                                   |
|        | <ul style="list-style-type: none"> <li>Demonstrate how the works that extend onto the Knuckle and are therefore not part of the SSD application, are not inconsistent with the existing PBE Approval (under which these works would be done).</li> </ul>                                                                                                                                            | Comment noted. While the proposal does not include any works associated with the Knuckle, the construction and operational traffic issues associated with the Knuckle have been considered in the traffic and cumulative impacts assessments. Refer to Section 6.2, Section 6.12 and Attachment E. |
|        | <ul style="list-style-type: none"> <li>Provide details of the number of car spaces to be provided on-site in relation to the numbers of employees.</li> </ul>                                                                                                                                                                                                                                       | Chapter 2, Section 2.2.                                                                                                                                                                                                                                                                            |
|        | <ul style="list-style-type: none"> <li>Provide information on how an area of the terminal would be isolated in the case of an incident.</li> </ul>                                                                                                                                                                                                                                                  | Chapter 6, Section 6.6.                                                                                                                                                                                                                                                                            |
|        | <ul style="list-style-type: none"> <li>Port Botany Community Liaison Group (SPC to coordinate) will be advised of the proposal.</li> </ul>                                                                                                                                                                                                                                                          | Chapter 4.                                                                                                                                                                                                                                                                                         |
|        | <ul style="list-style-type: none"> <li>EP&amp;A Act (including an assessment against Section 79C in accordance with s89H of Division 4.1).</li> </ul>                                                                                                                                                                                                                                               | No longer relevant to the adopted planning approvals pathway.                                                                                                                                                                                                                                      |
|        | <ul style="list-style-type: none"> <li>Airports Act 1996 (specifically Section 182 and 183 of Division 4 – Protection of Prescribed Airspace).</li> </ul>                                                                                                                                                                                                                                           | Chapter 3.                                                                                                                                                                                                                                                                                         |

| Agency | Issues raised                                                                                                                                                                                                                                                                           | Location in environmental assessment                             |
|--------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------|
|        | <ul style="list-style-type: none"> <li>Airports (Protection of Airspace) Regulations 1996 (to determine if the proposed development, including construction activities, is a 'controlled activity' and any necessary approvals / referrals required in regards to lighting).</li> </ul> | Comment noted. Not relevant to approvals pathway.                |
|        | <ul style="list-style-type: none"> <li>Civil Aviation Act 1988 and the Civil Aviation (Building Control) Regulations 1988.</li> </ul>                                                                                                                                                   | Comment noted. Not relevant to approvals pathway.                |
|        | <ul style="list-style-type: none"> <li>CASA Manual of Standards Part 139 – Aerodromes (specifically Section 9.21 - Lighting in the Vicinity of Aerodromes).</li> </ul>                                                                                                                  | Chapter 2, Section 2.2.                                          |
|        | <ul style="list-style-type: none"> <li>Protection of the Environment Operations Act 1997.</li> </ul>                                                                                                                                                                                    | Chapter 3.                                                       |
|        | <ul style="list-style-type: none"> <li>State Environmental Planning Policy (Major Development) 2005 (specifically Part 20 of Schedule 3 in relation to zone objectives and permissibility).</li> </ul>                                                                                  | Chapter 3.                                                       |
|        | <ul style="list-style-type: none"> <li>State Environmental Planning Policy (State and Regional Development) 2011.</li> </ul>                                                                                                                                                            | Chapter 3.                                                       |
|        | <ul style="list-style-type: none"> <li>State Environmental Planning Policy No. 55 (Remediation of Land).</li> </ul>                                                                                                                                                                     | Chapter 3.                                                       |
|        | <ul style="list-style-type: none"> <li>Port Botany Land Use Safety Study Overview Report 1996.</li> </ul>                                                                                                                                                                               | Chapter 6, Section 6.6.                                          |
|        | <ul style="list-style-type: none"> <li>SPC's Port Botany Development Code 2012 (including Traffic Management Plan Guidelines 2007 and Green Port Guidelines).</li> </ul>                                                                                                                | Chapter 2, Section 2.2, Chapter 6, Section 6.2 and Attachment B. |
|        | All draft and final documentation for review prior to submission.                                                                                                                                                                                                                       | Comment noted.                                                   |
|        | Additional items to be considered in the assessment:                                                                                                                                                                                                                                    |                                                                  |
|        | <ul style="list-style-type: none"> <li>The planning application documentation is to include an assessment of existing conditions on the site, particularly a statement on soil and groundwater contamination and acid sulphate soils.</li> </ul>                                        | Chapter 6, Section 6.4.                                          |

| Agency                                                   | Issues raised                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | Location in environmental assessment                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
|----------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                                                          | <ul style="list-style-type: none"> <li>The planning application documentation is to be clear that the proposal is not seeking to increase the approved TEU capacity for the Patrick site. It should be clear that the increase (i.e. from 1.3 million TEU/annum to 1.6 million TEU/annum) is due to the prorata proportion of the new terminal that Patrick has leased from Sydney Ports. How the figure of 300,000 additional TEU/annum was derived should be included.</li> </ul> | <p>Comment noted. The proposal would not result in any change to the terminal (operating) capacity. Refer to Chapter 2, Section 2.4. It is understood that issues relating to the former capacity “cap” at the port have now been overturned. Notwithstanding, consideration of the additional capacity arising from the Knuckle and its integration with the existing terminal has been considered as part of the traffic and cumulative impact assessment. Refer to Section 6.2, Section 6.12 and Attachment E.</p> |
|                                                          | <ul style="list-style-type: none"> <li>Operational impacts of the proposal are to relate to the operation of the full terminal, post construction (e.g. up to 1.6 million TEU and the associated traffic, noise, etc impacts).</li> </ul>                                                                                                                                                                                                                                           | As above.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| <b>Sydney Ports Corporation (Request for Amendments)</b> | Address information requested at the Planning Application Meeting.                                                                                                                                                                                                                                                                                                                                                                                                                  | Comment noted. Refer to information requests noted above.                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
|                                                          | All final documentation for review prior to lodgement with DP&I (including proposal plans).                                                                                                                                                                                                                                                                                                                                                                                         | Comment noted.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
|                                                          | Complete and submit for review: The Sydney Ports Green Ports Guidelines checklist and the Sydney Ports Port Botany Development Code checklist.                                                                                                                                                                                                                                                                                                                                      | Comment noted. Completed Green Port Guideline checklist will be provided to SPC independent of this assessment. Refer to Attachment B for Port Botany Development Code checklist.                                                                                                                                                                                                                                                                                                                                     |
|                                                          | Submit final details regarding stormwater management on the site.                                                                                                                                                                                                                                                                                                                                                                                                                   | Chapter 2, Section 2.2.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
|                                                          | Require all pits be fitted with pollutant traps to meet the standards required under the EPL and the PRPC.                                                                                                                                                                                                                                                                                                                                                                          | Chapter 2, Section 2.2 and Chapter 6, Section 6.3.                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |

| Agency | Issues raised                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | Location in environmental assessment                                                                                                                                                                                                                                                              |
|--------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|        | An assessment is required of construction and operational traffic impacts of the development for the Patrick terminal and is to include any impacts given the increase in terminal traffic numbers on Penrhyn Road associated with the proposed operations of the knuckle. Operational traffic associated with the knuckle will be utilising Penrhyn Road and the assessment of the road and intersection performance (particularly Foreshore Road and Penrhyn Road) should therefore be updated to reflect this in both the assumptions made and the potential impacts. | Chapter 6, Section 6.2<br>Section 6.12 and Attachment E. Extra truck traffic from the Knuckle using Penrhyn Road would be managed using existing spare capacity outside of the existing peak hours.                                                                                               |
|        | The assessment of construction and operational traffic impacts of the development for the Patrick terminal is to ensure that all trucks visiting the facility (that have an allocated slot and visit within the allocated slot) do not park or queue outside the boundaries of the premises on common roads unless otherwise permitted by PBOPL. The traffic study should demonstrate that that requirement is met at all stages of construction and operation as set out in Development Deed Schedule 2.2.                                                              | Chapter 6, Section 6.2<br>Section 6.12 and Attachment E.                                                                                                                                                                                                                                          |
|        | The environmental assessment should include an assessment of the cumulative impact of the construction traffic associated with the proposed development, the development of the knuckle, and the construction of Ramp D should be identified and assessed to ensure no construction traffic will park off site.                                                                                                                                                                                                                                                          | Chapter 2, Section 2.3,<br>Chapter 6, Section 6.12 and Attachment E.                                                                                                                                                                                                                              |
|        | The environmental assessment should include an appropriate solution for truck traffic access from CargoLink to the proposed truck grids at the Patrick terminal as detailed under Development Plan A of the Development Deed. The assessment should clarify whether this access is via Ramp D or via an alternative route through the terminal and should consider the associated traffic volume in the traffic assessment accordingly.                                                                                                                                  | As part of a separate development, Patrick will include a “fillet” at the existing roundabout to facilitate truck access to the terminal.<br><br>Chapter 6, Section 6.2, Section 6.12 and Attachment E includes consideration of this additional truck traffic as part of the traffic assessment. |

| Agency                                             | Issues raised                                                                                                                                                                                                                                                                                           | Location in environmental assessment                                                                                                                                                                                                                                                                                                                                                                                   |
|----------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                                                    | It was noted that there is a high probability of queuing at PM peak times due to construction workers vehicle flows; PBOPL requests that alternatives to reduce traffic load during these periods e.g. staggering start times or "off site" parking and dedicated buses are investigated.               | The traffic assessment indicates that construction vehicles associated with the proposal would only add 2 per cent to traffic volumes during the PM peak and while the LOS would reduce substantially, this results from background traffic growth rather than the proposal. Notwithstanding, Chapter 6, Section 6.2 and Attachment E indicates the measures that would be adopted to ensure that impacts are reduced. |
|                                                    | Require details of the expected impact on the rail network, including worst case proposed periods of rail closure to construction works and the estimated impact on traffic flows from and to site.                                                                                                     | Chapter 6, Section 6.2.                                                                                                                                                                                                                                                                                                                                                                                                |
|                                                    | The environmental assessment makes frequent mention of the Inter-Terminal Access Road. Please note that this road is now referred to as Penrhyn Road and as such it is recommended that any reference to the road in the EA be amended to reflect this.                                                 | Comment noted.                                                                                                                                                                                                                                                                                                                                                                                                         |
| Department of Primary Industries (Fisheries)       | Adequate erosion and sediment control measures should be employed during construction.                                                                                                                                                                                                                  | Chapter 6, Section 6.3 and Section 6.4.                                                                                                                                                                                                                                                                                                                                                                                |
|                                                    | The proposed water treatment measures should seek to improve water quality related impacts to the adjacent waters of Botany Bay.                                                                                                                                                                        | Chapter 6, Section 6.3.                                                                                                                                                                                                                                                                                                                                                                                                |
| Department of Primary Industries (Office of Water) | <ul style="list-style-type: none"> <li>SPC is exempt from the need to obtain a controlled activity approval under the Water Management Act 2000.</li> <li>Any works within 40 m fall under the <i>Water Management Act 2000</i> and should still address the objects and principles of same.</li> </ul> | Comment noted.                                                                                                                                                                                                                                                                                                                                                                                                         |
|                                                    | Sediment and erosion control measures to be undertaken accordingly.                                                                                                                                                                                                                                     | Chapter 6, Section 6.3 and Section 6.4                                                                                                                                                                                                                                                                                                                                                                                 |
| NSW Fire and Rescue                                | No response received.                                                                                                                                                                                                                                                                                   | -                                                                                                                                                                                                                                                                                                                                                                                                                      |
| Sydney Airport Corporation                         | If the proposed development remains below Sydney Airport's Obstacle Limitation Surface (OLS), in terms of Airspace Protection, Sydney Airport will have no issues.                                                                                                                                      | Chapter 6, Section 6.5.                                                                                                                                                                                                                                                                                                                                                                                                |
|                                                    | If any part of the proposed development penetrates the OLS, a full assessment would need to be carried out.                                                                                                                                                                                             | Chapter 6, Section 6.5.                                                                                                                                                                                                                                                                                                                                                                                                |

| Agency                                 | Issues raised                                                                                                                                                                                                        | Location in environmental assessment |
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|                                        | Construction cranes may be required to operate at a height significantly higher than that of the proposed development and consequently, may not be approved under the Airports (Protection of Airspace) Regulations. | Chapter 6, Section 6.5.              |
|                                        | To minimise the potential for bird habitation and roosting, the proponent must ensure that non-bird attracting plant species are used in any landscaping design.                                                     | Chapter 6, Section 6.5.              |
|                                        | Any landscaping design must minimise the attractiveness for foraging birds.                                                                                                                                          | Chapter 6, Section 6.5.              |
|                                        | All trees to be planted shall not be capable of intruding into the OLS when mature.                                                                                                                                  | Chapter 6, Section 6.5.              |
|                                        | All proposed lighting, including floodlighting, must comply with CASA's Manual of Standards Part 139 - Aerodromes, Chapter 9, Section 9.21 "Lighting in the Vicinity of Aerodromes" (refer attached).                | Chapter 6, Section 6.5.              |
| <b>Civil Aviation Safety Authority</b> | No response received.                                                                                                                                                                                                | -                                    |

## 4.2 Community consultation

A consultation plan for this environmental assessment was developed and implemented with the aim of encouraging community involvement during preparation of the environmental assessment.

The overall objective of the community involvement process was to ensure clear, two-way communication by listening, recording and responding to issues as they arose.

Specific objectives were to:

- Disseminate information about the proposal and the approval pathway to key stakeholders and the surrounding community.
- Build a deeper stakeholder and neighbour knowledge base about any impacts of the proposal and how these are to be managed or mitigated.
- Ensure stakeholders and the local community have an opportunity to view the environmental assessment and provide comment through the submissions process.
- Provide timely and factual information that is easy to understand and relevant to the target audience, as well as correct any potential misinformation.
- Demonstrate how community and stakeholder feedback is being integrated and considered in the development of the environmental assessment.
- Demonstrate a willingness to answer any questions and address potential concerns directly with that stakeholder.

#### 4.2.1 Key stakeholders

Key stakeholders with an interest in the proposal were identified and offered the opportunity to provide feedback and raise issues during the environmental assessment process. Key stakeholder groups identified included residents in the vicinity of the proposal site, local community groups and special interest groups including the following:

- Local residents.
- Local businesses.
- Utility providers.
- Agencies.
- Neighbourhood Liaison Group.
- General community.

#### 4.2.2 Stakeholder engagement program

The stakeholder engagement program involved the following elements:

- Website updates and media releases.
- Information mail-outs.
- Frequently asked questions published on the website.
- Stakeholder presentations.
- Local advertisements.
- Public response mechanisms (e.g. phone, email and mailing address).

Each of these elements is discussed in more detail in Table 4-3.

**Table 4-3 Summary of consultation activities**

| Activity                                  | Purpose                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | Activity to date                                                                                                                                                     |
|-------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Website updates and media releases</b> | <p>A new community page was established to enable stakeholders and the community to find out more information about the proposal. The website advertised the proposals contact mechanisms for feedback and enquiries.</p> <p>Media releases were produced at major milestones within the proposal development to provide timely, factual information that is easy to understand and relevant to the target audience, as well as correct any potential misinformation.</p> | <p>A new community page was established on the Patricks website in February 2013. Monthly updates were provided throughout the life of the proposal development.</p> |

| Activity                          | Purpose                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | Activity to date                                                                                                                                                                                         |
|-----------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Information mail outs</b>      | <p>Patrick letter box dropped to all affected stakeholders within the immediate surrounds of the proposal site (approximately 1 kilometre). The letters provided an outline of the proposal progress including opportunities to provide feedback.</p> <p>A postcard/flyer was also produced and sent to all affected stakeholders within the immediate surrounds of the proposal site (approximately 1 kilometre) to advertise the environmental assessment display and encourage feedback.</p> | 1000 letters were letter box dropped to stakeholders in February 2013. In addition, 1000 postcard/flyers will be letter box dropped to stakeholders prior to exhibition of the environmental assessment. |
| <b>Frequently asked questions</b> | A set of frequently asked questions was developed and placed on the website to inform stakeholders and the community about the proposal and progress throughout the approvals process. These questions were reviewed and expanded throughout the life of the proposal development.                                                                                                                                                                                                              | The first set of frequently asked questions were prepared and published in February 2013.                                                                                                                |
| <b>Stakeholder presentations</b>  | Presentations were held at Neighbourhood Liaison Group meeting to present information on the proposal and to obtain feedback.                                                                                                                                                                                                                                                                                                                                                                   | The first presentation was held on Tuesday 26 February 2013 A total of 22 stakeholders attended the session. The second presentation will be held on 28 May 2013.                                        |
| <b>Local advertisements</b>       | Advertisements placed in local newspapers to advertise the public display of the environmental assessment.                                                                                                                                                                                                                                                                                                                                                                                      | Adverts will be placed in the Southern Courier to advertise the public display of the environmental assessment.                                                                                          |
| <b>Public display</b>             | Public display of the environmental assessment.                                                                                                                                                                                                                                                                                                                                                                                                                                                 | The environmental assessment will be placed on public display at the SPC Operations Centre in Port Botany and at Botany Bay City Council and Randwick City Council.                                      |
| <b>Public response mechanisms</b> | <p>A community information phone number, email and mailing address were established to allow the community to provide feedback.</p> <p>All public responses were recorded using an excel database. This database allowed the environmental assessment team to maintain an accurate record of contact with stakeholders, as well as to identify and track any issues or trends that arose.</p>                                                                                                   | <p>The dedicated phone number received no phone calls.</p> <p>The dedicated email address received one email.</p> <p>The dedicated mailing address received one letter.</p>                              |

#### 4.2.3 Issues raised by the community

Two issues were raised by the community during the stakeholder engagement program. These issues included a question regarding port capacity and a request to be included on the mailing list. The issue of port capacity is discussed in Section 2.4.



## 5. Environmental risk analysis

*This chapter provides an environmental risk analysis of the proposal. The analysis was undertaken to assess the potential environmental risks that may arise as a result of the proposal. The environmental risk analysis identifies and ranks potential environmental risks with the aim of identifying an appropriate level of assessment of the issue to be included in the environmental assessment.*

### 5.1 Methodology

The environmental risk analysis for the proposal involved:

- Understanding all elements of the proposal and the environmental context in which it would be undertaken. This allowed identification of environmental sensitivities and the risk of harm.
- Evaluating the likelihood of occurrence and consequence for each issue assuming the application of standard mitigation measures.
- Assigning a risk rating for each issue using Table 5-1.

The potential risks were given a rating between one and three with regard to the likelihood of it occurring (assuming that the proposal would be designed and implemented with standard environmental controls) in accordance with the following definitions:

1. **Low.** Unlikely to occur.
2. **Medium.** Potential to occur
3. **High.** Likely to occur.

Potential risks were given a rating between one and three with regard to the perceived consequence if left unmanaged, in accordance with the following definitions:

1. **Low.** Potential for insignificant to minor environmental change; localised implications; imperceptible or short term cumulative impacts; offsets readily available.
2. **Medium.** Potential for moderate adverse environmental change; regional implications; modest or medium term cumulative impacts; offsets available.
3. **High.** Potential for adverse environmental change; inter-regional implications; serious or long term cumulative impacts; offsets not readily available.

Based on the assessment of likelihood and consequence, a foreseeable impact/risk was assigned a risk ranking. This enabled higher ranking risks to be identified and an appropriate level of assessment to be undertaken in the environmental assessment. The matrix shown in Table 5-1 was used to identify potential environmental risks as either category A, B or C.

Table 5-1 Risk matrix

| Likelihood | Consequence |          |       |
|------------|-------------|----------|-------|
|            | 3 High      | 2 Medium | 1 Low |
| 3 High     | A           | A        | B     |
| 2 Medium   | A           | B        | C     |
| 1 Low      | B           | C        | C     |

**Category A issues.** May result in medium or high level impacts and require detailed analysis to identify appropriate measures to manage the possible effects.

**Category B issues.** May result in a low to medium level of impact however can normally be satisfactorily controlled using standard or identified management measures.

**Category C issues.** Low impact or other minor issues for which standard mitigation measures are usually effective in protecting the environment.

## 5.2 Results of the environmental risk analysis

Table 5-2 provides the results of the environmental risk analysis for the proposal. It includes:

- A summary of the potential issue and key impacts/risks (Columns 1 and 2).
- Likelihood of occurrence and consequence incorporating the application of standard or identified mitigation measures (Columns 3 and 4).
- The consequent risk rating (Column 5).
- A comment regarding the findings and basis of the risk analysis (Column 6).

Table 5-2 Environmental risk analysis results

| Issue/<br>Document<br>reference.                   | Potential impact                                                                                                                                                                     | Likelihood | Consequence | Residual risk<br>rating | Comment/response                                                                                                                                                                                                                                                                                                                                                  |
|----------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------|-------------|-------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Noise and<br/>vibration<br/>(Section 6.1)</b>   | Noise emissions from construction site activities may exceed noise limits and affect sensitive receptors.                                                                            | 1          | 2           | C                       | Noise and vibration emissions from the site are likely to be masked by the relatively high ambient noise levels (from port operations, other construction sites, industrial activities and road traffic noise). Noise modelling undertaken has indicated that the predicted noise during construction and operation would be below the applicable noise criteria. |
|                                                    | Noise emissions from operation could exceed noise limits and affect sensitive receptors.                                                                                             | 1          | 2           | C                       | The only change to operation of the terminal would be the use of new automated straddle carriers. The new automated straddle carriers would be up to 10dBA quieter than existing manual equipment which would lead to an overall reduction in operational noise from straddle operations.                                                                         |
|                                                    | Construction and operational vibration causing adverse impacts e.g. human discomfort, cracking of structures, etc. at adjacent receivers.                                            | 1          | 1           | C                       | Receivers are distant from the site and construction activities are not such to generate excessive vibration. No changes to existing operations at the terminal and therefore unlikely to be changes in vibration levels during operation.                                                                                                                        |
| <b>Traffic and<br/>transport<br/>(Section 6.2)</b> | Construction may result in an increase in heavy vehicle traffic along Foreshore Road and Botany Road reducing capacity for other vehicles during the peak hour and effecting safety. | 1          | 2           | C                       | Foreshore Road and Botany Road are high capacity, arterial roads carrying in excess of 2,000 vehicles in the peak hour. Heavy vehicles associated with construction would not be significant relative to these volumes and would be spread throughout the day and outside of peak hours so as to reduce possible impacts.                                         |

| Issue/<br>Document<br>reference.                                                   | Potential impact                                                                                                                                                       | Likelihood | Consequence | Residual risk<br>rating | Comment/response                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
|------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------|-------------|-------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                                                                                    | Worker parking and delivery of large materials during construction may result in terminal congestion and interfere with the efficiency of container traffic movements. | 1          | 1           | C                       | Parking for workers would be provided in discrete areas within the construction compounds, physically separated from terminal operational areas. Detailed construction planning and a traffic management plan would aim to ensure there is minimal interference with terminal operations.                                                                                                                                                                                                                                        |
|                                                                                    | Operational traffic increases may result in increased congestion of public roads.                                                                                      | 1          | 2           | C                       | There would be no additional operational traffic resulting from the proposal.                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| <b>Surface water and drainage and soils and groundwater (Sections 6.3 and 6.4)</b> | Exposed soils from demolition and/or construction works may be eroded, resulting in sediment laden runoff and associated impacts.                                      | 1          | 2           | C                       | Bulk earthworks would not be required. Minor excavations and pavement works may expose disturbed areas to erosion. Some stockpiling would be undertaken on impervious surfaces and there is potential for runoff to be conveyed to site drainage.                                                                                                                                                                                                                                                                                |
|                                                                                    | Uncovering of contaminated soils or ground water and exposure of construction workers.                                                                                 | 1          | 2           | C                       | The terminal is located on reclaimed land which has been used for heavy industrial activities for several decades. There is also known contamination of soils and groundwater in adjacent areas from past industrial usage. Prior to construction, a soil and groundwater assessment would be undertaken within the proposed excavation footprints. This would identify the appropriate waste classification and any specific occupational health and safety requirements that would need to be implemented during construction. |

| Issue/<br>Document<br>reference.                       | Potential impact                                                                                                                                                                          | Likelihood | Consequence | Residual risk<br>rating | Comment/response                                                                                                                                                                                                                                                                                                                                                             |
|--------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------|-------------|-------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                                                        | Chemical leaks and/or spills, from poorly maintained equipment and storage areas during construction and operation, due to poor operational practices may lead to contamination of soils. | 1          | 1           | C                       | All storage facilities and equipment would be designed, constructed and operated in accordance with relevant standards and manufacturer's guidelines including the OEMP for the site to be approved by the Minister for Planning and Infrastructure and SPC.                                                                                                                 |
|                                                        | Interception of contaminated soils and groundwater may result in the spreading of contamination to adjacent areas.                                                                        | 1          | 2           | C                       | If contaminated soils or groundwater are identified at site as a result of proposed intrusive investigations, measures would be put in place to ensure contaminated materials are disposed of at an appropriately licensed disposal facility. If acid sulfate soils are likely to be encountered, a management plan would be put in place to reduce potential impacts.       |
| <b>Design and<br/>visual amenity<br/>(Section 6.5)</b> | Key elements of the proposal may result in changes to the visibility of the site during construction and operation.                                                                       | 2          | 1           | C                       | The proposed administration and control building would be approximately 43 metres high and possibly visible from a number of public areas remote from the site. However, the new element would appear as part of the existing port and not as tall as other structures and therefore the visual change is not considered to be significant.                                  |
| <b>Hazards and<br/>risks<br/>(Section 6.6)</b>         | During construction, small quantities of hazardous materials may be stored and used onsite which may result in additional hazards and risks.                                              | 1          | 1           | C                       | There may be small quantities of fuels and other chemicals used during construction. These would be stored in bunded designated areas within the construction compounds and used in accordance with relevant legislation and guidelines. Appropriate safety equipment would also be available on site e.g. fire extinguishers, spill kits, Material Safety Data Sheets, etc. |

| Issue/<br>Document<br>reference.     | Potential impact                                                                                                                               | Likelihood | Consequence | Residual risk<br>rating | Comment/response                                                                                                                                                                                                                                                                                                                                                                                             |
|--------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------|------------|-------------|-------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                                      | The construction of the new fuel storage area with a storage capacity of 210,000 litres resulting in additional hazards and risks.             | 1          | 2           | C                       | The fuel tank would be constructed further away from the site boundary, resulting in reduced offsite risks. Based on the preliminary hazard assessment undertaken, the SEPP 33 threshold screening values for dangerous goods would not be exceeded as a result of the proposal.                                                                                                                             |
|                                      | During construction, the works may require changes to the storage of hazardous cargo which may change the hazard rating either on or off site. | 1          | 2           | C                       | There would be no changes to the location and storage of hazardous cargo as a result of the proposal.                                                                                                                                                                                                                                                                                                        |
|                                      | Operation of the proposal poses a hazard on or off site.                                                                                       | 1          | 1           | C                       | There would be no change to operation of the site including the location and storage of hazardous cargo. The use of automated straddle equipment has been proven to be safe and is presently used in Patrick's Brisbane terminal where a reduction in worker injuries has been recorded.                                                                                                                     |
| <b>Air quality<br/>(Section 6.7)</b> | Dust emissions from construction activities causing nuisance to sensitive receptors.                                                           | 1          | 1           | C                       | The site is located in a heavy industrial area which multiple sources of air pollution including shipping, road traffic, port operations, manufacturing operations and construction. The proposed works would not involve large amounts of earthworks and the receivers are generally remote from the site. Standard dust mitigation measures would be employed to reduce potential nuisance dust emissions. |
|                                      | Operational impacts as a result of the proposal.                                                                                               | 1          | 1           | C                       | The operation of the terminal would not change as a result of the proposal.                                                                                                                                                                                                                                                                                                                                  |

| Issue/<br>Document<br>reference.  | Potential impact                                                                                      | Likelihood | Consequence | Residual risk<br>rating | Comment/response                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
|-----------------------------------|-------------------------------------------------------------------------------------------------------|------------|-------------|-------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Ecology<br/>(Section 6.8)</b>  | Effects on threatened or vulnerable species through removal of vegetation and destruction of habitat. | 1          | 1           | C                       | <p>The terminal is a highly modified industrial site with no remnant vegetation and very limited potential to provide habitat for fauna. No works would involve direct or indirect effects on Penrhyn Estuary.</p> <p>The proposal would not result in any direct impacts on threatened flora or fauna species, threatened ecological communities or matters of national environmental significance as none occur within the terminal site. Furthermore, indirect impacts such as changes to air quality and noise would not present any adverse impact to flora or fauna in the vicinity of the site.</p> |
| <b>Heritage<br/>(Section 6.9)</b> | Encounter and disturb items of cultural heritage during construction and operation.                   | 1          | 1           | C                       | <p>The closest recorded heritage item to the site is the 'Port Botany Old Government Wharf Remains' which is listed on the Sydney Ports Corporation Section 170 State agency heritage register.</p> <p>The above listed heritage item is located more than 400 metres northwest of the site in Penrhyn Estuary and would not be impacted during construction or operation of the proposal. No other heritage items are known to occur within the site and none are likely to occur due to the highly disturbed state and industrial nature of the site.</p>                                                |

| Issue/<br>Document<br>reference.                      | Potential impact                                                                                                                                                                                 | Likelihood | Consequence | Residual risk<br>rating | Comment/response                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
|-------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------|-------------|-------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Waste<br/>(Section 6.10)</b>                       | The proposal would generate waste particularly from demolition activities which if not managed appropriately could result in unlawful disposal of waste and/or unnecessary disposal to landfill. | 1          | 1           | C                       | Both demolition and building removal work would be undertaken for the proposal. Some obsolete facilities such as site sheds and other temporary structures would be loaded onto trucks and removed/ reused elsewhere. Other buildings and components would be dismantled and recycled where possible under a waste management plan as part of the CEMP. Where materials are unable to be reused or recycled, they would be classified and disposed of at an appropriately licensed facility. |
| <b>Services and<br/>utilities<br/>(Section 2.3.9)</b> | Construction works may have an unexpected impact or cause disruption to utilities and services.                                                                                                  | 2          | 1           | C                       | The works would involve a range of works to onsite utilities and services including potable water, stormwater and electricity. All works on utilities would be undertaken by licensed tradesman and utility searches (including Dial Before You Dig) would be undertaken prior to any excavation or utility work.                                                                                                                                                                            |
| <b>Sustainability<br/>(Section 2.2.4)</b>             | Energy/ utility demands may increase as a result of the proposal.                                                                                                                                | 1          | 1           | C                       | A number of sustainability measures would be incorporated into the design of the proposal including: designing all buildings with a Green Star Rating of 4.0; applying power factor correction to the electrical power systems to increase energy efficiency and to reduce electricity costs; installing more energy efficient, lower intensity lighting in the terminal.                                                                                                                    |
| <b>Land use<br/>(Section 2.2)</b>                     | Changes to land use of the site or surrounds.                                                                                                                                                    | 1          | 1           | C                       | The proposal would be wholly located within the existing terminal area and proposed changes are consistent with the existing land use. There would be no land use impacts on adjoining lands as a result of the proposal.                                                                                                                                                                                                                                                                    |

| Issue/<br>Document<br>reference.                 | Potential impact                                                                                                                                           | Likelihood | Consequence | Residual risk<br>rating | Comment/response                                                                                                                                                                                                                                                                 |
|--------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------|------------|-------------|-------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Social amenity<br/>(Section 6.11)</b>         | Potential amenity related impacts on nearby sensitive receivers as a result of noise, dust and traffic (or other issues) during construction or operation. | 1          | 1           | C                       | Potential impacts to the community are considered to be low due to the distance of sensitive receivers from the site and the nature of the proposed works. Standard mitigation measures would be implemented as part of the CEMP and OEMP to minimise potential amenity impacts. |
| <b>Cumulative<br/>impacts<br/>(Section 6.12)</b> | Increased noise, dust, traffic as a result of construction occurring at the same time as other construction works within the vicinity of the terminal.     | 1          | 2           | C                       | Cumulative impacts during construction are not considered to be significant with the implementation of standard environmental mitigation measures.                                                                                                                               |

### 5.3 Conclusion

The results of the environmental risk analysis indicate that the proposal would not result in significant adverse environmental risks during construction or operation. Further assessment of the above potential environmental risks during construction and operation of the proposal along with the mitigation approaches is provided in Chapter 6.

## 6. Environmental impact assessment

*This chapter examines impacts on matters including noise, traffic, surface water and drainage, soils and groundwater, design and visual amenity, hazards and risks, air quality, ecology, heritage, waste generation and social amenity. Mitigation measures are identified to reduce potential impacts and a cumulative impact assessment is made in relation to the existing environment and other proposed developments in the same locality.*

### 6.1 Noise and vibration

This section presents a summary of the *Section 75W Modification - Port Botany Container Terminal Project (DA-453-12-2002-i MOD 7) Noise Impact Assessment (2013)* undertaken by GHD. It includes a summary of the potential noise and vibration impacts associated with the construction and operation of the proposal. Mitigation measures have been identified to reduce potential noise and vibration impacts, as required. A copy of the noise and vibration assessment is included as Attachment D.

#### 6.1.1 Methodology

The noise and vibration impact assessment included a quantitative assessment of construction noise and vibration and operational noise. The assessment was prepared in accordance with the following policies and guidelines:

- *Environmental Protection License (EPL) 6962.*
- *Industrial Noise Policy (INP) (EPA, 2000).*
- *Interim Construction Noise Guideline (ICNG) (DECC, 2009).*
- *Assessing Vibration: A technical guideline (DEC, 2006).*
- *Road Noise Policy (RNP) (DECCW, 2011).*

The assessment approach involved:

- Identification of sensitive receivers and background noise levels.
- Establishment of noise assessment criteria.
- Predictions of construction and operational noise.
- Assessment of construction and operational noise against the applicable criteria.
- Review of the existing consent conditions and assessment if criteria would be achievable.
- Provision of mitigation measures, where required.

#### 6.1.2 Existing environment

##### **Sensitive receivers**

Land use surrounding the site consists of industrial, commercial, residential, and recreational land uses and educational facilities.

Sensitive receivers which have the potential to be impacted by the proposed works include:

- Botany residential area approximately 750 metres north of the site.
- Matraville residential area approximately 700 metres east of the site.
- Phillip Bay residential area approximately 1,900 metres southeast of the site.

- Banksmeadow Public School approximately 1,300 metres north of the site.
- Matraville Public School approximately 1,500 metres northeast of the site.
- Sir Joseph Banks Park approximately 1,000 metres north of the site.
- Botany Golf Course approximately 350 metres north of the site.
- Purcell Park approximately 700 metres east of the site.
- Women's Athletic Field approximately 1,750 metres southeast of the site.
- Yarra Bay Bicentennial Park approximately 1300 metres southeast of the site.
- Yarra Recreation Reserve approximately 1,600 metres southeast of the site.
- Botany Cemetery approximately 1,000 metres southeast of the site.

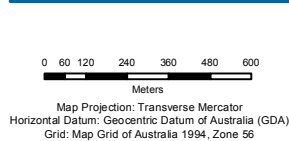
These sensitive receivers are shown on Figure 6-1.

### **Background noise levels**

The background noise levels at the site are typical of an industrial area with noise from traffic, industry and air traffic. Background noise levels from September 2012 were obtained from the *Patrick Stevedores Port Botany Container Terminal - Environmental Noise Compliance report* (PB 2012). The results from the monitoring are presented in Table 6-1 and the monitoring locations are shown in Figure 6-1.

**Table 6-1 Summary of measured noise levels (September 2012)**

| Noise monitoring locations      | Rating Background Level dB(A) |               |              | L <sub>Aeq</sub> (period) dB(A) |               |              |
|---------------------------------|-------------------------------|---------------|--------------|---------------------------------|---------------|--------------|
|                                 | Day                           | Evening       | Night        | Day                             | Evening       | Night        |
|                                 | 7 am to 6 pm                  | 6 pm to 10 pm | 7 am to 6 pm | 7 am to 6 pm                    | 6 pm to 10 pm | 7 am to 6 pm |
| 1424 Botany Road, Banksmeadow   | 51                            | 50            | 45           | 60                              | 57            | 56           |
| 80 Australia Avenue, Matraville | 47                            | 45            | 45           | 58                              | 53            | 52           |
| Military Road, Matraville       | 41                            | 43            | 41           | 53                              | 50            | 49           |



#### LEGEND

- Noise sensitive receivers
- Noise monitoring locations
- Proposal site (Patrick Port Botany Container Terminal)
- The Knuckle (Patrick)
- SICTL



Patrick Stevedores Operations No 2  
Section 75W Modification  
- Port Botany Container Terminal Project  
(DA-453-12-2002-i MOD 7)

Noise monitoring locations  
and sensitive receivers

|            |             |
|------------|-------------|
| Job Number | 21-21961    |
| Revision   | 0           |
| Date       | 19 Mar 2013 |

Figure 6-1

### 6.1.3 Noise criteria

#### Construction noise management levels

Construction noise at the site should comply with the existing operational noise limits specified in EPL 6962 and should also consider the ICNG which provides guidance for assessment of construction noise. The existing operational noise limits for the terminal are provided in Table 6-2. The ICNG recommended noise management levels during construction for residential receivers are:

- The daytime construction noise management level ( $L_{Aeq(15\text{ min})}$ ) should not exceed the background noise level ( $L_{A90}$ ) by more than 10 decibels (dB(A)). This management level is during the ICNG recommended standard construction hours of Monday to Friday 7 am to 6 pm, and Saturday 8 am to 1 pm, with no works on Sundays or public holidays.
- The highly noise affected level of 75 dB(A). This noise level represents the point above which there may be strong community reaction to noise.
- For works outside standard construction hours, the noise level should not exceed the background noise level by more than 5 dB(A).

The ICNG recommends the following noise management levels  $L_{Aeq(15\text{ min})}$  for other sensitive receivers and areas:

- Classrooms at schools and other educational institutions internal 45 dB(A)
- Hospital wards and operating theatres internal 45 dB(A)
- Place of worship internal 45 dB(A)
- Active recreation areas (such as parks) external 65 dB(A)
- Passive recreation areas external 60 dB(A)
- Industrial premises external 75 dB(A)
- Offices, retail outlets external 70 dB(A)

The ICNG noise management levels have been adopted where the levels are more stringent than the existing operational noise limits and for sensitive land uses other than residential receivers. The established noise management levels that apply to surrounding receivers during construction are presented in Table 6-2.

**Table 6-2 Construction noise criteria during standard hours dB(A)**

| Location                      | EPL 6962 noise limits   |                     | ICNG recommended noise management levels | Construction noise criteria |                     |
|-------------------------------|-------------------------|---------------------|------------------------------------------|-----------------------------|---------------------|
|                               | $L_{Aeq(15\text{min})}$ | $L_{A(\text{max})}$ | $L_{Aeq(15\text{min})}$                  | $L_{Aeq(15\text{min})}$     | $L_{A(\text{max})}$ |
| Botany residential area       | 55                      | 55                  | 61 (56) <sup>4</sup>                     | 55                          | 55                  |
| Matraville residential area   | 55                      | 55                  | 57 (53) <sup>4</sup>                     | 55 (53) <sup>4</sup>        | 55                  |
| Port Phillip residential area | 55                      | 55                  | 51 <sup>1</sup> (46) <sup>4</sup>        | 51 (46) <sup>4</sup>        | 55                  |
| Banksmeadow Public School     | - <sup>3</sup>          | -                   | 55 <sup>2</sup> (external)               | 55                          | -                   |
| Matraville Public School      | -                       | -                   | 55 <sup>2</sup> (external)               | 55                          | -                   |

| Location                                         | EPL 6962 noise limits    |                      | ICNG recommended noise management levels | Construction noise criteria |                      |
|--------------------------------------------------|--------------------------|----------------------|------------------------------------------|-----------------------------|----------------------|
|                                                  | L <sub>Aeq</sub> (15min) | L <sub>A</sub> (max) | L <sub>Aeq</sub> (15min)                 | L <sub>Aeq</sub> (15min)    | L <sub>A</sub> (max) |
| Sir Joseph Banks Park (passive recreation)       | -                        | -                    | 60                                       | 60                          | -                    |
| Botany Golf Course (active recreation)           | -                        | -                    | 65                                       | 65                          | -                    |
| Purcell Park (passive recreation)                | -                        | -                    | 60                                       | 60                          | -                    |
| Womens Athletic Field (active recreation)        | -                        | -                    | 65                                       | 65                          | -                    |
| Yarra Bay Bicentennial Park (passive recreation) | -                        | -                    | 60                                       | 60                          | -                    |
| Yarra Recreation Reserve (active recreation)     | -                        | -                    | 65                                       | 65                          | -                    |
| Botany Cemetery (passive recreation)             | -                        | -                    | 60                                       | 60                          | -                    |

**Notes**

1. Based on the Military Road monitoring location.
2. Educational facility noise management levels for classrooms are based on internal noise levels therefore the external noise management level has been estimated based on a 10 dB reduction in external to internal noise levels.
3. The ICNG noise management levels have been adopted for non-residential sensitive receivers, as none are specified by the EPL (hence, no L<sub>A</sub>(max)).
4. Between 1 pm and 2 pm on Saturday.

The NSW Road Noise Policy (RNP) (DECCW 2011) traffic noise target levels for residential receivers in the vicinity of existing roads are presented in Table 6-3. Based on the RNP, if road traffic noise increases as a result of development and is within 2 dB(A) of current levels then the objectives on the RNP are met.

**Table 6-3 Traffic noise target levels, L<sub>Aeq</sub>(period), dB(A)**

| Type of development                                                                                     | Day 7 am – 10 pm          | Night 10 pm – 7 am       |
|---------------------------------------------------------------------------------------------------------|---------------------------|--------------------------|
| Existing residence affected by additional traffic on arterial roads generated by land use developments. | 60 L <sub>eq</sub> (15hr) | 55 L <sub>eq</sub> (9hr) |
| Existing residence affected by additional traffic on local roads generated by land use developments.    | 55 L <sub>eq</sub> (1hr)  | 50 L <sub>eq</sub> (1hr) |

### Operational noise management levels

Based on the DGRs, operational noise should comply with the existing operational noise limits which are defined in Table 6-2.

The operational noise limits specified by EPL 6962 are provided in Table 6-4.

**Table 6-4 Condition L6.1 –Noise limits, dB(A)**

| Location                                    | Day                      |                      | Evening                  |                      | Night                    |                      |
|---------------------------------------------|--------------------------|----------------------|--------------------------|----------------------|--------------------------|----------------------|
|                                             | L <sub>Aeq</sub> (15min) | L <sub>A</sub> (max) | L <sub>Aeq</sub> (15min) | L <sub>A</sub> (max) | L <sub>Aeq</sub> (15min) | L <sub>A</sub> (max) |
| Residential premises<br>(from January 2009) | 55                       | 55                   | 43                       | 55                   | 43                       | 55                   |

*Note: Should the EPA consider that a lower noise level can be achieved, the EPA will further reduce the night-time noise limit to as close as possible to 40 dB(A).*

#### 6.1.4 Construction impacts

##### **Construction**

The typical construction equipment likely to generate noise during construction and associated noise levels are shown in Table 6-5. The noise levels were obtained from *AS 2436 – 2010 - Guide to noise control on construction, maintenance and demolition sites*.

**Table 6-5 Construction equipment sound power levels, dB(A)**

| Plant and equipment    | Sound power level (typical) |
|------------------------|-----------------------------|
| Backhoe                | 104                         |
| Truck (average)        | 107                         |
| Concrete truck         | 108                         |
| Concrete truck         | 103                         |
| Mobile crane           | 104                         |
| Roller                 | 108                         |
| Grader                 | 110                         |
| Dozer                  | 108                         |
| Bobcat                 | 100                         |
| Excavator              | 107                         |
| Front end loader       | 113                         |
| Water cart             | 107                         |
| Piling rig (vibratory) | 125                         |

The construction noise modelling assumed a ‘worst case’ sound power level with all equipment operating continuously on the site. It is highly unlikely that all construction equipment would be operating at their maximum sound power levels at any one time and certain types of construction machinery would be present at the site for only brief periods during construction. Therefore, noise predictions are considered to be conservative.

Based on the equipment sound power levels, noise levels were predicted at varying distances from the site using *ISO 9613-2, Acoustics – Attenuation of sound during propagation outdoors*. Propagation calculations took into account sound intensity losses due to hemispherical spreading, atmospheric absorption, ground absorption (0.5) and adverse meteorological conditions (moderate temperature inversion). Shielding objects, frequency content and terrain

were ignored in the calculations. The predictions considered the construction equipment used for each construction task as identified in Appendix A of Attachment D.

### **Traffic noise**

Traffic noise predictions were based on the predicted construction traffic generation from the *Traffic Impact Assessment Report* prepared for the proposal, which is provided as Attachment D and summarised in Section 6.2. Traffic noise predictions were calculated using the *Calculation of Road Traffic Noise CoRTN* (UK Department of Transport) prediction method. Predictions were based on the morning and evening peak periods.

### **Construction works**

A summary of the predicted noise levels for each month of construction at the potentially impacted sensitive receivers and land uses are shown in Table 6-6.

As shown in Table 6-6, construction activities during the recommended standard construction hours and out of hours between 1 pm and 2 pm on Saturday are predicted to comply with the existing EPL noise limits and the ICNG construction noise management levels at all residential and sensitive receivers.

Recent compliance monitoring undertaken in September 2012 (PB 2012) concluded that the current operations at the terminal were not audible at the monitoring locations, therefore, the effect of construction noise in addition to existing terminal operations is not expected to be significant or exceed the noise management levels.

### **Traffic noise**

The predicted increases in traffic noise emissions along the preferred traffic routes during construction are shown in Table 6-7. As shown in Table 6-7, the additional construction traffic from the proposal is predicted to increase road traffic noise emission levels by a maximum of 0.1 dB(A) which is considerably less than the 2 dB(A) criteria stipulated by the RNP. Therefore, the construction road traffic noise levels are predicted to comply with the noise criteria at sensitive receivers along the construction traffic routes.

### **Vibration**

Energy from equipment is transmitted into the ground and transformed into vibration, which attenuates with distance. The magnitude and attenuation of ground vibration is dependent on a number of factors including:

- The efficiency of the energy transfer mechanism of the equipment (i.e. impulsive; reciprocating, rolling or rotating equipment).
- The frequency content.
- The impact medium stiffness.
- The type of wave (surface or body).
- The ground type and topography.

Due to the above factors, there is inherent variability in ground vibration predictions without site-specific measurement data. The *Construction Noise Strategy (Rail Projects)* (TCA, 2011) provides typical equipment safe working distances for cosmetic damage and human comfort.

For construction activities, the safe working distances for equipment that has the potential to generate vibration is shown in Table 6-8.

Construction works would not be sufficient to generate vibration impacts at any sensitive receiver outside of the proposal site as all sensitive receivers are well over 100 metres from the site. Therefore, construction vibration impacts are not expected to be significant.

#### 6.1.5 Operational impacts

Existing noise sources on the site include:

- Trucks.
- Ship unloading operations.
- Locomotives operations.
- Forklifts.
- Straddle carriers.

The existing operations would not change except for the replacement of the 37 existing manually operated straddle carriers with 44 automated straddle carriers.

The automated straddle carriers would be fitted with noise reduction kits with sound attenuation material on the side and top plates of the power unit cover and acoustic louvers on the outlet ventilation system. The location in which the straddle carriers would operate would not significantly change from existing operations. A comparison of the noise source data for the existing manually operated straddle carriers and the proposed automated straddle carriers is provided in Table 6-9.

The 37 existing manually operated straddle carriers have a total noise emission sound power level of 127 dB(A). Based on the noise predictions, the total noise emission sound power level of the proposed 44 automated straddle carriers would be 117 dB(A) (at maximum revolutions). This would be 10 dB(A) lower than the 37 existing manually operated straddle carriers.

The automated straddle carriers are also manufactured without reversing alarms (which is currently a requirement for the manual straddle carriers). This would result in further reductions in noise and nuisance associated with the equipment.

Therefore, as no other operational changes are anticipated, operational noise levels are anticipated to decrease as a result of the proposal.

#### **EPL requirements**

Since the compliance noise monitoring of existing operations (refer relevant section where this information is included) indicates compliance with the EPL noise limits and the proposed modifications to the site are anticipated to result in an overall reduction of operational noise emissions (by 10 dB(A)), then the proposal is expected to comply with the existing EPL noise limits during operation.

Table 6-6 Predicted noise levels at the nearest surrounding receivers (dB(A))

| Location                      | Construction noise criteria, $L_{Aeq}(15min)$ | Month |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |
|-------------------------------|-----------------------------------------------|-------|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|
|                               |                                               | 1     | 2  | 3  | 4  | 5  | 6  | 7  | 8  | 9  | 10 | 11 | 12 | 13 | 14 | 15 | 16 |
| Botany residential area       | 55                                            | 43    | 51 | 53 | 53 | 53 | 53 | 53 | 53 | 53 | 53 | 51 | 51 | 51 | 51 | 51 | 32 |
| Matrville residential area    | 55 (53) <sup>1</sup>                          | 42    | 50 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 50 | 50 | 50 | 50 | 50 | 31 |
| Port Phillip residential area | 51 (46) <sup>1</sup>                          | 33    | 41 | 42 | 42 | 42 | 43 | 42 | 42 | 42 | 42 | 41 | 41 | 40 | 40 | 40 | 21 |
| Banksmeadow Public School     | 55                                            | 39    | 47 | 48 | 48 | 49 | 49 | 48 | 48 | 48 | 48 | 47 | 47 | 47 | 47 | 47 | 28 |
| Matrville Public School       | 55                                            | 36    | 44 | 46 | 46 | 46 | 46 | 46 | 46 | 46 | 45 | 44 | 44 | 44 | 44 | 44 | 25 |
| Sir Joseph Banks Park         | 60                                            | 42    | 50 | 51 | 51 | 52 | 52 | 51 | 51 | 51 | 51 | 50 | 50 | 50 | 50 | 50 | 31 |
| Botany Golf Course            | 65                                            | 49    | 57 | 58 | 58 | 59 | 59 | 59 | 59 | 59 | 58 | 57 | 57 | 57 | 57 | 57 | 38 |
| Purcell Park                  | 60                                            | 42    | 51 | 52 | 52 | 52 | 53 | 52 | 52 | 52 | 52 | 51 | 51 | 50 | 50 | 50 | 31 |
| Womens Athletic Field         | 65                                            | 33    | 41 | 42 | 42 | 43 | 43 | 43 | 43 | 43 | 42 | 41 | 41 | 41 | 41 | 41 | 22 |
| Yarra Bay Bicentennial Park   | 60                                            | 37    | 45 | 46 | 46 | 47 | 47 | 46 | 46 | 46 | 46 | 45 | 45 | 45 | 45 | 45 | 26 |
| Yarra Recreation Reserve      | 65                                            | 34    | 42 | 43 | 43 | 44 | 44 | 43 | 43 | 43 | 43 | 42 | 42 | 42 | 42 | 42 | 23 |
| Botany Cemetery               | 60                                            | 39    | 47 | 49 | 49 | 49 | 49 | 49 | 49 | 49 | 49 | 47 | 47 | 47 | 47 | 47 | 28 |

Note: 1. Between 1 pm and 2 pm on Saturday.

Table 6-7 Predicted construction traffic noise levels (AM/PM peak)

| Road                                  | Existing traffic |                  | Traffic generation |     | Noise emission level increase dB(A) |
|---------------------------------------|------------------|------------------|--------------------|-----|-------------------------------------|
|                                       | Volume           | hv% <sup>1</sup> | Volume             | hv% |                                     |
| Foreshore Road (north of Botany Road) | 2,107            | 15%              | 34                 | 29  | 0.1                                 |
| Beauchamp Road (north of Botany Road) | 1,640            | 6%               | 8                  | 29  | 0.1                                 |
| Botany Road (east of Penrhyn Road)    | 2,839            | 15%              | 8                  | 29  | <0.1                                |

Note: 1. Heavy vehicle percentage.

Table 6-8 Recommended safe working distances for vibration intensive plant

| Plant item             | Description                       | Safe work distance (m) |               |
|------------------------|-----------------------------------|------------------------|---------------|
|                        |                                   | Building damage        | Human comfort |
| Large vibratory roller | 300 kN (>18 tonne)                | 25                     | 100           |
| Large hydraulic hammer | 1600 kg (8 to 34 tonne excavator) | 22                     | 73            |

Table 6-9 Straddle carrier noise emission comparison

| Straddle                                                                  | Noise Sound Power Level, dB(A) |                              |                                        | Reversing alarms   | Data source                                                                                                                             |
|---------------------------------------------------------------------------|--------------------------------|------------------------------|----------------------------------------|--------------------|-----------------------------------------------------------------------------------------------------------------------------------------|
|                                                                           | Idling, standing               | Maximum revolution, standing | Maximum revolutions, hoisting 40t load |                    |                                                                                                                                         |
| Existing manual straddle                                                  | 99.5                           | 112                          | -                                      | Reversing alarm    | Parsons Brinkerhoff Report, <i>Patrick Stevedores Port Botany Container Terminal – Environmental Noise Compliance</i> (September 2012). |
| Automated straddle (AutoStrad (SC1111)) with noise reduction kit (CH7043) | 93                             | 101                          | 104                                    | No reversing alarm | Kalmar Straddle Carrier Noise ESC W SC1111 Rev A.                                                                                       |

#### 6.1.6 Mitigation measures

Although noise emissions during construction and operation are predicted to be below the noise management levels at nearest sensitive receivers, reasonable measures would be implemented to minimise noise impacts. Construction noise would be managed through the preparation and implementation of a Construction Noise Management Plan as part of the CEMP and Operational Noise Management Plan as part of the OEMP, and compliance noise monitoring would continue to be undertaken as per the existing conditions of consent.

#### 6.1.7 Conclusion

During construction, noise emissions are predicted to comply with the existing EPL noise limits and the ICNG construction noise management levels at all residential and other sensitive receivers during standard construction hours. Traffic noise levels are also predicted to comply with the RNP noise criteria at sensitive receivers along the construction traffic routes. Construction vibration is not predicted to impact sensitive receivers as none are located within 100 metres of the site.

During operation, noise emissions are anticipated to decrease as a result of the replacement of manual straddle carriers with automated straddle carriers and would therefore continue to be below the existing EPL operational noise limits.

### 6.2 Traffic

This section presents a summary of the *Section 75W Modification - Port Botany Container Terminal Project (DA-453-12-2002-i MOD 7) Traffic Impact Assessment* (2013) undertaken by GHD. It includes a summary of the potential traffic (road and rail) impacts associated with the construction and operation of the proposal. Mitigation measures have been identified to reduce potential traffic impacts, as required. A copy of the traffic assessment is included as Attachment E.

#### 6.2.1 Methodology

The traffic assessment was prepared in accordance with the RMS *Guide to Traffic Generating Developments* procedure and included the following approach:

- Review of existing road features, adjacent developments, traffic volumes, and pedestrian facilities.
- Review of additional traffic generated from the proposal and proposed access/egress arrangements during morning and evening peaks during construction and operation of the proposal.
- Assessment of the performance of the existing intersections (queues, delays, level of service, safety) during morning and evening peaks during construction and operation of the proposal.
- Provision of mitigation measures to manage traffic during construction and operation, where required.

An assessment of impacts to rail operations during construction and operation of the proposal was also undertaken.

#### **Traffic volumes**

Existing key intersection turning movement counts for morning (AM) and evening (PM) peak periods were obtained from the *Traffic Management Plan* (Parking and Traffic Consultants,

2012) prepared as part of the *Patrick Terminals Division Port Botany Terminal Operational Environmental Plan* (Patrick, 2012) for the following intersections:

- Penrhyn Road / Patrick Terminal Entry (roundabout).
- Penrhyn Road / Foreshore Road (signalised).

Additional morning and evening peak intersection traffic surveys were undertaken on Tuesday the 4 December 2012 between 7.00–10.00 AM and 3:30–6:30 PM, at the following intersections:

- Botany Road / Beauchamp Road (signalised).
- Botany Road / Bunnerong Road (priority controlled).

### **Traffic growth**

Average annual daily traffic (AADT) data was obtained from RMS between 2005 and 2008 for Foreshore Road and indicated an increase by approximately 1.5 per cent annually. This growth rate was incorporated into the 2012 background traffic volumes to provide an estimate for 2014 (year of construction).

### **Intersection performance**

The performance of the existing road network is largely dependent on the operating performance of key intersections, which are critical capacity control points on the road network. SIDRA intersection modelling software was used to assess the proposed peak hour operating performance of intersections on the surrounding road network. The criteria for evaluating the operational performance of intersections was based on a qualitative measure (i.e. level of service) obtained from the *RMS Guide to Traffic Generating Developments (2002)*. The performance criteria is shown in Table 6-10.

**Table 6-10 Performance criteria at intersections**

| Level of service (LoS) | Average delay per vehicle (secs/vehicle) | Traffic signals, roundabout                                    | Give-way and stop signs                          |
|------------------------|------------------------------------------|----------------------------------------------------------------|--------------------------------------------------|
| A                      | Less than 14.                            | Good Operation.                                                | Good Operation.                                  |
| B                      | 15 to 28.                                | Good with acceptable delays and spare capacity.                | Acceptable delays and spare capacity.            |
| C                      | 29 to 42.                                | Satisfactory.                                                  | Satisfactory but accident study required.        |
| D                      | 43 to 56.                                | Operating near capacity.                                       | Near capacity and other accident study required. |
| E                      | 57 to 70.                                | At capacity; at signals incidents will cause excessive delays. | At capacity and requires other control mode.     |
| F                      | Greater than 70.                         | Roundabouts require other control mode.                        |                                                  |

Notes:

1. The average delay for priority-controlled intersections is selected from the movement on the approach with the highest average delay.
2. The level of service for priority-controlled intersections is based on the highest average delay per vehicle for the most critical movement.
3. The degree of saturation is defined as the ratio of the arrival flow (demand) to the capacity of each approach.

## 6.2.2 Existing environment

### *Local road network*

The local road network in the vicinity of the site is shown on Figure 6-2. Penrhyn Road provides road access to the site off Foreshore Road. Penrhyn Road also provides access to the car park and temporary administration building in the southeast of the site.

RMS has developed a set of road hierarchy classifications, indicating typical nominal volumes expressed in terms of AADT serviced by various classes of roads. These are identified in Attachment E and have been used to classify the road network below.

### **Penrhyn Road**

Penrhyn Road is classified as a collector road which provides direct access to the site. It forms the southern approach to the signalised intersection of Foreshore Road and Botany Roads (a four arm intersection controlled by traffic signals). Penrhyn Road splits at a three arm roundabout (the Penrhyn Road roundabout) approximately 150 metres south of Foreshore Road and continues along both the northern and eastern sides of the site (refer to Figure 6-2). Penrhyn Road, adjacent to the site, is sealed with a posted speed limit of 40 kilometres per hour and generally consists of one lane of traffic in both directions.

Construction of a new access ramp ("Ramp D") to the site from the Penrhyn Road roundabout was approved as part of the Port Botany Expansion Project. Ramp D will provide adequate room (via the construction of a "fillet") for trucks to make a left turn onto Ramp D from Penrhyn Road without needing to circle the roundabout. Construction of Ramp D is due to commence in May 2013 and is due for completion in early 2014. The Ramp D footprint is shown on the proposal plans in Attachment B.

### **Foreshore Road**

Foreshore Road is a state road and is classified as an arterial road and provides B-double route access to the site from General Holmes Drive. In the vicinity of Penrhyn Road, the carriageway of Foreshore Road is divided by a grassed median with two lanes in each direction, and has a posted speed limit of 80 kilometres per hour.

### **Botany Road**

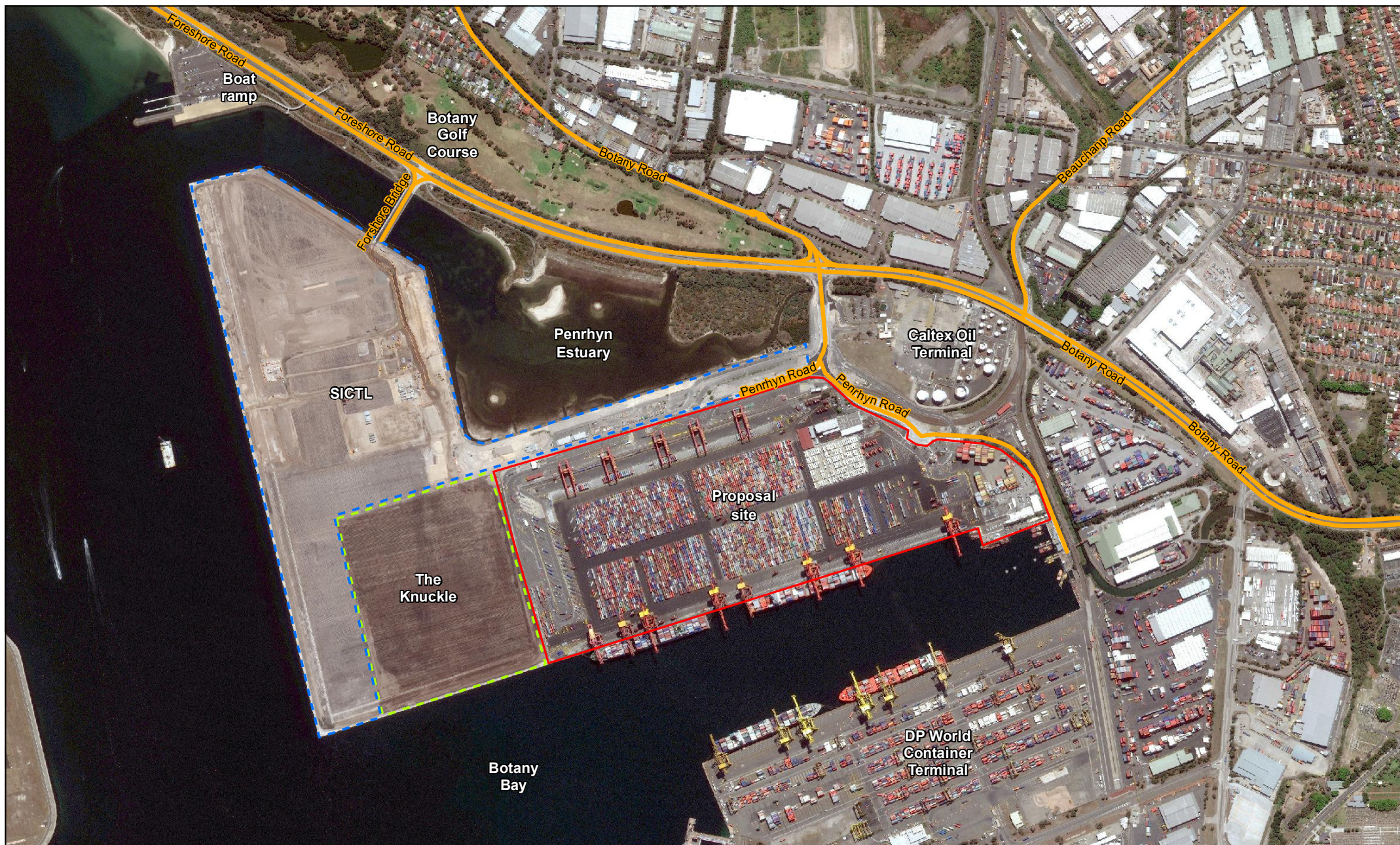
Botany Road is a State road and is classified as an arterial road providing access to Beauchamp Road, Bunnerong Road and Wentworth Road. To the east of Penrhyn Road, the carriageway of Botany Road is divided by a median with two lanes in each direction and a posted speed limit of 70 kilometres per hour.

To the north of the intersection with Penrhyn Road, Botany Road has a posted speed limit of 50 kilometres per hour and generally provides one lane in each direction.

### *Recent road improvements*

Several improvements to the surrounding road network have been implemented to facilitate traffic movement and to manage the pressure of container traffic on the local road network. These improvements include:

- Grade separation of the Penrhyn Road/Botany Road/Foreshore Road roundabout.
- Footbridge over Foreshore Road connected to Sir Joseph Banks Park.
- Right turn and road access bridge to SICTL terminal from Foreshore Road.
- Truck marshalling area on Foreshore Road.



1:8,000 (at A3)  
0 40 80 160 240 320 400  
Metres

Map Projection: Transverse Mercator  
Horizontal Datum: Geocentric Datum of Australia (GDA)  
Grid: Map Grid of Australia 1994, Zone 56



#### LEGEND

Key roads for traffic analysis

Proposal site (Patrick Port Botany Container Terminal)

The Knuckle (Patrick)  
SICTL



Patrick Stevedores Operations No 2  
Section 75W Modification  
- Port Botany Container Terminal Project  
(DA-453-12-2002-i MOD 7)

Job Number 21-21961  
Revision 0  
Date 22 Apr 2013

Local road network

Figure 6-2

Level 15, 133 Castlereagh Street Sydney NSW 2000 T 61 2 9239 7100 F 61 2 9239 7199 E sydmail@ghd.com.au W www.ghd.com.au

G:\2121961\GIS\Mapa\MXD\21\_21961\_2011\_Traffic\_Fig1\_SiteLocation.mxd  
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Data Source: NSW Department of Lands; Cadastre - Jan 2011; Geoscience Australia; 250k Data - Jan 2011; Imagery: Google EarthPro Extracted Feb 2013; Created by: sdwoodger

### Existing road traffic volumes

Existing daily traffic volumes during morning and evening peak periods are summarised in Table 6-11. Full survey details are provided in Appendix B of Attachment E.

**Table 6-11 Summary of traffic volumes (two-way traffic flows), 2012**

| Location                             | Morning peak period (vph)* | Evening peak period (vph) |
|--------------------------------------|----------------------------|---------------------------|
| Penrhyn Road south of Foreshore Road | 229                        | 179                       |
| Foreshore Road west of Penrhyn Road  | 2642                       | 2107                      |
| Botany Road north of Foreshore Road  | 1052                       | 838                       |
| Botany Road east of Penrhyn Road     | 2839                       | 2354                      |
| Penrhyn Road adjacent to site        | 109                        | 40                        |
| Beauchamp Road north of Botany Road  | 1640                       | 1587                      |
| Bunnerong Road north of Botany Road  | 660                        | 821                       |
| Bunnerong Road south of Botany Road  | 981                        | 1,111                     |

Notes: \*Vehicles per hour

Heavy vehicle percentages in 2012 are shown in Table 6-12.

**Table 6-12 Heavy vehicles, 2012**

| Location                             | Vehicles per hour (vph) | Heavy commercial vehicles (vph) | Heavy commercial vehicles % |
|--------------------------------------|-------------------------|---------------------------------|-----------------------------|
| Penrhyn Road south of Foreshore Road | 229                     | 125                             | 55%                         |
| Foreshore Road west of Penrhyn Road  | 2642                    | 388                             | 15%                         |
| Botany Road north of Foreshore Road  | 1052                    | 150                             | 15%                         |
| Botany Road east of Penrhyn Road     | 2839                    | 407                             | 15%                         |
| Penrhyn Road adjacent to site        | 109                     | 68                              | 62%                         |
| Beauchamp Road north of Botany Road  | 1640                    | 98                              | 6%                          |
| Bunnerong Road north of Botany Road  | 821                     | 34                              | 4%                          |
| Bunnerong Road south of Botany Road  | 1111                    | 33                              | 3%                          |

Based on the 2012 survey results, over 55 per cent of vehicles on Penrhyn Road were heavy commercial vehicles, while 15 per cent of vehicles on Botany and Foreshore Roads were heavy vehicles.

### Intersection performance

The performance of key intersections in the study area indicated the following:

- The intersections of Penrhyn Road roundabout and Botany Road/Beauchamp Road operate satisfactorily in both the morning peak period (7:45-8:45 AM) and evening peak period (4:30-5:30 PM) under existing conditions.
- The intersection of Foreshore Road/Penrhyn Road/Botany Road operates satisfactorily in the morning peak period, however, is operating near to capacity in the evening peak period under existing conditions.

Detailed information on the performance of these intersections is included in Attachment E.

### ***Crash statistics***

Crash statistics between July 2007 and June 2011 for the adjacent road network found:

- A total of 16 crashes along Penrhyn Road, all prior to the construction of the improved grade separate roundabout.
- A total of 72 crashes along Foreshore Road, one of which resulted in a fatality
- A total of 83 crashes along Botany Road (between Foreshore Road and Bunnerong Road), one of which resulted in a fatality.

These crashes are not out of character for these type of high volume roads with a higher than average percentage of heavy vehicles accessing the port. Improvements to the Penrhyn Road roundabout have been completed since the recorded crash data for Penrhyn Road.

### ***Rail operations***

The Port Botany Rail Line is a freight line running from Marrickville Junction through to the wharves at Port Botany. The line is approximately 2.3 kilometres in length. The line is currently single track that splits into two sidings within the existing terminal. Train services to Port Botany are currently operated Monday to Friday and Saturday morning. Approximately 68 train movements occur each week to and from the Patrick Terminal.

In 2012, 137,912 TEU were moved by rail to and from the existing terminal. This represented 15 per cent of the total throughput at the terminal.

Recently, the Commonwealth Department of Infrastructure and Transport has provided over \$175 million to improve rail access arrangements to Port Botany. Stage 1 of the "Port Botany Rail Line Upgrade", removed a significant bottleneck between the Port Botany Rail Yard and port terminals and improved safety and operating arrangements. Stage 1 was completed in February 2012. Stage 2 works are currently underway and involve the upgrade of the Enfield Rail Yard to provide train staging capacity to hold trains away from the Port Botany area as well as additional signalling to increase track capacity and enable remote control of signals from the Australian Rail Track Corporation Ltd's (ARTC) train control facility at Junee.

According to the Department of Infrastructure and Transport, the rail upgrades will:

- Lift capacity of the Port Botany Rail Line by more than 30 per cent.
- Increase the capacity for container movements to and from the Port Botany from around 700,000 containers per annum to around 1,000,000 containers per annum.

The Department of Infrastructure and Transport predicts that the rail upgrades mean there will be 300,000 fewer truck movements per annum on the road network in and around Port Botany when the works are completed in 2014 (Commonwealth Department of Infrastructure and Transport, 2013).

#### **6.2.3 Construction impacts**

### ***Traffic generation***

During the peak periods of construction (which is estimated to be approximately four months), a maximum of 150 construction workers are anticipated to access the site. Assuming there would be a typical car driver rate of 100 per cent, this would result in a maximum of 150 light vehicles per day during construction. It is expected that the arrival of workers would occur before the observed road network morning peak period (7:45-8:45 AM) and depart after the evening peak period (4:30-5:30 PM). However, in order to provide a robust assessment, a conservative assumption of 20 per cent of worker light vehicles arriving in the morning and departing in the evening peak periods has been assumed for the traffic model.

Approximately 60 heavy vehicles are expected to access the site per day during the peak construction period. A conservative assumption of 20 per cent of trucks trips occurring in the morning and evening peak periods has been assumed for the traffic model.

Based on these assumptions, the predicted construction traffic generation during peak morning and evening periods is summarised in Table 6-13. Under the worst case scenario, the proposal has the potential to generate an additional 42 vehicles per hour in the morning peak period and 42 vehicles per hour in the evening peak period.

**Table 6-13 Construction traffic generation**

| Proposed construction works | Morning peak period traffic (vtph)* | Evening peak period traffic (vtph) |
|-----------------------------|-------------------------------------|------------------------------------|
| Heavy vehicles.             | 12 (6 In / 6 Out).                  | 12 (6 In / 6 Out).                 |
| Light vehicles.             | 30 In.                              | 30 Out.                            |
| <b>Total</b>                | <b>42 (36 In / 6 Out)</b>           | <b>42 (6 In / 36 Out)</b>          |

Notes: \*Vehicle trips per hour

### **Proposed traffic routes**

Access to the various construction zones during construction would be through the existing Penrhyn Road entry point.

It is estimated that 80 per cent of construction traffic would access the site from Foreshore Road and it is assumed that the remaining 20 per cent would access the site via Beauchamp Road and Botany Road, as shown in Figure 6-3. No construction traffic would be allowed to access the site through Botany (via Botany Road, northwest of the Penrhyn Road/Foreshore Road/Botany Road intersection). The resulting maximum morning and evening peak hour construction traffic flows based on the predictions in construction traffic and traffic distribution is summarised in Figure 6-4.

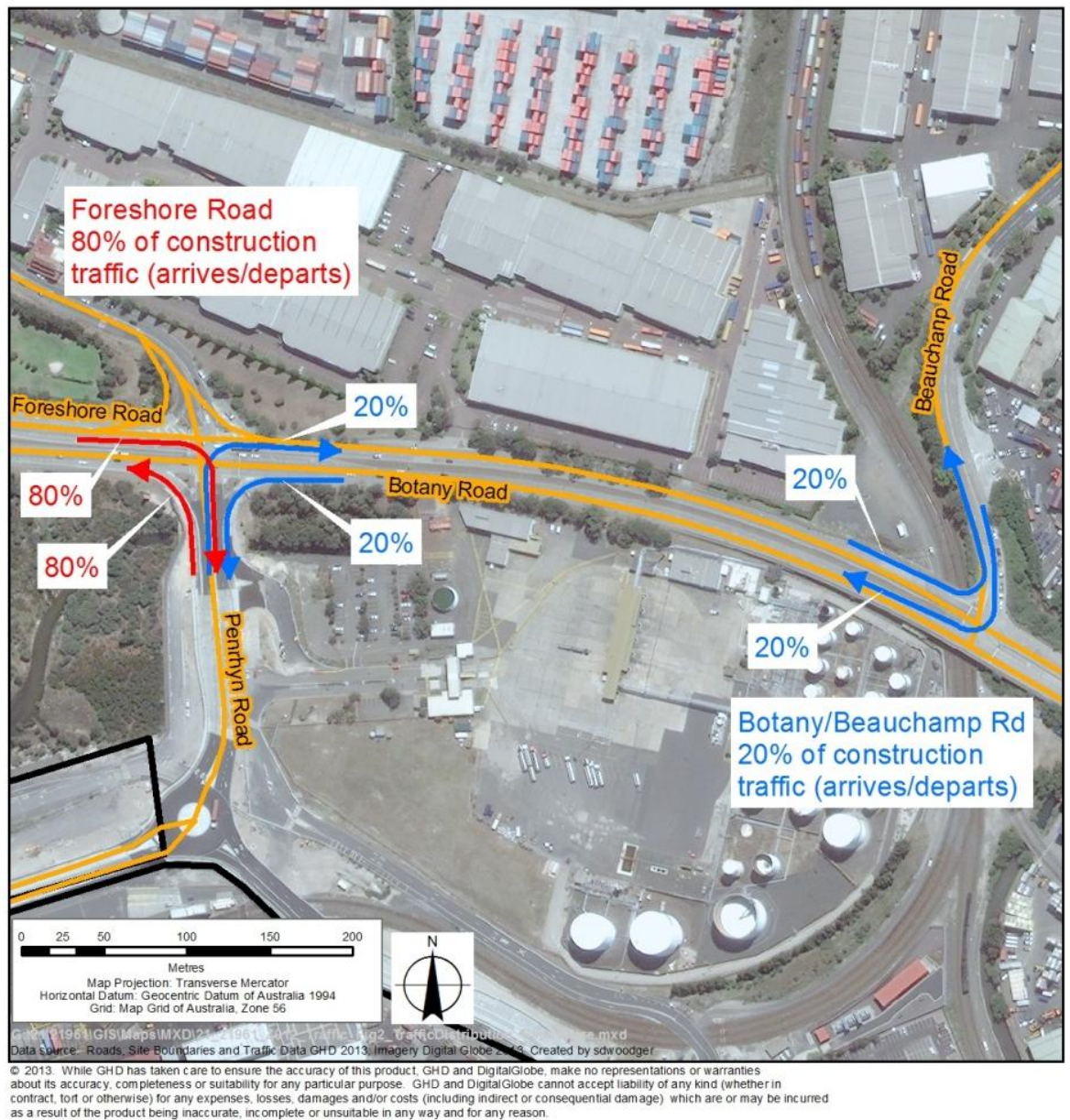


Figure 6-3 Traffic distribution during construction

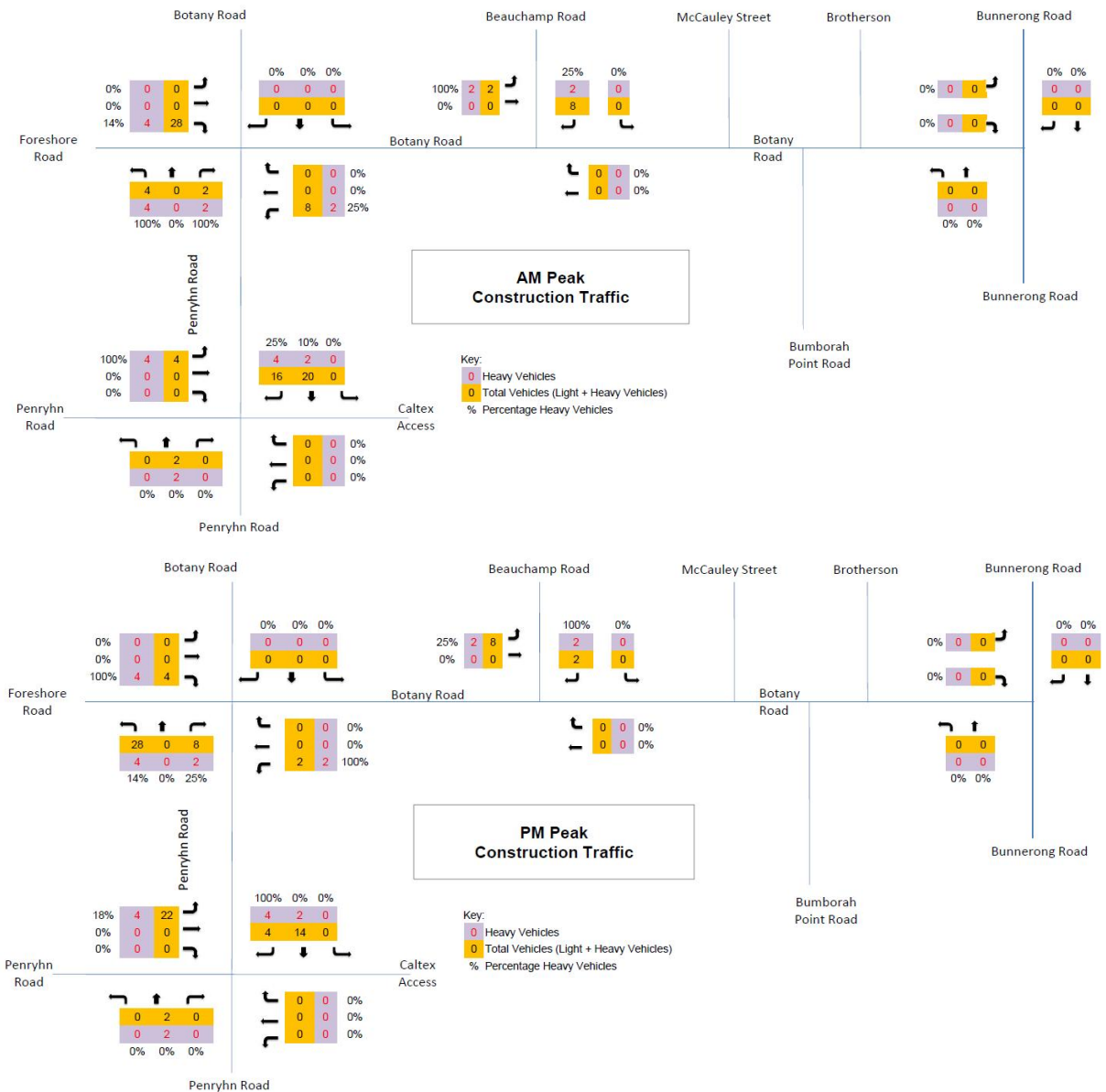


Figure 6-4 Morning and evening peak hour construction traffic flows

### Intersection performance

Potential traffic volume increases on the surrounding road network during the morning and evening peak periods during construction are summarised in Table 6-14.

**Table 6-14 Summary of 2014 construction traffic volumes (vph)**

| Road                             | Morning peak period |                      |                         |            | Evening peak period |                      |                         |            |
|----------------------------------|---------------------|----------------------|-------------------------|------------|---------------------|----------------------|-------------------------|------------|
|                                  | Peak hour (vph)     | Construction Traffic | Predicted traffic (vph) | % Increase | Peak hour (vph)     | Construction traffic | Predicted traffic (vph) | % Increase |
| Penrhyn Rd south of Foreshore Rd | 236                 | 42                   | 278                     | 18%        | 184                 | 42                   | 226                     | 23%        |
| Foreshore Rd west of Penrhyn Rd  | 2722                | 32                   | 2754                    | 1%         | 2171                | 32                   | 2203                    | 2%         |
| Botany Rd east of Penrhyn Rd     | 2925                | 10                   | 2935                    | 0.3%       | 2425                | 10                   | 2435                    | 0.4%       |

As shown in Table 6-14, Penrhyn Road is predicted to have the highest percentage increase in traffic during construction as it provides direct access to the site and would be used by all construction vehicles.

The results from the SIDRA analysis of intersection performance during construction are shown in Table 6-15.

**Table 6-15 Intersection performance during construction**

| Intersection                  | Morning peak period |                  |                  | Evening peak period |     |      |
|-------------------------------|---------------------|------------------|------------------|---------------------|-----|------|
|                               | Average delay (sec) | LoS <sup>1</sup> | DoS <sup>2</sup> | Average delay (sec) | LoS | DoS  |
| Penrhyn Road Roundabout       | 9                   | A                | 0.18             | 7                   | A   | 0.12 |
| Foreshore/Penrhyn/Botany Road | 28                  | B                | 0.86             | 60                  | E   | 0.97 |
| Botany Road/Beauchamp Road    | 20                  | B                | 0.79             | 19                  | B   | 0.77 |

Notes: 1. As defined in Table 6-12.  
2. Degree of saturation.

Based on the results of the analysis, the intersections of Penrhyn Road roundabout and Botany Road/Beauchamp Road would continue to operate satisfactorily and would have spare capacity in both the morning and evening peak periods during construction.

The intersection of Foreshore Road/Penrhyn Road/Botany Road would continue to operate satisfactory in the morning peak period, however during the evening peak period, the intersection would be operating at capacity for the duration of peak construction (LoS E). This is primarily due to the background traffic growth, as the proposal's contribution to traffic along Foreshore Road is only 1 per cent in the morning peak period and 2 per cent in the evening peak period (as shown in Table 6-14).

### Road safety

The construction and operation of the proposal is not expected to have any adverse impacts on crash trends on the surrounding road network.

### Parking

Construction of the proposal is not expected to have any adverse impact on public roads in terms of parking and queuing. As discussed in Section 2.3.4, sufficient parking would be provided for the construction equipment/machinery and vehicles within the designated construction compounds to prevent off-site parking and queuing on public roads.

### Rail operations

There would be temporary rail closures within the existing terminal during construction of the proposal. These closures would be for limited durations with single closures of approximately 2 to 4 weeks. During times of rail closure, containers would continue to be received via rail to the port precinct. Arrangements would be made with neighbouring rail and container operators located within the port precinct or Cooks River facilities, to allow containers to be received and temporarily stacked in container yards in the vicinity of the terminal. The management of these containers will remain a Patrick operation and the containers would then be transported to the terminal during off-peak periods to ensure that there would be no observable increase in traffic during these times. The same process would occur during the delivery of containers via ship to the terminal. Containers would be transported from the terminal by truck during off-peak periods to container yards located within the port precinct. Containers would then be loaded onto rail and shipped to their destination. This proposal will avoid impacts on the rail customers during the proposed works. Additionally, during short closures (i.e. extended weekends) deliveries by rail will be held at existing Patrick Logistics sidings until the rail sidings in the terminal are re-opened.

#### 6.2.4 Operational impacts

The proposal would not result in changes to the operational capacity of the terminal and, therefore, heavy vehicle volumes entering and exiting the site would not change as a result of the proposal. The replacement of manually operated equipment with automated equipment would result in a reduction in the number of staff at the site which would result in a decrease of light vehicle movements entering and exiting the site. Therefore, no traffic increase is anticipated on the surrounding road network during operation of the proposal. In addition, there would be no impact to rail operations during operation of the proposal.

#### 6.2.5 Mitigation measures

Although the proposal is not predicted to have a significant contribution to morning and evening peak traffic during construction, a Construction Traffic Management Plan (CTMP) would be prepared for the proposal in accordance with *Sydney Ports Corporation Traffic Management Plan Guidelines 2007* to further minimise potential traffic impacts during construction. The implementation of the CTMP would aim to ensure that construction vehicles access the site outside of the peak hours to reduce the potential for traffic impacts.

An updated OEMP would be prepared to replace the existing OEMP and would include an Operational Traffic Management Plan in accordance with *Sydney Ports Corporation Traffic Management Plan Guidelines 2007*.

During times of rail closure, arrangements would be made with the neighbouring rail operators to allow containers to be received and stored in container storage yards in the vicinity of the

terminal. The containers would be transported to the terminal during off-peak periods to ensure that there would be no increase in traffic during these times.

#### 6.2.6 Conclusion

The construction of the proposal would not result in significant traffic impacts on the surrounding road network. A CTMP would be prepared for construction to reduce impacts on intersection performance. The proposal would not result in any changes to the terminal capacity or heavy vehicle entries or exits during operation and, therefore, unacceptable impacts on traffic flows on the surrounding road network are not anticipated.

There would be temporary (2 to 4-week) rail closures during construction of the proposal. During times of rail closure, arrangements would be made with the neighbouring rail operators to allow the containers to be received and stored in the local area (other container storage yards). The containers would be transported to the terminal during off-peak periods to ensure no increase in traffic during these times.

### 6.3 Surface water and drainage

This section presents an assessment of the potential surface water and drainage impacts associated with the construction and operation of the proposal. Mitigation measures are identified to reduce identified impacts, as required.

#### 6.3.1 Methodology

The assessment of potential impacts to water quality and water supply during construction and operation of the proposal was based on existing available data and involved:

- Describing the existing environment including site location, characteristics of the receiving environment and potential sources of contaminants.
- Assessing the potential impacts to water quality resulting from construction works.
- Assessing the potential impacts to water quality during future operations.
- Identifying mitigation measures to reduce impacts to the receiving environment.

The assessment was based on a review of the following reports and guidelines:

- *Assessment Report – Patrick Stevedores Operations Pty Ltd Proposal for the Upgrade of the Patrick Container Terminal at Port Botany in the Botany Bay Local Government Area* (Department of Infrastructure, Planning and Natural Resources, 2003).
- *Port Botany Expansion Project Environmental Impact Statement* (URS, 2003).
- *Patrick Port Botany Container Terminal Upgrade Environmental Impact Statement* (Parsons Brinkerhoff, 2002).
- *Environmental Conditions Report – Patrick Terminal Site, Port Botany NSW* (E3 Consulting Australia, 2012).
- *Port Botany Terminal Operational Environmental Management Plan (OEMP)* (Patrick Stevedore Operations, 2012).
- *Port Botany Terminal Soil and Water Management Plan (SWMP)* (Patrick Stevedore Operations, 2012).
- *The Blue Book – Managing Urban Stormwater: Soils and Construction* (Landcom, 2004).
- *Australian Standard 1940-2004 – The Storage and Handling of Flammable and Combustible Liquids*.

- *Marine Water Quality Objectives for NSW Ocean Waters: Sydney Metropolitan & Hawkesbury-Nepean* (DEC, 2005).
- *Australian and New Zealand Guidelines for Fresh and Marine Water Quality Volume 1 – The Guidelines* (ANZECC/ARMCANZ, 2000).

### 6.3.2 Water quality objectives

Water Quality Objectives (WQO) define the environmental values to be considered during the assessment of impacts of activities on the receiving environment. The selection of water quality guidelines and assessment criteria is dependent on the WQO of the receiving environment. WQO have been determined in consultation with key stakeholders and endorsed by the NSW Government, as defined in *Marine Water Quality Objectives for NSW Ocean Waters – Sydney Metropolitan and Hawkesbury – Nepean* (DEC, 2005). There are five WQO for the Sydney Metropolitan and Hawkesbury – Nepean Catchment Management Authority (CMA) region which include:

- **Aquatic ecosystem health** – to maintain or improve the ecological condition of ocean waters.
- **Primary contact recreation** – to maintain or improve ocean water quality so that it is suitable for activities such as swimming and other direct water contact sports.
- **Secondary contact recreation** – to maintain or improve ocean water quality so it is suitable for activities such as boating and fishing where there is less bodily contact with the waters.
- **Visual amenity** – to maintain or improve ocean water quality so that it looks clean and is free of surface films and debris.
- **Aquatic foods** – to maintain or improve water quality for the production of aquatic foods for human consumption (whether derived from aquaculture or recreation, commercial or indigenous fishing).

Assessment criteria for the receiving environment are defined in the *Australian and New Zealand Guidelines for Fresh and Marine Water Quality* (ANZECC 2000). The ANZECC guidelines provide different levels of protection dependant on the conditions of the receiving environment. In NSW, the level of protection applied to most waterways is for 'slightly to moderately disturbed' ecosystems. For the purposes of water quality monitoring, the 95 per cent level of protection is recommended for 'slightly to moderately' disturbed ecosystems, including the receiving environment for the site.

### 6.3.3 Existing environment

The site is located within the Botany Bay catchment area which has an area of approximately 1,165 square kilometres. The catchment receives water from the Georges/Woronora River and Cooks River sub-catchments, with the remaining contributions being from local watercourses, drains and direct runoff from adjacent land uses.

Previous water quality investigations at Botany Bay have identified concentrations of hydrocarbon, nutrients and some metals in exceedence of ANZECC guidelines. Hydrocarbons, metals and nutrients have also been detected in sediments of the bay (E3 Consulting Australia, 2012).

Potential contamination sources which contribute to the water quality of the receiving environment include:

- Container terminals operated by Patrick and DP World.

- Approximately 50 local premises licensed by the EPA.
- Sydney Airport.
- Groundwater contamination as a result of existing and historical land use in the Port Botany industrial area.
- Adjacent construction areas with exposed surfaces discharging to local drainage systems.
- Surface runoff from roads and other open spaces to council stormwater systems and drains.

### **Stormwater management**

Stormwater runoff within the site is primarily discharged via a stormwater network which drains both north into Penrhyn Estuary and south into Botany Bay, off Brotherson Dock. A small area within the northeastern section of the site (within the workshop area) is treated via a stormwater treatment plant prior to discharge at an EPL discharge point (which is located adjacent to the stormwater treatment plant).

Stormwater at the site is managed by grated pits connecting into stormwater channels. Stormwater runoff north of the rail line drains into Penrhyn Estuary and is contained within the SICTL lease area. SICTL are replacing the existing gross pollutant traps with new stormwater quality improvement devices. This will improve the quality of stormwater discharging into Penrhyn Estuary.

Stormwater runoff south of the rail line drains into Botany Bay. Approximately 75 per cent of the existing stormwater pits in this area are fitted with gross pollutant traps to capture contaminants (litter, suspended solids and sediments, oil and grease) before discharge into Botany Bay. Pollutant traps are currently being procured for the remaining 25 per cent to meet the requirements of the Pollution Reduction Program specified by EPL 6962.

### **Dangerous goods area**

Drainage from the dangerous goods storage area is comprised of a spill containment area which includes three 100,000 litre in-ground concrete tanks. Leaking containers are managed using a spill trailer which allows the container to be placed onto a mobile bund.

### **Workshop area and stormwater treatment plant**

All stormwater drainage from the workshop area (including refuelling and fuel storage area) is captured in a 100,000 litre storage tank and processed through a stormwater treatment plant which processes the collected water by flocculation, filtration and chlorination. The treated stormwater is temporarily stored in a 9,000 litre above ground tank prior to release to the drainage system via the EPL discharge point. Treated stormwater is analysed prior to and during discharge in accordance with the conditions of the site EPL 6962.

Stormwater grates are fitted across the workshop roller door entrances, which drain via underground pipework directly to the trade waste pit located adjacent to the stormwater treatment plant.

### **Trade waste**

A washbay is attached to the workshop where straddle carriers are cleaned. Wastewater generated in the washbay drains to a trade waste storage tank via underground pipework. Residue collected in the stormwater treatment plant is also released to the trade waste tank. Trade waste is processed before being directed to the Sydney Water Corporation (Sydney Water) sewer via a Trade Waste Agreement (Consent No. 24990).

### **Existing potential contaminant sources**

Existing potential contaminant sources and activities within the site that contribute to the quality of stormwater runoff include:

- Leaks and spills from the operation of straddle carriers, cranes and other vehicles and containers stored or in transit.
- Rubber and grit accumulation on heavily trafficked locations, specifically the quay line, truck parking area and middle road.
- Bulk and package storage of dangerous goods and hazardous substances.
- Maintenance of plant, equipment and machinery in the workshop.
- Refuelling of site vehicles and equipment.
- Cleaning of straddle carriers in the wash bay.

### **Stormwater risk assessment**

In March 2013, GHD prepared a *Stormwater Risk Assessment Report* for the site (GHD, 2013) to meet the requirements of the Pollution Reduction Program specified by EPL 6962. The stormwater risk assessment included a valuation of potential environmental risks to stormwater and the local marine environment posed by operation of the terminal and recommendations to ensure that potentially significant risks would be appropriately addressed. The assessment provided the following recommendations:

- Review and update of dangerous goods containment area and contamination detection system.
- Develop and implement a program for retrofitting existing drainage lines including the installation of drain protection at each drainage pit.
- Improvements to inspection and maintenance regimes and the development of policies and procedures to further reduce risks.

#### **6.3.4 Construction impacts**

Construction works have the potential to impact surface water quality as a result of:

- Erosion of exposed soils and stockpiled materials resulting in the generation of sediment laden stormwater runoff.
- Leaks and spills of fuel, oil or other chemicals from construction plant, machinery and equipment.
- Temporary changes to stormwater flows including unintentional blockages of stormwater inlets resulting in impacts to the system capacity and capabilities during construction.

A Soil and Water Management Plan (SWMP) would be prepared as part of the CEMP. The SWMP would provide site specific measures to be implemented during construction to minimise impacts on receiving waters. Erosion and sediment controls would be installed and regularly maintained in accordance with the guidelines outlined in the *'Blue Book' -Managing Urban Stormwater Volume 1: soils and construction* (Landcom, 2004). Stormwater runoff would be diverted around construction areas and stormwater inlets would be adequately protected and regularly checked. This would minimise impacts on stormwater quality and site drainage.

If not managed appropriately, there is a low risk of surface water contamination during construction from accidental spillage of chemicals such as fuels, oils or other chemicals used during construction. Construction equipment and vehicles would be maintained and regularly

inspected for leaks and all chemicals would be stored in appropriately bunded areas in the construction compounds in accordance with relevant standards and guidelines.

Wastewater generated from construction processes (as a result of cleaning and wash down of machinery and equipment) would be contained onsite and either disposed of offsite at an appropriately licensed liquid waste facility or processed onsite through the existing trade waste or stormwater treatment plant prior to discharge.

With the implementation of the existing conditions of consent and the mitigation measures provided in Section 6.3.6, impacts to surface water quality during construction are not expected to be significant and potential impacts on receiving waters would be adequately mitigated. Water quality monitoring would be undertaken before, during and after construction works to ensure that the WQO and ANZECC criteria are met.

### 6.3.5 Operational impacts

Operation of the site would generally be consistent with the current terminal operations, with the exception of the operation of automated straddle carriers. The replacement of the old manual straddle carriers with new, well-maintained automated straddle carriers would likely pose less risk to water quality from leaks and spills. Regular maintenance and servicing would continue to be undertaken in accordance with the manufacturer's recommendations and appropriate incident response procedures would be developed as part of the OEMP and implemented to manage spills and leaks within the automated area.

Stormwater runoff quality entering the receiving environment is expected to improve as a result of infrastructure upgrades described in Section 2.2.2. These upgrades include installing gross pollutant traps on all existing and new stormwater outlets, improvements to the workshop and fuel storage area and the realignment of the terminal roadways. The installation of gross pollutant traps at the end of the existing and new stormwater outlets would improve the quality of stormwater runoff at the site. Gross pollutant traps would capture contaminants including litter, suspended solids and sediments and oil and grease prior to discharge to Botany Bay.

The construction of the undercover workshop forecourt and straddle fuelling bays would reduce the area for stormwater to come into direct contact with potentially contaminated pavements, hence reducing the pollutant load contributing to stormwater. The new fuel storage area would be constructed with appropriate bunding and containment structures in accordance with appropriate standards and guidelines reducing the likelihood of spills and leaks occurring and providing improved containment in the event of a spill/leak.

Realignment of the terminal roadways would also help to improve the quality of stormwater runoff entering Penrhyn Estuary. The area north of the rail line would no longer be used as the truck entry point and instead as roadways for the new automated straddle carriers. This would result in only new, well-maintained equipment operating in this area as opposed to vehicles (primarily trucks) that Patrick have no control over the maintenance of, as is currently the case.

The implementation of recommendations provided in the stormwater risk assessment would further improve the quality of stormwater. Improvements such as the installation of pollutant traps at all existing and new stormwater pits at the site (as discussed above) and upgrading drainage within the dangerous goods containment area would improve stormwater protection and the quality of stormwater from the site.

The current EPL licensed discharge location would not change and no additional discharge locations are proposed. Discharge volumes and frequencies are expected to decrease based on the improvements to infrastructure (i.e. less dirty stormwater from the workshop area requiring treatment), and the existing stormwater system would continue to operate to meet the licensed water quality parameters.

Options for the onsite reuse of treated stormwater have been investigated, and due to the low volume of water generated from the stormwater treatment plant are not considered to be feasible. Reusing treated stormwater would require the construction of water distribution infrastructure to redirect the treated stormwater to landscaping and other site application purposes, which would not be cost effective and the volume of water generated by the stormwater treatment plant would not be sufficient to meet the site's water requirements. As the volume of treated stormwater would reduce as a result of the infrastructure improvements, discharge volumes to the stormwater system are not considered to be significant.

During operation, water use is expected to be similar to existing as site operational practices would remain generally unchanged. The implementation of the existing conditions of consent and mitigation measures provided in Section 6.3.6 would assist in meeting the water quality objectives for the receiving environment.

### 6.3.6 Mitigation measures

#### Construction

The development and implementation of the SWMP in accordance with the existing conditions of consent for would provide adequate protection of the receiving environment. The SWMP would include the following mitigation measures:

- Installation of standard erosion and sediment controls in accordance with the guidelines outlined in the 'Blue Book' - *Managing Urban Stormwater Volume 1: soils and construction* (Landcom, 2004).
- Establish erosion and sediment control measures prior to construction and undertake regular inspections particularly following rainfall events, to ensure their ongoing functionality.
- Where possible, minimise construction works during and following wet weather to control the spread of sediment.
- Implement controls at site exit points to minimise the tracking of sediment onto roads.
- Divert clean water around the construction areas.
- Where possible, locate any wash down areas away from stormwater drains.
- Where possible, locate any stockpiles away from stormwater drains.
- Regular inspections of machinery and equipment to identify any leaks.
- Locate storage of fuels, oils and other chemicals and refuelling areas in designated areas with adequate spill prevention and protection and away from stormwater inlets.
- Contain wastewater generated from construction processes for offsite disposal at an appropriately licensed liquid waste facility or for onsite treatment plant prior to discharge.
- Undertake a water quality monitoring at discharge locations program before, during and after construction works to monitor stormwater quality against the WQO and criteria outlined in Section 6.3.2.
- Where possible, re-use treated stormwater for construction processes such as dust suppression.

#### Operation

The proposed operations would be undertaken in accordance with the existing consent conditions in relation to water quality. The following mitigation measures are provided to further reduce impacts to water quality during operation.

- All existing and new stormwater infrastructure would include gross pollutant traps to provide overall site protection.
- Prepare and implement the following as part of the OEMP to further reduce impacts to water quality from site operations:
  - Develop and implement a regular terminal surface cleaning program to remove contaminant accumulations which may contribute to stormwater contamination.
  - Develop and implement a regular inspection and maintenance program for all stormwater pollution control equipment including the stormwater treatment plant, container area and the pollutant traps within the stormwater pits.
  - Develop and implement incident response procedures for operation of the site. This should include specific management procedures for the automated areas.
- Implement the recommendations outlined in the *Stormwater Risk Assessment Report* (GHD, 2013).

#### 6.3.7 Conclusion

With the implementation of existing conditions of consent, construction of the proposal would have a minimal impact on surface water quality. Water quality monitoring would be undertaken prior, during and following construction to ensure that water quality objectives of the receiving environment are met. The proposal would incorporate effective improvements in design, such as the creation of all-weather facilities within the upgraded maintenance and workshop areas and additional gross pollutant traps, which would reduce the introduction of pollutants into receiving waters during operation.

### 6.4 Soils and groundwater

This section provides an overview of existing soil and groundwater conditions within the site and the surrounding area and assesses the potential impact of the proposal. It includes an assessment of the potential for contamination and acid sulfate soils to occur. Mitigation measures are identified to reduce identified impacts, as required.

#### 6.4.1 Methodology

The soils and contamination assessment included a desktop review of the following documents and registers:

- *Patrick Port Botany Container Terminal Upgrade Environmental Impact Statement* (Parsons Brinkerhoff, 2002).
- *Environmental Condition Report – Patrick Terminal Site, Port Botany NSW* (E3 Consulting Australia, 2012).
- Site hazardous materials registers.
- Existing stormwater plans.
- NSW EPA Contaminated Land Register (search conducted 7 February 2013).
- Environmental Protection License Annual Returns (2011 and 2012).

#### 6.4.2 Existing environment

##### *Soils*

The site is located on generally flat reclaimed land with an elevation of approximately 2.5 metres Australian Height Datum (AHD). The site is primarily sealed with concrete, asphalt or pavers (in

the car park areas). Based on recent soil investigations undertaken as part of the Environmental Condition Report in April 2012 (E3 Consulting Australia, 2012), fill material beneath the hardstand generally consists of sands, gravels with concrete and brick fragments. Fine to medium grained grey or brown sand was encountered below the fill material. No clear demarcation between the reclaimed land and natural underlying material was noted.

### **Contamination**

There is a potential for contamination of soil and/or groundwater at the site due to:

- Land reclamation using materials of unknown origin.
- Fuel and oil storage, in particular diesel, which is currently stored in three 55,000 litre above ground storage tanks.
- Fuel/oil spillage and leaks from the operation and maintenance of equipment.
- A high pressure Caltex fuel line in the eastern section of the site.

Soil and groundwater testing within the site, undertaken as part of the Environmental Condition Report in April 2012 (E3 Consulting Australia, 2012), indicated that tested contaminant concentrations were below the adopted site criteria in all samples analysed, which suggests that widespread “gross” contamination within the site is unlikely.

A search of the NSW EPA's record of notices in the Botany LGA revealed a number of significantly contaminated sites within one kilometre to the north of the site, including:

- The Esso Depot, McPherson Street, Banksmeadow.
- The Olympic/Springvale Drain, Botany Road, Banksmeadow.
- Orica Botany (Southlands), Banksmeadow.
- Nuplex Industries, Stephen Road, Botany.

Contamination of soils and groundwater at these sites includes chlorinated hydrocarbons from chemical manufacturing; petroleum hydrocarbons and benzene, toluene, ethyl benzene and xylene from industrial manufacturing; and fuel storage and distribution.

The management of contamination on these sites (and adjacent areas) is actively regulated by the NSW EPA. The mapped groundwater management area for the Orica Botany site, which includes part of Penrhyn Estuary, is located to the north of the site.

### **Acid sulfate soils**

There is potential for acid sulfate soils to occur at the site. The Botany Bay Acid Sulfate Soil Risk Map (Department of Land and water Conservation, 1997) indicates that the site is located on disturbed terrain caused by reclamation of the land. This soil classification requires that investigations be undertaken to assess the soil for acid sulfate potential.

### **Groundwater**

The site lies within the Botany Basin which is characterised by an unconfined and semi-confined aquifer system known as the Botany Sands aquifer. Due to the presence of contamination within parts of the Botany Basin, large areas are designated as groundwater extraction exclusion zones. The site is located within an area designated by NSW Office of Water as a Groundwater Management Zone (Zone 1 – Groundwater Extraction Exclusion Zone) (E3 Consulting Australia, 2012).

Groundwater has been encountered at depths of between 2 to 2.5 metres below ground surface across the site and it is considered that the groundwater is present as a shallow aquifer, affected by tidal influence and is expected to flow towards the north, west and southern

boundaries of the site and discharge directly into Botany Bay. It is uncertain if the shallow tidal aquifer is hydraulically connected with the Botany Sands aquifer (E3 Consulting Australia, 2012).

Although the site is situated in the Groundwater Extraction Exclusion Zone, no significant concentrations of contaminants in groundwater were recorded in the *Environmental Conditions Report – Patrick Terminal Site, Port Botany NSW* (E3 Consulting Australia, 2012).

#### 6.4.3 Construction impacts

##### **Soils**

During construction, poorly managed excavation activities and stockpiling of soils could result in erosion of soils by stormwater runoff and dust resulting in sedimentation of the receiving waters. As discussed in Section 6.3.4, a SWMP would be prepared and implemented in accordance with the 'Blue Book' - *Managing Urban Stormwater Volume 1: soils and construction* (Landcom, 2004) which would minimise the potential erosion and sedimentation risks to acceptable levels during construction.

Fill material would need to be imported to site for various construction activities. To ensure that contaminated fill is not imported to site, the source of all imported fill would be assessed prior to commencement of construction. If a risk of contamination is perceived, screening level testing would be undertaken on the material prior to the fill being transported and used onsite.

Excess spoil material that cannot be reused onsite for backfilling would be tested and classified in accordance with the DECCW *Waste Classification Guidelines* (DECCW 2009) prior to disposal at an EPA licensed facility.

##### **Contamination**

Due to the site's long industrial history, current activities onsite, the presence of fuel storage tanks, unknown source of fill material used to reclaim the land and the known contamination in surrounding areas, there is potential for localised soil contamination to occur. As various excavation works are required as part of the proposal (for the construction of building foundations, pavement works and installation of services), there is a potential for encountering localised contamination during excavation activities. If not managed appropriately, the disturbance of contaminated soils could pose a risk to the health and safety of personnel and contaminate groundwater and/or surface runoff resulting in detrimental impacts to water quality. Prior to construction, contamination assessment would be undertaken within the proposed excavation footprints. Soils would be analysed for a range of potential contaminants including the potential for acid sulfate soils to determine the need for any specific management measures that may be required. Testing would also provide an indication of waste classification for offsite disposal purposes in accordance with the DECCW *Waste Classification Guidelines* (DECCW 2009) and any occupational health and safety requirements that would need to be implemented.

Soil contamination could also occur as a result of accidental spills or leaks of fuels, oils and other chemicals from equipment and vehicles during construction works. The storage of small volumes of fuels would be required within a designated section of each construction zone. All chemicals would be stored in appropriately bunded areas in accordance with relevant standards and guidelines. Spill kits would also be kept near each storage area.

##### **Acid sulfate soils**

If potential acid sulfate soils are exposed to oxygen, soils oxidise forming sulfuric acid, which can have detrimental impacts on water quality and lead to adverse environmental impacts. As the works would involve the disturbance of soils, which are mapped as 'disturbed terrain', there is a potential to encounter acid sulfate soils. Soil investigations would be undertaken prior to

commencement of construction to determine the potential for acid sulfate soils and determine the need for acid sulfate management measures to be developed.

### Groundwater

Potential impacts to groundwater could occur during construction as a result of:

- Excavations encountering shallow groundwater. Piling would be required for the installation of building foundations and potential impacts could include groundwater entering the excavations. If groundwater is encountered, it would be pumped into a contained area, tested and if necessary treated for discharge or disposal, as required.
- Contamination of groundwater through seepage from material and waste stockpiles, or spills of fuels, oils or other chemicals.

Provided appropriate mitigation measures are implemented, impacts to groundwater are not considered to be significant.

With the implementation of the mitigation measures contained in the existing conditions of consent, potential impacts to soils and groundwater would be adequately managed during construction.

#### 6.4.4 Operational impacts

The risk of erosion during operation would be minimal as the terminal surface would be sealed with little to no exposed soils. Potential contamination impacts on soils and/or groundwater would resemble the existing impacts posed by operation of the terminal. No additional impacts on soils and/or groundwater are anticipated during operation.

#### 6.4.5 Mitigation measures

The following mitigation measures would be implemented to minimise potential impacts to soils and groundwater during construction:

- A contamination assessment would be undertaken in the proposed excavation footprints prior to the commencement of construction. A range of potential contaminants would be analysed, including the potential for acid sulfate soils, to determine the need for any specific management measures that may be required. Testing would also provide an indication of waste classification for offsite disposal purposes in accordance with the DECCW *Waste Classification Guidelines* (DECCW 2009) and any occupational health and safety requirements.
- If potential acid sulfate soils are encountered, an Acid Sulfate Soils Management Plan would be prepared in accordance with the *Acid Sulfate Soils Management Advisory Committee: Acid Sulfate Soils Assessment Guidelines* (ASSMAC, 1998) as per the conditions of consent.
- Any groundwater encountered during excavation would be pumped into a contained area, tested and if necessary appropriately treated prior to appropriate disposal.
- Imported fill would be tested prior to the commencement of construction. If a risk of contamination is perceived, screening level testing would be undertaken on the material to determine existing contaminant levels prior to the fill material being transported and used on site.
- The CEMP would outline procedures for:
  - Appropriately assessing, remediating and/or managing all soil and groundwater to be disturbed during construction.

- Identifying and appropriately managing any unexpected contamination finds if encountered during construction.
- Identifying and appropriately managing acid sulfate soils if encountered during construction.

#### 6.4.6 Conclusion

Based on the desktop study, there is potential for localised soil contamination and/or acid sulphate soils to be encountered during construction. Soil and groundwater investigations would be undertaken prior to commencement of construction to substantiate the occurrence of contamination within the construction footprints. Any specific management measures from the analysis, would be developed and implemented as part of the CEMP. With the implementation of the mitigation measures above and the existing conditions of consent, potential impacts on soils and groundwater are not considered to be significant.

### 6.5 Design and visual amenity

This section presents a summary of the *Section 75W Modification - Port Botany Container Terminal Project (DA-453-12-2002-i MOD 7) Visual and Landscape Impact Assessment* (2013) undertaken by GHD. It includes a summary of the potential landscape and visual impacts associated with the construction and operation of the proposal. Lighting impacts and impacts to flight paths at Sydney Airport are also assessed. Mitigation measures have been identified to reduce potential visual and landscape impacts, as required. A copy of the visual and landscape impact assessment is included as Attachment F.

#### 6.5.1 Methodology

The landscape and visual impact assessment was undertaken in accordance with the following guidelines:

- *Guidelines for Landscape and Visual Impact Assessment, Second Edition* (2002) produced by The Landscape Institute and The Institute for Environmental Management and Assessment in the United Kingdom .
- *Visual Landscape Planning in Western Australia* (2007) produced by the Western Australian Planning Commission.
- *A Manual for Forest Landscape Management* (2006) produced by the Forest Practice Board of Tasmania.

A detailed description of the landscape and visual impact assessment methodology is provided in Attachment F. In summary, the following steps were undertaken to determine the potential landscape and visual impacts associated with the construction and operation of the proposal:

- Define the characteristics of the existing environment and the overall visual quality of the study area. Landscape character units were identified and representative sensitive visual receptor locations within these landscape character units were selected for assessment of impacts during both construction and operation of the proposal.
- Evaluate the landscape and visual elements from each sensitive visual receptor location, both before and after implementation of the proposal. Photomontages were prepared for four of the sensitive visual receptor locations to show the views following the completion of the proposal.

- Assign an impact significance rating to each sensitive visual receptor location (refer to Table 6-16 and Table 6-17). The impact rating was determined based on an assessment of landscape impact (landscape sensitivity and capacity to accommodate change) versus visual sensitivity (receptors interest in the visual environment, duration and viewing opportunity and number of viewers and their distance/angle of view).

**Table 6-16 Significance of impact rating**

|                    |            | Landscape Impact       |                        |                        |                     |
|--------------------|------------|------------------------|------------------------|------------------------|---------------------|
|                    |            | Large                  | Moderate               | Small                  | Negligible          |
| Visual Sensitivity | High       | Major significance.    | High significance.     | Moderate significance. | Minor significance. |
|                    | Medium     | High significance.     | Moderate significance. | Minor significance.    | Not significant.    |
|                    | Low        | Moderate significance. | Minor significance.    | Not significant.       | Not significant.    |
|                    | Negligible | Minor significance.    | Not significant.       | Not significant.       | Not significant.    |

Source: Landscape Institute and Institute for Environmental Management and Assessment (2002)

**Table 6-17 Definition of impacts**

| Significance of impact | Description                                                                                                                                                                                                         |
|------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Major significance     | Large reduction (modification) in the amenity for receptors of high visual sensitivity.                                                                                                                             |
| High significance      | Large reduction (modification) in the amenity of a view for receptors of medium visual sensitivity.                                                                                                                 |
| Moderate Significance  | Moderate reduction (modification) in the amenity of a view for viewers of a medium level visual sensitivity; or<br>Large reduction (modification) in the amenity of a view for receptors of low visual sensitivity. |
| Minor significance     | Moderate reduction (modification) in the amenity of a view for receptors of low sensitivity.                                                                                                                        |
| Not significant        | Small reduction (modification) in the amenity of a view for receptors of low sensitivity.                                                                                                                           |

Source: Landscape Institute and Institute for Environmental Management and Assessment (2002)

### 6.5.2 Existing visual environment

The landscape in the vicinity of the site is dominated by the existing Patrick and DP World terminals and associated infrastructure. The existing, operational container terminals cover an area of approximately 80 hectares and consist of large flat expanses of asphalt with multi-coloured shipping containers stacked up to approximately 9 metres high. At the terminals, there are various types of container handling equipment including quay cranes, which are painted either red or yellow and are approximately 107 metres in height (in the boom up configuration) as well as rail mounted gantries, rubber tyred gantries and straddle carriers.

Immediately to the west and northwest of the site is vacant container terminal land currently being developed by Patrick (referred to as the “Knuckle”) and Hutchison/ SICTL.

To the south of the site is the bulk liquids berth, with several large bulk liquid storage tanks. Approximately 1 kilometre to the west of the site is Sydney Airport. The area to the northeast of the site is dominated by industrial land uses.

The visual quality of the site and the surrounding area of Port Botany is relatively low. Factors which contribute to this assessment include the predominately industrial landscape, the limited and low vegetation, and the relatively flat topography which provides views of industrial and transport-related infrastructure from relatively long distances across land and water.

### **Landscape character**

Three landscape character units were identified in the study area. These landscape character units are described below and are shown in Figure 6-5.

#### **Landscape Character Unit 1 – Commercial, Industrial and Infrastructure**

Commercial, industrial and infrastructure areas are predominately concentrated on the northern side of Botany Bay. These areas include Sydney Airport and Port Botany and a large area of Banksmeadow. Views are composed of major transport-related infrastructure (freight, trucks, cars, airplanes and ships) and their associated movements to, from and around the proposal site.

The majority of receptors have a low sensitivity and interest in their visual environment and include:

- Airplane passengers (with passing views of the proposal site from above).
- Employees and customers accessing the airport, port and surrounding industry with an interest in their purpose/work.
- Road users with low sensitivity who have passing views and interest in their visual environment.

The landscape sensitivity of this landscape character unit is considered to be low.



*Landscape Character Unit 1 – Commercial, Industrial and Infrastructure.  
Example: View of Sydney Airport from Brighton-le-Sands.*

#### **Landscape Character Unit 2 – Residential**

Residential areas are predominately concentrated on the western side of Botany Bay and include the suburbs of Botany, Banksmeadow, Matraville, Hillsdale, La Perouse, and Phillip Bay. Views vary between residential areas. Those residential areas located directly on the coast experience views of heavy infrastructure including Sydney Airport and Port Botany.



*Landscape Character Unit 2 – Residential.  
Example: Residential area of La Perouse.*

Receptors include:

- Residential receptors that have a high sensitivity to their visual environment due to their prolonged viewing opportunities.
- Local road users with low sensitivity who have passing views and interest in their visual environment.

The landscape sensitivity of this landscape character unit is considered to be medium.

### **Landscape Character Unit 3 – Natural, Vegetated and Recreational**

Areas of vegetation (natural and planted) are predominately located along coastal fringes and rivers and in isolated community parks. The largest area of vegetation is Botany Bay National Park in Kurnell. Most of the vegetated areas have some form of recreational function. Botany Bay also provides recreational opportunities such as fishing and boating. Views vary between natural/vegetated/recreational areas. Those areas located directly on the coast experience views of heavy infrastructure including Sydney Airport and Port Botany.

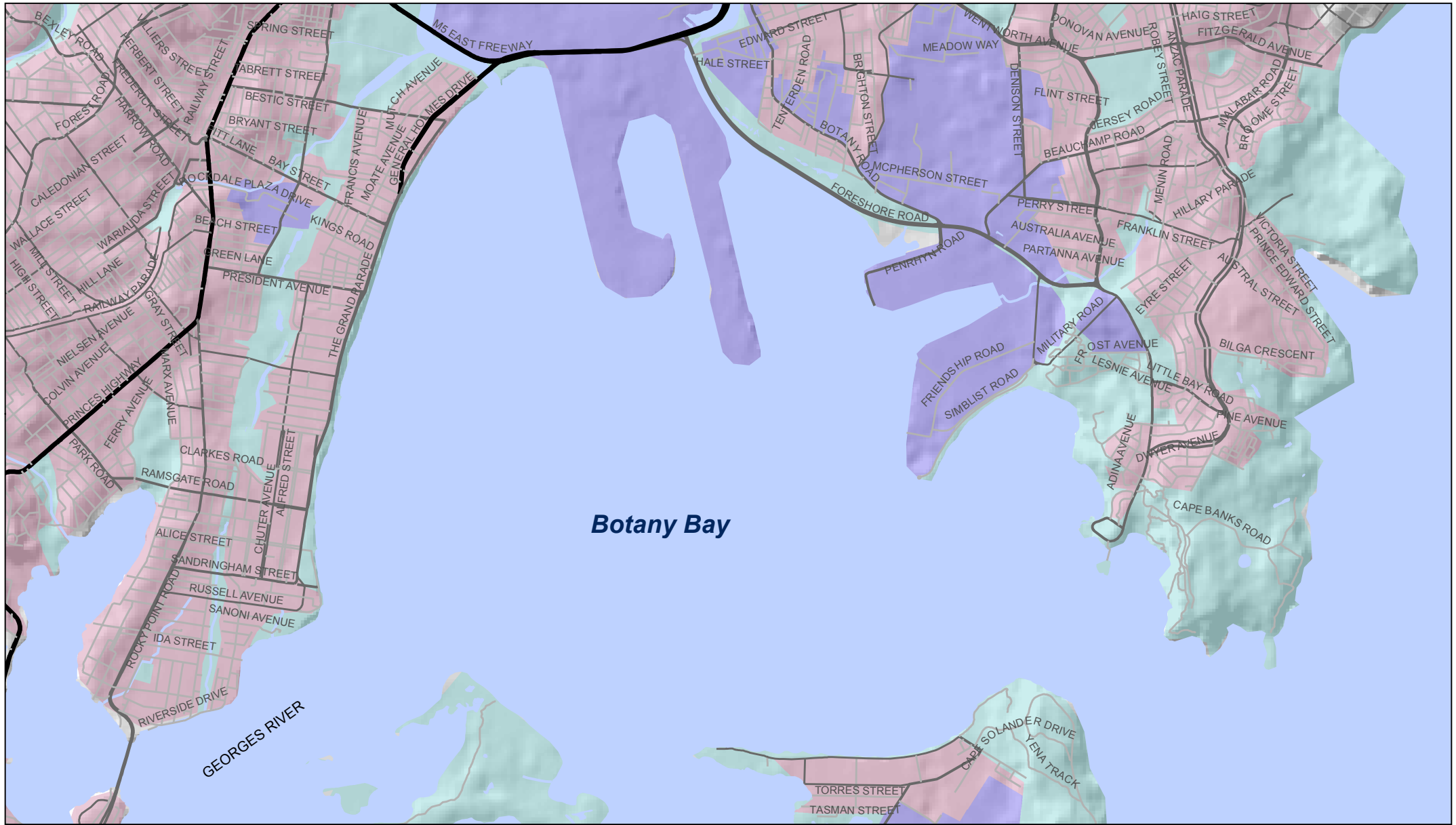


*Landscape Character Unit 3 – Natural, Vegetated and Recreational.  
Example: Botany Public Golf Course, Banksmeadow.*

Receptors include:

- Recreational users of public areas with medium sensitivity when recreation areas are located within close proximity but viewing periods are limited.
- Local road users with low sensitivity who have passing views and interest in their visual environment.

The landscape sensitivity of this landscape character unit is considered to be medium.



Landscape character units

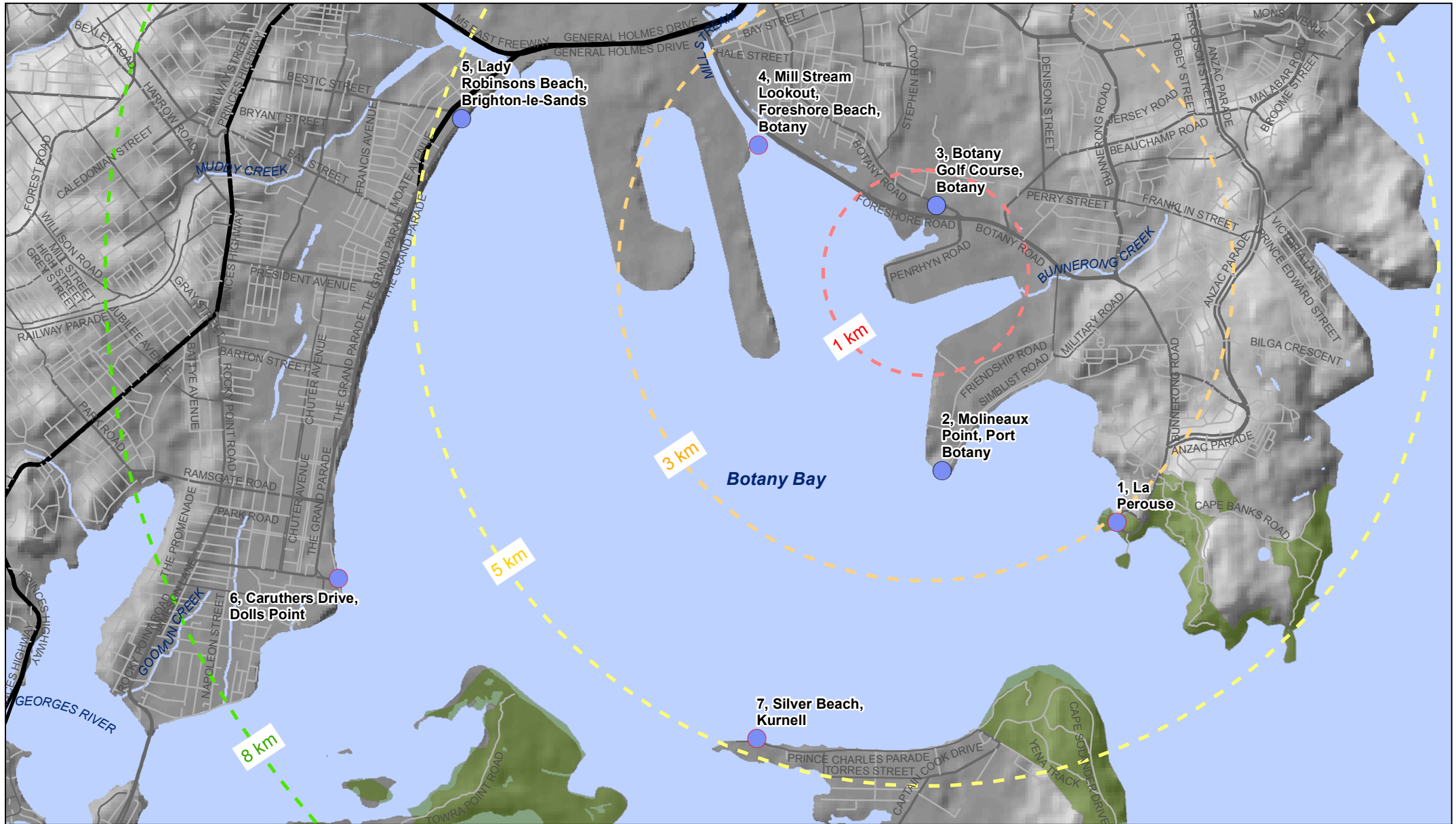
Figure 6-5

### *Sensitive visual receptor locations*

Seven representative sensitive visual receptor locations within the landscape character units were identified for assessment. The sensitive visual receptor locations are shown in Figure 6-6 and described in Table 6-18. The view from each location is shown in Photograph 6-1 through Photograph 6-7.

**Table 6-18 Sensitive visual receptor locations**

| Sensitive visual receptor location                | Receivers                             | Existing visual context                                                                                                                                                                                                                                                                                                                                                                       |
|---------------------------------------------------|---------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1 - La Perouse.                                   | - Recreational users.<br>- Residents. | Open views of Botany Bay and across to Kurnell. To the northwest, the existing port operations are visible. DP World operations are visible with the Patrick operations partially visible behind it (refer to Photograph 6-1).                                                                                                                                                                |
| 2 - Molineaux Point, Port Botany.                 | - Recreational users.                 | Open views of Botany Bay which encompasses La Perouse, Kurnell and Sydney Airport with distant views to Lady Robinsons Beach in Brighton-le-Sands. The large buildings associated with the DP World operations and the presence of vegetation limit views to the north (refer to Photograph 6-2).                                                                                             |
| 3 - Botany Golf Course, Botany.                   | - Recreational users.                 | Views obscured by the presence of dense vegetation along Foreshore Road. Cranes associated with DP World and Patrick operations are visible above the height of the vegetation. Refer to Photograph 6-3.                                                                                                                                                                                      |
| 4 - Mill Stream Lookout, Foreshore Beach, Botany. | - Recreational users.                 | Views of Botany Bay which encompasses Sydney Airport, DP World and Patrick port operations, with distant views to Lady Robinsons Beach in Brighton-le-Sands and Kurnell. Patrick operations are visible with the DP World operations partially visible behind it. The coloured stacks of containers and the tall cranes are a prominent visual element in the view (refer to Photograph 6-4). |
| 5 - Lady Robinsons Beach, Brighton-le-Sands.      | - Recreational users.<br>- Residents. | Views of Botany Bay which encompasses the length of Lady Robinsons Beach, Sydney Airport, DP World and Patrick port operations and distant views to Kurnell (refer to Photograph 6-5).                                                                                                                                                                                                        |
| 6 - Carruthers Drive, Dolls Point.                | - Recreational users.<br>- Residents. | Views of Botany Bay with distant views of Sydney Airport, DP World and Patrick port operations and the City of Sydney in the distance (refer to Photograph 6-6).                                                                                                                                                                                                                              |
| 7 - Silver Beach, Kurnell.                        | - Recreational users.<br>- Residents. | Views of Botany Bay with the Caltex Oil Jetty in the foreground at Kurnell and views of Sydney Airport, DP World and Patrick port operations and the City of Sydney in the distance (refer to Photograph 6-7).                                                                                                                                                                                |





Photograph 6-1 Sensitive receptor location 1 (La Perouse). Existing view looking northwest from La Perouse to the proposal site



Photograph 6-2 Sensitive receptor location 2 (Molineaux Point, Port Botany). Existing view looking northeast from commemorative platform in Molineaux Point to the proposal site



Photograph 6-3 Sensitive receptor location 3 (Botany Golf Course, Botany). Existing view looking south to southwest from Botany Golf Course to the proposal site



Photograph 6-4 Sensitive receptor location 4 (Mill Stream Lookout, Foreshore Beach, Botany). Existing view looking southeast from Mill Stream Lookout towards the proposal site



Photograph 6-5 Sensitive receptor location 5 (Lady Robinsons Beach, Brighton-le-Sands). Existing view looking southeast from Lady Robinsons Beach towards the proposal site



Photograph 6-6 Sensitive receptor location 6 (Carruthers Drive, Dolls Point). Existing view looking east from Carruthers Drive, Dolls Point to the proposal site



**Photograph 6-7 Sensitive receptor location 7 (Silver Beach, Kurnell). Existing view looking northeast from Silver Beach, Kurnell to the proposal site**

### 6.5.3 Landscape and visual impacts

The potential landscape and visual impacts of the proposal at each sensitive visual receptor location is presented in Table 6-19. Photomontages of four of the locations are provided in Figure 6-7 through Figure 6-10. Landscape and visual impact ratings are defined in Attachment F. Significance of impact ratings are described in Table 6-16 and Table 6-17.

The landscape in the area is considered to have a high capacity to accommodate change. This is due to the urban nature and the existing industrial character of the area.

During construction of the proposal, there would be limited visibility of the works as the construction areas would be within the existing container terminal which is an active site that contains large infrastructure such as cranes and containers that would aid in obscuring many of the potential views. For the majority of the potential sensitive visual receptors, it was assessed that there would not be any significant impacts.

During operation, the new administration and control building and maintenance building and workshop would be visible from a limited number of locations, but given the context of the surrounding industrial character of the landscape and the presence of other tall elements in the visual landscape such as the cranes the change was considered to be not significant.

Table 6-19 Landscape and visual impacts at sensitive visual receptor locations

| Sensitive visual receptor | Visible elements of the proposal (during construction and operation)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | Landscape and visual impact                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | Significance of impact during construction | Significance of impact during operation |
|---------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------|-----------------------------------------|
| 1 - La Perouse.           | <p>This receptor is located approximately 2.5 kilometres to the southeast of the proposal site. The residential areas are located on ground that slopes up from the shoreline which offers some slightly elevated viewing opportunities of the site. The elements of proposal that would likely be seen during construction of the proposal include:</p> <ul style="list-style-type: none"> <li>- Construction of the administration and control building in the southeastern portion of the site.</li> <li>- Large machinery, trucks and other vehicles in and around the construction zones.</li> </ul> <p>The elements of proposal that would likely be seen during operation of the proposal include the new administration and control building.</p> <p>Refer to photomontage in Figure 6-7.</p> | <p>The receptor sensitivity is assessed as medium sensitivity due the highly modified nature of the landscape which has an industrial built form.</p> <p>During the construction phase the landscape was assessed as having a small visual reduction due to the nature of the construction activities. The construction works are expected to be temporary. The quality of the impacts would be negative.</p> <p>During the operational phase there would be a small visual modification of the landscape. The operational phase is expected to be long term. The quality of the impacts would be negative.</p> <p>It is considered that this landscape has a high potential capacity to accommodate change.</p> | Minor significance.                        | Minor significance.                     |

| Sensitive visual receptor         | Visible elements of the proposal (during construction and operation)                                                                                                                                                                               | Landscape and visual impact                                                                                                                                                                                                                                                                                                                       | Significance of impact during construction | Significance of impact during operation |
|-----------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------|-----------------------------------------|
| 2 - Molineaux Point, Port Botany. | This receptor is located approximately 2 kilometres to the south of the proposal site. Views towards the proposal site are limited. No elements of proposal would likely be seen during construction or operation of the proposal.                 | <p>The receptor sensitivity is assessed as medium sensitivity due to the panoramic views available and recreational use.</p> <p>During construction and operation, the landscape was assessed as having a no perceivable visual reduction.</p> <p>It is considered that this landscape has a high potential capacity to accommodate change.</p>   | Not significant.                           | Not significant.                        |
| 3 - Botany Golf Course, Botany.   | This receptor is located approximately 500 metres to the north of the proposal site. There are limited views in the direction of the proposal site. No elements of proposal would likely be seen during construction or operation of the proposal. | <p>The receptor sensitivity is assessed as medium sensitivity due to the panoramic views available and recreational use.</p> <p>During construction and operation, the landscape was assessed as having a no perceivable visual reduction.</p> <p>It is considered that this landscape has a medium potential capacity to accommodate change.</p> | Not significant.                           | Not significant.                        |

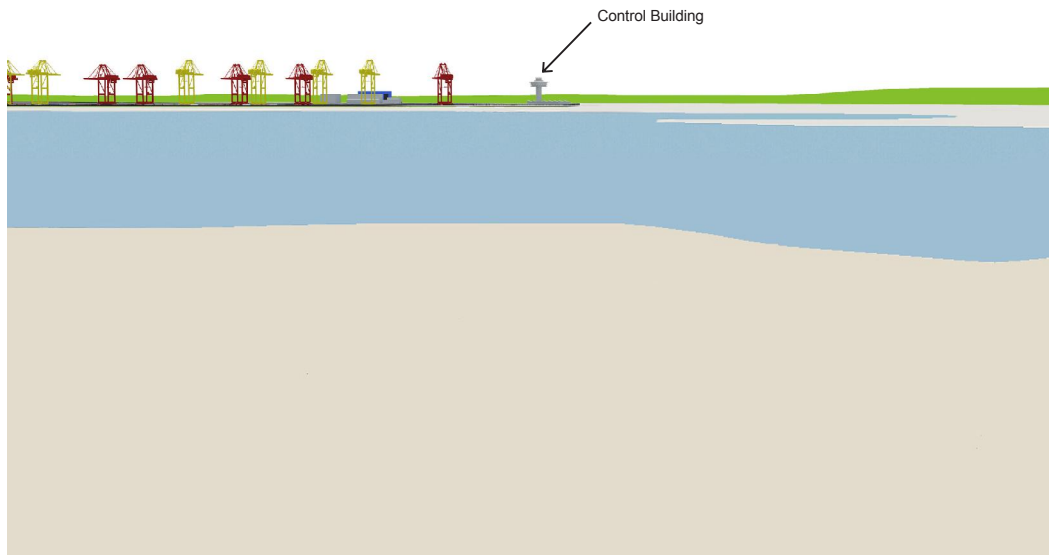
| Sensitive visual receptor                         | Visible elements of the proposal (during construction and operation)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | Landscape and visual impact                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | Significance of impact during construction | Significance of impact during operation |
|---------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------|-----------------------------------------|
| 4 - Mill Stream Lookout, Foreshore Beach, Botany. | <p>This receptor is located approximately 1.5 kilometres to the northwest of the proposal site. Views towards the proposal site are unobstructed. The elements of proposal that would likely be seen during construction of the proposal include:</p> <ul style="list-style-type: none"> <li>- Construction of the new administration and control building in the south-eastern portion of the site.</li> <li>- Construction of the new maintenance building and workshop.</li> <li>- Removal of the existing OCR building and construction of a new OCR structure.</li> <li>- Large machinery, trucks and other vehicles in and around construction zone.</li> </ul> <p>The elements of proposal that would likely be seen during operation of the proposal include the new administration and control building and maintenance building and workshop.</p> <p>Refer to photomontage in Figure 6-8.</p> | <p>The receptor sensitivity is assessed as medium sensitivity due to the scenic views available and recreational nature of the area.</p> <p>During construction, the landscape was assessed as having a small visual reduction due to the nature of the construction activities. The construction works would be temporary. The quality of the impacts would be negative.</p> <p>During operation, there would be a small visual modification of the landscape. Operation would be long term. The quality of the impacts would be negative.</p> <p>It is considered that this landscape has a high potential capacity to accommodate change.</p> | Minor significance.                        | Minor significance.                     |

| Sensitive visual receptor                    | Visible elements of the proposal (during construction and operation)                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | Landscape and visual impact                                                                                                                                                                                                                                                                                                                | Significance of impact during construction | Significance of impact during operation |
|----------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------|-----------------------------------------|
| 5 - Lady Robinsons Beach, Brighton-le-Sands. | This receptor is located approximately 5 kilometres to the northwest of the proposal site. There are distant views towards the proposal site and individual elements of the proposal site become less distinguishable from each other from this location. The existing infrastructure on the proposal site such as the cranes and container stacks would obscure views of the proposed works. No elements of the proposal would likely be seen during construction or operation of the proposal.                                         | <p>The receptor sensitivity is assessed as low sensitivity due to the panoramic views available and recreational use.</p> <p>During construction and operation, the landscape was assessed as having no perceivable visual reduction.</p> <p>It is considered that this landscape has a high potential capacity to accommodate change.</p> | Not significant.                           | Not significant.                        |
| 6 - Carruthers Drive, Dolls Point.           | This receptor is located approximately 6.5 kilometres to the southwest of the proposal site. There are distant views towards the proposal site and individual elements of the proposal site become less distinguishable from each other from this location. The existing infrastructure on the proposal site such as the cranes and container stacks would also obscure views of the proposed works. No elements of proposal would likely be seen during construction or operation of the proposal. Refer to photomontage in Figure 6-9. | <p>The receptor sensitivity is assessed as low sensitivity due to the panoramic views available and recreational use.</p> <p>During construction and operation, the landscape was assessed as having no perceivable visual reduction.</p> <p>It is considered that this landscape has a high potential capacity to accommodate change.</p> | Not significant.                           | Not significant.                        |

| Sensitive visual receptor  | Visible elements of the proposal (during construction and operation)                                                                                                                                                                                                                                                                                                          | Landscape and visual impact                                                                                                                                                                                                                                                                                                                                                            | Significance of impact during construction | Significance of impact during operation |
|----------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------|-----------------------------------------|
| 7 - Silver Beach, Kurnell. | <p>This receptor is located approximately 5 kilometres to the south of the proposal site. The existing infrastructure on the proposal site such as the cranes and container stacks would obscure views of the proposed works. No elements of proposal would likely be seen during construction or operation of the proposal.</p> <p>Refer to photomontage in Figure 6-10.</p> | <p>The receptor sensitivity is assessed as medium sensitivity due to the panoramic views available, the recreational use and the historic importance of the area.</p> <p>During construction and operation, the landscape was assessed as having no perceivable visual reduction.</p> <p>It is considered that this landscape has a high potential capacity to accommodate change.</p> | Not significant.                           | Not significant.                        |



Photomontage



3D model camera view

#### VIEWPOINT LOCATION MAP



#### EXISTING CONDITIONS



#### TECHNICAL INFORMATION

For indicative purposes only:  
Viewpoint Location: 336581.69 E 6237675.64 N  
(GDA 1994 MGA Zone 56)

Approximate direction of view: 336°  
Approximate distance to control building: 2700m

#### NOTE:

- Existing workshop and amenities buildings are located behind the existing cranes and containers.
- New workshop building would be located behind the existing cranes and containers. New workshop building would not be visible from this location.

#### LEGEND



P & O cranes

New workshop building



Patrick Stevedores cranes

Existing workshop & amenities buildings

| B   | Issue for Information | AL    | ST          | 07.02.13 |
|-----|-----------------------|-------|-------------|----------|
| A   | Issue for approval    | AL    | ST          | 01.02.13 |
| rev | description           | drawn | job manager | date     |

Patrick Stevedores Operations Pty Ltd  
Port Botany Building and Infrastructure Improvements  
**Photomontage of  
Location 01 - La Perouse**



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|               |          |         |           |
|---------------|----------|---------|-----------|
| sheet size    | A3       | job no. | 212196105 |
| date          | 07.02.13 | rev no. | B         |
| approved (PD) | GM       |         |           |

Figure 6-7