# State Significant Development Modification (MOD 1)

## Port Kembla Bulk Liquids Terminal (SSD 7264)

TQ Document Number: PJ-PK-0001---REPT-025

8201703801/Report 001 – Ver 3

Prepared for
TQ Holdings Australia Pty Ltd

21 November 2016

Cardno
Shaping the Future

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# Document Information

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# Document History

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| 1 | 31/10/2016 | Draft for Client Review | RMH | AJL |
| 2 | 4/11/2016 | Final for NSW Ports Review | RMH | AJL/CNB |
| 3 | 21/11/2016 | Final | RMH | AJL |

# Executive Summary

A Development Consent (Approval SSD 15_7264) was provided to TQ Holdings Australia Pty Ltd (TQ) to develop the Port Kembla Bulk Liquids Terminal (PK BLT) at Port Kembla, New South Wales, Australia on 9 September 2016. The construction and operation of the PK BLT will allow for the importation by ship, storage on site and distribution of liquids by road and the bulk liquids terminal will operate 24 hours a day and seven days a week.

Approval SSD 15_7264 was obtained under Part 4, Division 4.1 of the *Environmental Planning & Assessment 1979* (EP&A Act). A modification (MOD 1) to this existing approval is proposed in accordance with Section 96(1A) of the EP&A Act.

The proposal modification includes the following works:

- Consolidation of development staging;
- Minor adjustments to the configuration and Layout of Site 2;
- Separation of the fire water tanks and pumps on Site 2;
- Establishment of a north and south bund with an increase in bund height from 1.8 to 3.9m to comply with potential amendments to AS1940;
- Relocation of the Vapour Recovery Unit (VRU) on Site 2; and
- Relocation of Oily Water Separator (OWS) from Site 3 to Site 2.

It is considered the proposed modifications are minor and would be in compliance with Section 96(1A) of the EP&A Act whereby the development is *'substantially the same development as the development for which the consent was originally granted'.* This report provides a review and assessment of the potential environmental impacts of the proposed modification.

**Environmental Assessment Review**

To assess the environmental impacts arising from the proposed project approval modification as a worst-case scenario, a review of previous supporting environmental assessments and risk analysis, informed by previous agency consultation and Secretaries Environmental Assessment Requirements (SEARs), was undertaken by Cardno NSW/ACT Pty Ltd (Cardno).

The main environmental aspects assessed as part of the approved project Environmental Impact Statement (EIS) and Response to Submissions (RTS) and have been subsequently reassessed include:

- Hazard and Human Health Risk
- Air quality
- Noise and Vibration
- Traffic & Transport
- Surface Water, Waste Water and Flooding
- Soil, Contamination and Groundwater
- Greenhouse Gas and Climate Change
- Biodiversity
- Waste Management
- Visual Amenity
- Heritage
- Socio-economic
- Ecologically Sustainable Development
- Cumulative Impacts.

Each environmental aspect of the proposed project modification was reviewed against the previous impact assessments with additional detailed investigations undertaken for the following:

1. Hazard and Risk;
2. Air Quality and Greenhous Gas Emissions;
3. Noise and Vibration;
4. Human Health Risk; and
5. Surface Water.

The proposed modification (MOD1) was compared to the existing Approval SSD 15_7264 and found to be 'substantially the same' as the approved development. The extent of the facility is unchanged and storage capacity is reduced by approximately 5%.

The listed environmental aspects were reassessed in consideration of MOD1 with the proposal considered to be of minimal environmental impact subject to the appropriate mitigation and management measures provided at **Table 8-1**.

The proposal satisfies the requirements specified under Section 96 (1A) of the EP&A Act with a new application for approval considered unnecessary.

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# 1 Background

## 1.1 Introduction

TQ Holdings Australia Pty Ltd (TQ) submitted an Environmental Impact Statement (EIS) (Cardno, 2015a) in December 2015 and Response to Submissions Report (RTS) in April 2016 (Cardno, 2016) for the construction and operation of the Port Kembla Bulk Liquids Terminal (PK BLT) (the Site) at the Inner Harbour of Port Kembla, within the Wollongong Local Government Area (LGA) in NSW. This project will comprise a bulk liquids terminal for the importation and distribution of finished fuel products.

The project was approved by the Minister of Planning on 9 September, 2016 under Part 4 (State Significant Development (SSD)) of the *Environmental Planning and Assessment Act 1979* (EP&A Act), application number SSD 15_7264. The approved development comprised of three sites with the plan to develop the terminal in three stages (see Section 5 of the RTS (Cardno, 2016) for an outline of the approved staging).

The PK BLT project site is located on NSW Port's land, with TQ holding a long-term lease. The Site comprises the following land parcels:

> Lot 301 DP 1148391

> Lot 2 DP 1125445

> Lot 11 DP 1182111.

The site also includes a license to operate on Berth 104 (Lot 70 DP1182824).

TQ seeks to establish the intermediate capacity terminal at Sites 2 and 3 to optimise construction and operation activities, improve safety and align with potential updates to the applicable guidelines.

This has resulted in a change to the approved development staging with Sites 2 and 3 to be developed as the intermediate capacity terminal known as Stage 1 (see **Figure 2-1**). The approved Site 1 would remain unchanged in accordance with the condition of consent specified in Approval SSD 15_7264 and would be developed as Stage 2.

The detailed design process has resulted in minor changes to the design and layout of the bulk liquids storage tanks and associated infrastructure of Sites 2 and 3. The throughput and operations of the terminal will remain unchanged and the overall capacity is reduced by approximately 5% (see **Section 2** and **Section 3** for a more detailed description of the proposed modifications and their justification).

TQ seeks approval for the proposed modifications via a Section 96 (1A) modification application (MOD 1). It is considered the proposed modifications are minor and would be in compliance with section 96(1A) of the EP&A Act whereby the development is *'substantially the same development as the development for which the consent was originally granted.'* This report has been prepared to assess the potential environmental impacts of the proposed modification.

## 1.2 Site Description

The site, comprising four lots, is located in the Inner Harbour of Port Kembla, within the Wollongong LGA. TQ has a long-term lease over the land from NSW Ports, which includes non-exclusive access and use of Berth 104. Refer to **Figure 1-1** for a locality plan.

The land allotments and zoning is shown in **Figure 1-2**, with the site descriptions identified below.

**Table 1-1 Site Allotments**

| Description | Part Lot No. | Deposited Plan (DP) | Zoning (Three Ports SEPP, 2013) | Approximate Area (ha) |
|---|---|---|---|---|
| Site 1 | 2 | 1125445 | SP1 – Special Activities | 1.8 |
| Site 2 | 301 | 1148391 | SP1 – Special Activities | 4.139 |
| Site 3 | 11 | 1182111 | SP1 – Special Activities | 0.367 |
| Berth 104 | 70 | 1182824 | SP1 – Special Activities | 0.91 |

### 1.2.2 Existing Land Use

Sites 1, 2 and 3 are undeveloped, although earthworks including grading have been undertaken previously, which will minimise bulk earthworks required. Berth 104 is a common user berth that services grain facilities and bulk liquids storage facilities that are owned and operated by GrainCorp. The development site is situated amongst a range of existing heavy industry, port and associated logistical operations.

## 1.3 Summary of Proposed Modifications

The proposed changes to the approved development are summarised in **Table 1-2** below, and are shown in **Figure 2-1** and **Appendix A.**

**Table 1-2 Summary of Proposed Changes**

| Change No. | Description | Original Approval *(SSD 15_7264)* | Proposed Change |
|---|---|---|---|
| 1 | Development Staging | Stage 1, Stage 2 and Stage 3 | Development completed in 2 Stages beginning with construction activities at Sites 2 and 3 as Stage 1. See **Section 2.1**. |
| 2 | Re-configuration of small capacity storage tanks. | See Appendix C of the EIS (Cardno, 2015a) for design layout. | See **Appendix A** for design layout. |
| 3 | Establishment of north and south bund for Site 2. | See Appendix C of the EIS (Cardno, 2015a) for design layout. | See **Appendix A** for design layout. |
| 4 | Separation of the fire water tanks and pumps in the northern portion of Site 2. | Fire water tank and pumps located to the north west on Site 2. | Fire water tanks and pumps separated, one in the north eastern corner of Site 2 and one in the north western corner of Site 2. See **Figure 2-1**. |
| 5 | Increasing bund height from 1.8m to 3.9m. | Bund height 1.8m. | Bund height 3.9m. |
| 6 | Relocation of the vapour recovery unit within Site 2. | See Appendix C of the EIS (Cardno, 2015a) for design layout. | See **Appendix A** for design layout. |
| 7 | Relocation of oil separator from Site 3 to Site 2. | Oil separator located on Site 3. See Figure 3-3 of the EIS (Cardno, 2015a). | Oil separator located to Site 2. See **Figure 2-1**. |
| 8 | Relocation of additive and slops tanks within Site 2. | See Appendix C of the EIS (Cardno, 2015a) for design layout. | See **Appendix A** for design layout. See **Figure 2-1.** |
| 9 | Minor adjustment to bulk storage tank locations. Including replacing one 18ML tank with two 1.5ML tanks. | See Appendix C of the EIS (Cardno, 2015a) for design layout. | See **Appendix A** for design layout. See **Figure 2-1.** |
| 10 | Minor Truck loading bay realignment. | See Appendix C of the EIS (Cardno, 2015a) for design layout. | See **Appendix A** for design layout. See **Figure 2-1.** |

| | | | |
|---|---|---|---|
| 11 | Relocation of the pump bay within Site 2. | See Appendix C of the EIS (Cardno, 2015a) for design layout. | See **Appendix A** for design layout. See **Figure 2-1.** |
| 12 | Relocation of Nitrogen vacuum insulated evaporator (VIE) from Site 3 to Site 2. | See Appendix C of the EIS (Cardno, 2015a) for design layout. | See **Appendix A** for design layout. See **Figure 2-1.** |
| 13 | Relocation of Air Compressors from Site 3 to Site 2. | See Appendix C of the EIS (Cardno, 2015a) for design layout. | See **Appendix A** for design layout. See **Figure 2-1**. |

See **Section 2** for a more detailed outline of the proposed modification and **Section 3** for a justification of the proposal.

## 1.4 Assessment and Approval Pathway

TQ propose to modify the approved development consent (SSD 15_7264) under Section 96(1A) of the EP&A Act. The development (SSD 15_7264) was approved by the Minister for Planning on 9 September 2016 under Part 4 of the EP&A Act. A review of the relevant provisions of the EP&A Act is provided in **Section 4** of this Report. The review identifies that the proposal satisfies the 'substantially the same test' established through legal precedent.

## 1.5 Purpose and Structure of this Report

The structure of this report is as follows:

- Section 1 - introduces the project context and requirements
- Section 2 – describes and outlines the proposed modification
- Section 3 – provides justification for the proposed modifications
- Section 4 - assesses the proposed modification in relation to relevant planning legislation and policies
- Section 5 - assesses the environmental impacts from the proposed modification
- Section 6 – describes the consultation undertaken in relation to the proposal
- Section 7 - summarises the report findings
- Section 8 - references the cited documents


| Site # | Lot / DP | Area (ha) |
|---|---|---|
| Site 1 | 2 / 1125445 | 1.80 |
| Site 2 | 301 / 1148391 | 4.14 |
| Site 3 | 11 / 1182111 | 0.37 |
| Berth 104 | 70 / 1182824 | 0.91 |
| | | **7.22** |

FIGURE 1-1

1:2,500 Scale at A3

Metres

0 25 50 75 100

# Site Plan

PORT KEMBLA

Cardno

Map Produced by Cardno NSW/ACT Pty Ltd (WOL)
Date: 2016-10-28
Coordinate System: GDA 1994 MGA Zone 56
Project: 82017038
Map: 82017038-GS-003-SitePlan.mxd 01
Aerial imagery supplied by nearmap (January, 2015)

# Location Plan

PORT KEMBLA

## Legend

- Project Site
- Railway Stations
- Railway
- Motorway
- Primary Road
- Distributor Road
- Local Road
- Watercourses

**Land Use (ABS, 2011)**

- Commercial
- Education
- Industrial
- Parkland
- Residential
- Water

**FIGURE 1-2**

**1:40,000 Scale at A3**

Kilometres

0 0.5 1 1.5 2

N

Cardno

Map Produced by Cardno NSW/ACT Pty Ltd (WOL)
Date: 2016-10-28
Coordinate System: GDA 1994 MGA Zone 56
Project: 82017038
Map: 82017038-GS-004-LocationPlan.mxd 01

# 2 Proposed Modification

This proposal seeks to modify the approved PK BLT with the proposed modifications including:

> Consolidation of development staging; and

> Minor alterations to the basic design and layout of Site 2.

**Table 2-1** outlines the approved project and identifies items in bold requiring minor modification as part of this proposal.

**Table 2-1 Proposed modification in comparison to the approved development outlined in the EIS (Cardno, 2015a) and RTS (Cardno, 2016).**

| Original Approval Item *(SSD 15_7264)* | Modification | Description |
|---|---|---|
| Product Receipt & Storage | No | Product receipt and transfer would occur as approved. See Section 3.2.1 of the EIS (Cardno, 2015a). |
| Product Distribution | No | Product distribution would occur as approved. See Section 3.2.2 of the EIS (Cardno, 2015a). |
| Interaction with Other Port Operations and Activities | No | Interactions as a result of the proposed modification would not result in an increase in truck movements above that identified in the existing approval. Potential interactions and cumulative impacts of the modification have been considered in **Section 5**. |
| **Development Stages** | **Yes** | Development Staging has been revised as Stage 1 and Stage 2 with initial construction and operation activities occurring at Sites 2 and 3 as Stage 1. See Section 5.2 of the RTS (Cardno, 2016) for the approved staging and **Section 2.2** of this report for a description of the proposed modification. |
| Construction Activities | No | Construction activities would occur as approved. See Section 3.4 of the EIS (Cardno, 2015a). |
| **Construction Staging** | **Yes** | Minor modification as a result of the proposed development staging. See Section 3.4.2 of the EIS (Cardno, 2015a) for approved staging and **Section 2.2.2** for the proposed construction staging. |
| Hours of Construction | No | Hours of construction will occur as approved in accordance with the conditions of consent (SSD 15_7264). |
| Personnel and Employment | No | The overall number of personnel expected on site would remain the same as approved (SSD 15_7264). |
| Proposed Site Operations | No | Site operations would occur as approved. See Section 5.4.1 of the EIS (Cardno, 2015a). |
| **Transport Schedule** | **Yes** | Vehicle movements for operational stages would occur as approved. Minor adjustments to vehicle movements during construction stages as a result of proposed development staging. See Section 3.6.2 of the EIS (Cardno, 2015a) for approved transport schedule and **Section 2.4.2** for the proposed transport schedule. |
| Car Parking | No | The provision of car parking would occur as approved. See Section 3.6.3 of the EIS (Cardno, 2015a). |
| **Bulk Liquid Storage Tank Design and layout** | **Yes** | The proposal seeks minor adjustments to the configuration and sizing of storage and additive tanks. There is an overall reduction in the total storage capacity of approximately 5%. See **Section 2** and **Section 3** for more information. |
| **Bund Design and Layout** | **Yes** | Bunds would be designed in compliance with AS1940 as approved. The proposal seeks to establish a north and south bund at Site 2 and increase the bund height from 1.8m to |

| | | |
|---|---|---|
| | | 3.9m to comply with potential amendments to AS1940 (see **Section 2** and **Section 3** for more information). |
| Internal Floating Roof | No | Tanks listed in Table 3-6 of the EIS (Cardno, 2015a) will incorporate Internal Floating Roofs (IRFs) as approved. See updated **Table 2-6**. |
| Truck Loading Bays | No | The provision of loading bays and infrastructure would occur as approved. |
| Truck loading Operations | No | Truck loading operations would occur as approved. |
| Control Systems for Preventing Overfilling and Spills | No | Control Systems would be provided as approved. |
| **Vapour Recovery Unit** | **Yes** | The Vapour Recovery Unit (VRU) would be provided as approved. See Section 3.7.6 of the EIS (Cardno, 2015a) for further details. The proposal seeks to move the VRU within Site 2. Potential hazard, air quality and noise impacts from equipment relocations are assessed further in **Section 5**. |
| Additive and Dye Injection | No | The gantry loading system will function as approved. See Section 3.7.7 of the EIS (Cardno, 2015a). |
| **Fire Controls and Protocols** | **Yes** | Fire control systems and protocols will be provided as approved. See Section 3.7.8 of the EIS (Cardno, 2015a). The proposal seeks separation of the fire water tanks and pump sets in the northern portion of Site 2 as a result of further liaison with FRNSW and to address their comments in the RTS (Cardno, 2016). |
| Signage | No | The PK BLT will have appropriate signage in accordance with the conditions of consent (SSD 15_7264). |
| **Waste Management** | **Yes** | Waste management during construction and operation will occur in accordance with the conditions of consent. The proposal seeks to relocate the oil separator from Site 3 to Site 2 (see **Section 2** and **3** for more information). |

No modifications to Site 1 are proposed under this modification (MOD 1) with the Site expected to function as approved at this stage. The project description has been updated below in relation to the proposed changes identified in **Table 2-1**. All other project details remain as approved in the EIS (Cardno, 2015a) and RTS (Cardno, 2016).

## 2.2 Modified Development Staging

The approved PKBLT consisted of three main development stages constructed on sites 1, 2 and 3. The stages of the approved PKBLT Project were identified as:

> Stage 1

> Stage 2

> Stage 3

See Section 5 of the RTS Report and Figure 3-3 of the EIS for a more detailed description of the approved Development Staging.

TQ seeks to consolidate the development into two stages consisting of:

> Stage 1 – Immediate Capacity Terminal located at Sites 2 and 3 (subject to this modification).

> Stage 2 – Combustible and flammable bulk liquids storage and pump bay located at Site 1. Site 1 will not be developed during the proposed Stage 1 and development for Site 1 would occur as approved during Stage 2.

The proposed development staging (subject to this modification) is indicated in **Figure 2-1** and is outlined below. The EIS and RTS assessed the worst case impacts of construction and operation for the approved development with the consolidated proposed staging resulting in a reduction in the overall construction duration. The consolidated staging would have a lesser or equal impact to the approved development.

### 2.2.1 Stage 1

This stage of development will occur at Sites 2 and 3 and will comprise:

> Construction of eight flammable bulk liquid storage tanks, four combustible liquid storage tanks and eight small flammable tanks for the storage of slops and additives on Site 2 (see **Section 2.6.1** for a description of the proposed design and layout modifications).

> Truck loading bay structure and fit out of four loading bays on Site 2.

> Landscaping along sections of the perimeter of Site 3 including a suitable selection of native plants.

> Utilities, stormwater, fencing and pavements Sites 2 and 3.

> Vessel unloading equipment including rail mounted trolley with Marine Loading Arms (MLAs) and associated infrastructure on Berth 104 and product piping between Berth 104 and Site 2.

> Vapour Recovery Unit and Additive storage and injection system on Site 2.

> Air and Nitrogen Utilities and Oily Water Separation System on Site 2.

> Bunding around tanks on Site 2 to provide the necessary bund capacity.

> Pump bay and product piping to allow the transfer of product to the truck loading bays and within Site 2.

> Car parking, admin/office building and drainage catchpit on Site 3.

> Fire system including two firewater tanks and pump systems on Site 2.

The throughput after completion of Stage 1 will be up to 1,800 mega litres per annum (ML pa). Stage 1 works are anticipated to be completed to allow operation commencing in late 2018.

### 2.2.2 Stage 2

Stage 2 will occur on Site 1 and will comprise the following:

> Seven combustible liquid storage tanks

> Five flammable liquid storage tanks

> Slops tanks to collect any waste product or spills

> Construction of bund walls around the site

> Fire system, utilities, stormwater and pavements

> Installation of fourth MLA and connection pipe to Site 2

> Pump bay and product piping to allow the transfer of product from Site 1 to Site 2.

> Truck loading bay structure and fit out of two loading bays on Site 2.

> Services bridge between Site 2 and Site 1 including firewater.

The additional capacity for Stage 2 will allow throughput to increase to approximately 2,900 ML pa. The commencement of Stage 2 will be determined by market demand.

## 2.3 Proposed Site Construction

### 2.3.1 Proposed Construction Activities

As per Section 3.4 of the EIS (Cardno, 2015a), the following is a summary of construction activities proposed:

> Bulk earthworks across all sites.

> Installation of drainage infrastructure.

> Piling for tanks.

> Concrete foundations and roadway construction.

> General construction and fabrication activities including installation of piping and tanks requiring use of cranes, welding, grinding, etc.

A bulk earthworks strategy has been developed for the proposed bulk earthworks. This strategy identified that all three sites to require minimal net fill.

### 2.3.2 Construction Staging

Construction of the project will be staged as outlined in **Figure 2-1**.

Construction activities associated with:

1. Stage 1 will occur on Sites 2 and 3 and the Berth.
2. Stage 2 will occur on Site 1.

The date for commencing Stage 2 construction will be determined by market demand.

### 2.3.3 Stage 1 Construction Sequencing

Construction of Stage 1 is proposed to be completed according to the following sequence, noting applicable pre-construction SSD consent condition requirements are proposed to be provided as outlined below:

**Table 2-2 Construction Sequencing**

| Construction Phase | Activities | Applicable SDD Pre-Construction Consent Conditions |
|---|---|---|
| **1** | Piling, foundations and tanks | Condition B4:<br>a) Construction Safety Study<br>b) Fire Safety Study<br>c) Hazard and Operability Study<br>d) Final Hazard Analysis (excluding surge study results) |
| **2** | Piping equipment and structure | As per condition Phase 1 and condition B4:<br>d) Final Hazard Analysis including surge study. |
| **3** | Buildings & Ancillaries | As per Construction Phase 2. |

### 2.3.4 Hours of Construction

Normal hours of construction will be implemented as specified by the conditions of consent.

### 2.3.5 Personnel and Employment

The overall number of personnel expected on site during the construction stages of the project, excluding truck drivers who pick up/deliver construction items, are summarised in the **Table 2-3.**

**Table 2-3 Summary of Personnel**

| Stage | Construction (Personnel) | Operations (Personnel) | Total (Personnel) | Duration (months) |
|---|---|---|---|---|
| Stage 1 Construction | 38 - 138 | 0 | 38 - 138 | 22 |
| Stage 1 Operations | 0 | 5 - 12 | 5 – 12 | |
| Stage 1 Operations & Stage 2 Construction | 38-78 | 5 - 12 | 43 - 90 | 19 |
| Stage 2 Operations | 0 | 5 - 12 | 5 -12 | Ongoing |

## 2.4 Site Operations

### 2.4.1 Hours of Operation

As per Section 3.5 of the EIS (Cardno, 2015a) and the conditions of consent, the proposed site will be operational 24 hours a day 7 days per week manned by onsite operations personnel during higher risk activities such as ship unloading or product transfer. All terminal activities (controlling tank movements, product transfers, road tanker loading, VRU monitoring, fire system control and alarms) will be coordinated by the Control Room Operator.

### 2.4.2 Throughput

As per Section 3.5 of the EIS (Cardno, 2015a), Stages 1 and 2 are designed to accommodate flammable and combustible fuels. The forecast throughput levels are summarised in **Table 2-4** with the overall throughput the same as approved.

**Table 2-4 Estimated Annual Throughputs for Petroleum Products**

| Fuel Type | Stage 1 (ML pa) | Stage 2 (ML pa) |
|---|---|---|
| **Combustibles** | 1,170 | 1,885 |
| **Flammables** | 630 | 1,015 |
| **TOTAL** | 1,800 | 2,900 |

The above forecast is based on the following estimated ship movements as provided by TQ:

- Stage 1 – 25 vessels per year
- Stage 2 – 32 vessels per year

### 2.4.3 Maintenance of Other Minor Works

To support the daily functions of the PK BLT ongoing maintenance and other minor works may be undertaken during operation to ensure that operation occurs within the parameters as identified in the EIS (Cardno, 2015a) and the RTS (Cardno, 2016). The works will ensure the function of the PK BLT occurs in a safe and secure manner through minimising any risks or environmental impacts on people or the environment. The works may include activities such as plant and equipment upgrades or replacement, installation of additional pollution control measures and hose/pipeline repairs. The Operational Environmental Management Plan (OEMP) will identify such works and will outline appropriate management measures to minimise any potential impacts.

## 2.5 Proposed Vehicle Access & Egress

The approved development will operate within a working port area. Therefore, the design of access and egress locations have considered the vehicle type, turning pathways and appropriate sight lines to ensure road safety and to minimise operational impacts to the greater port environment.

The road accesses and egresses was assessed as part of the Traffic and Transport Impact Assessment in Section 7.6 and Appendix F of the EIS (Cardno, 2015a) and comprised all construction and operational vehicles entering and exiting the Port precinct via Tom Thumb Road and the existing security gatehouse situated just off Spring Hill Road. See **Section 2.5.1** below for a summary of the updated daily vehicle movements in line with the modified development staging.

### 2.5.1 Transport Schedule

A summary of vehicle movements for both the construction and operational stages is shown in **Table 2-5** below. It is assumed that site based personnel during construction and operations will drive light vehicles to site.

**Table 2-5 Summary of Daily Vehicle Movements Expected During Construction and Operations**

| Stage | Construction (No. of Vehicles) | | Operations (No. of Vehicles) | | Total | Duration (months) |
|---|---|---|---|---|---|---|
| | Light Vehicles | Heavy Vehicles | Light Vehicles | Heavy Vehicles | | |
| Stage 1 Construction | 38 - 138 | 10 - 20 | 0 | 0 | 48 - 158 | 22 |
| Stage 1 Operations | - | - | 5 – 12 | 84 - 174 | 89 - 186 | Ongoing until Stage 2 operating. |
| Stage 1 Operations & Stage 2 Construction | 38 - 78 | 5 - 10 | 5 – 12 | 84 - 174 | 132 – 274 | 19 |
| Stage 2 Operations | - | - | 5 – 12 | 140 - 261 | 145 - 273 | Ongoing |

The consolidation of stages has resulted in a reduction in the overall construction duration. This modified staging reduces the project construction timeframes from a total of 41 months to 37 months as well as reducing in the number of total vehicle movements required. Maximum vehicle movements for each individual stage are the same or less than the estimate provided in the EIS (Cardno, 2015a).

The EIS and RTS assessed the worst-case impacts of construction and operation for the approved development with a reduction in the overall construction duration. Therefore, the proposal is considered to be of minimal environmental impact subject to appropriate mitigation and management measures with revised mitigation and measures provided at **Table 8-1.**

### 2.5.2 Car Parking

As approved, 20 parking spaces will be located at Site 3 near the control room, office block and maintenance workshop for operational staff. One or two spaces will also be provided on Sites 1 and 2 to allow maintenance vehicle parking as required.

## 2.6 On Site Storage & Loading Facilities

### 2.6.1 Bulk Liquid Storage Tank Design and Layout

The proposal seeks approval for minor modifications to the design and layout of Sites 2 and 3. The function and throughput of the site will remain the same as approved by the conditions of consent (SSD 15_7264).

The proposed modifications include:

> Removal of 18ML flammable bulk liquids storage tank on Site 2 (this reduces overall developed storage by approximately 5%);

> The addition of a further two 1.5ML bulk liquids storage tanks on Site 2 for the storage of flammable products;

> Relocation of two 1.5ML flammable bulk liquid storage tanks within Site 2.

> Relocation of two 0.03ML flammable bulk liquids storage tanks within Site 2;

> Increasing the capacity of two small flammable storage tanks from 0.03LM to 0.05ML;

> Establishment of a north and south bund at Site 2;

> Increasing the bund height from 1.8m to 3.9m to comply with potential amendments to AS1940 ;

> Relocation of the oil water separator and nitrogen storage and air compressors from Site 3 to Site 2; and

> Relocation of Site 2 switch rooms and transformers within site 2.

The proposed dimensions and locations of the tanks are included in **Table 2-6**. See **Figure 2-1** for an outline of the proposed changes in relation to the overall site layout.

As outlined in Section 3.7 of the EIS (Cardno, 2015a), all bulk liquid storage tanks and bunds will be designed, constructed and operated in accordance with *AS1940-2004 - The storage and handling of flammable and combustible liquids and API650* and potential amendments to AS1940. The proposed modification has been designed in consideration of these guidelines as well as the Qualitative Risk Assessment (QRA) outcomes (refer Section 6 of the EIS (Cardno, 2015a)). Key considerations include:

> All tanks shall be located within bunded areas in such a way that spills will not reach a protected works, watercourse or a property boundary;

> The ground around the tank should be kept clear of any combustible vegetation or refuse within 3m;

> Tank to tank distances will be designed in accordance with *AS1940-2004 - The storage and handling of flammable and combustible liquids;*

> Distances from tanks to onsite and offsite protected places will be designed in accordance with AS1940. Protected places can be described as a dwelling, public building or place where people may be accustomed to assemble;

> Distances from tanks to security fence will be design in accordance with *AS1940-2004 - The storage and handling of flammable and combustible liquids*; and

> Power lines can present a particular hazard and so power lines must not be allowed within 5m of the tank.

The level of risk associated with the approved product types was assessed in the original Preliminary Hazard Analysis (PHA) which formed part of the original approval (Appendix D of the EIS (Cardno, 2015a)). This PHA has been updated to assess the level of risk associated with the proposed design and layout modifications to Site 2 (see **Appendix B**). Further review of the environmental impact of the proposed modification is provided in **Section 3** of this report.

**Table 2-6 Storage Design and Capacity (Table as modified from Table 3-6 of the EIS)**

| Site | Stage | Internal Floating Roof | Diameter (m) | Height (m) | Tank Volume | DA Modification |
|---|---|---|---|---|---|---|
| Site 1 | 2 | No | 20 | 21.5 | 6ML | No change. |
| Site 1 | 2 | No | 20 | 21.5 | 6ML | No change. |
| Site 1 | 2 | No | 20 | 21.5 | 6ML | No change. |
| Site 1 | 2 | No | 29 | 28.9 | 18ML | No change. |
| Site 1 | 2 | No | 29 | 28.9 | 18ML | No change. |
| Site 1 | 2 | No | 29 | 28.9 | 18ML | No change. |
| Site 1 | 2 | Yes | 29 | 28.9 | 18ML | No change. |
| Site 1 | 2 | Yes | 29 | 28.9 | 18ML | No change. |
| Site 1 | 2 | Yes | 29 | 28.9 | 18ML | No change. |
| Site 1 | 2 | Yes | 10 | 21.5 | 1.5ML | No change. |
| Site 1 | 2 | Yes | 10 | 21.5 | 1.5ML | No change. |
| Site 1 | 2 | No | 10 | 21.5 | 1.5ML | No change. |
| Site 1 | 2 | No | 3 | 4.8 | 0.03ML | No change. |
| Site 1 | 2 | No | 3 | 4.8 | 0.03ML | No change. |
| Site 1 | 2 | No | 3 | 4.8 | 0.03ML | No change. |
| Site 1 | 2 | No | 3 | 4.8 | 0.03ML | No change. |
| Site 1 | 2 | No | 3 | 4.8 | 0.03ML | No change. |
| Site 1 | 2 | No | 3 | 4.8 | 0.03ML | No change. |
| Site 2 | 1 | Yes | 10 | 20.5 | 1.5ML | Relocation within Site 2. |
| Site 2 | 1 | Yes | 10 | 20.5 | 1.5ML | Relocation within Site 2. |
| Site 2 | 1 | Yes | 29 | 28.2 | 18ML | Removed. |
| Site 2 | 1 | Yes | 29 | 28.2 | 18ML | No change. |
| Site 2 | 1 | Yes | 29 | 28.2 | 18ML | No change. |
| Site 2 | 1 | No | 29 | 28.2 | 18ML | No change. |
| Site 2 | 1 | No | 29 | 28.2 | 18ML | No change. |
| Site 2 | 1 | No | 3 | 7.3 | 0.05ML | Increased from 0.03 to 0.05 ML. |

| | | | | | | |
|---|---|---|---|---|---|---|
| Site 2 | 1 | No | 3 | 7.3 | 0.05ML | Increased from 0.03 to 0.05 ML. |
| Site 2 | 1 | No | 3 | 4.8 | 0.03ML | No change. |
| Site 2 | 1 | No | 3 | 4.8 | 0.03ML | Removed |
| Site 2 | 1 | No | 3 | 4.8 | 0.03ML | No change. |
| Site 2 | 1 | Yes | 29 | 28.2 | 18ML | No change. |
| Site 2 | 1 | Yes | 29 | 28.2 | 18ML | No change. |
| Site 2 | 1 | No | 29 | 28.2 | 18ML | No change. |
| Site 2 | 1 | No | 24 | 28.2 | 12ML | No change. |
| Site 2 | 1 | No | 3 | 4.8 | 0.03ML | Contains flammable liquid. |
| Site 2 | 1 | No | 3 | 4.8 | 0.03ML | Contains flammable liquid and changed to above ground tank. |
| Site 2 | 1 | No | 3 | 4.8 | 0.03ML | Relocated within Site 2. |
| Site 2 | 1 | No | 3 | 4.8 | 0.03ML | Relocated within Site 2. |
| Site 2 | 1 | Yes | 10 | 21.5 | 1.5ML | New tank on Site 2. |
| Site 2 | 1 | No | 10 | 21.5 | 1.5ML | New tank on Site 2. |
| Site 2 | 1 | No | 12 | 10.0 | 1.00ML | No change. |
| Site 2 | 1 | No | 12 | 10.0 | 1.00ML | Relocate fire tank and pumps on Site 2. |

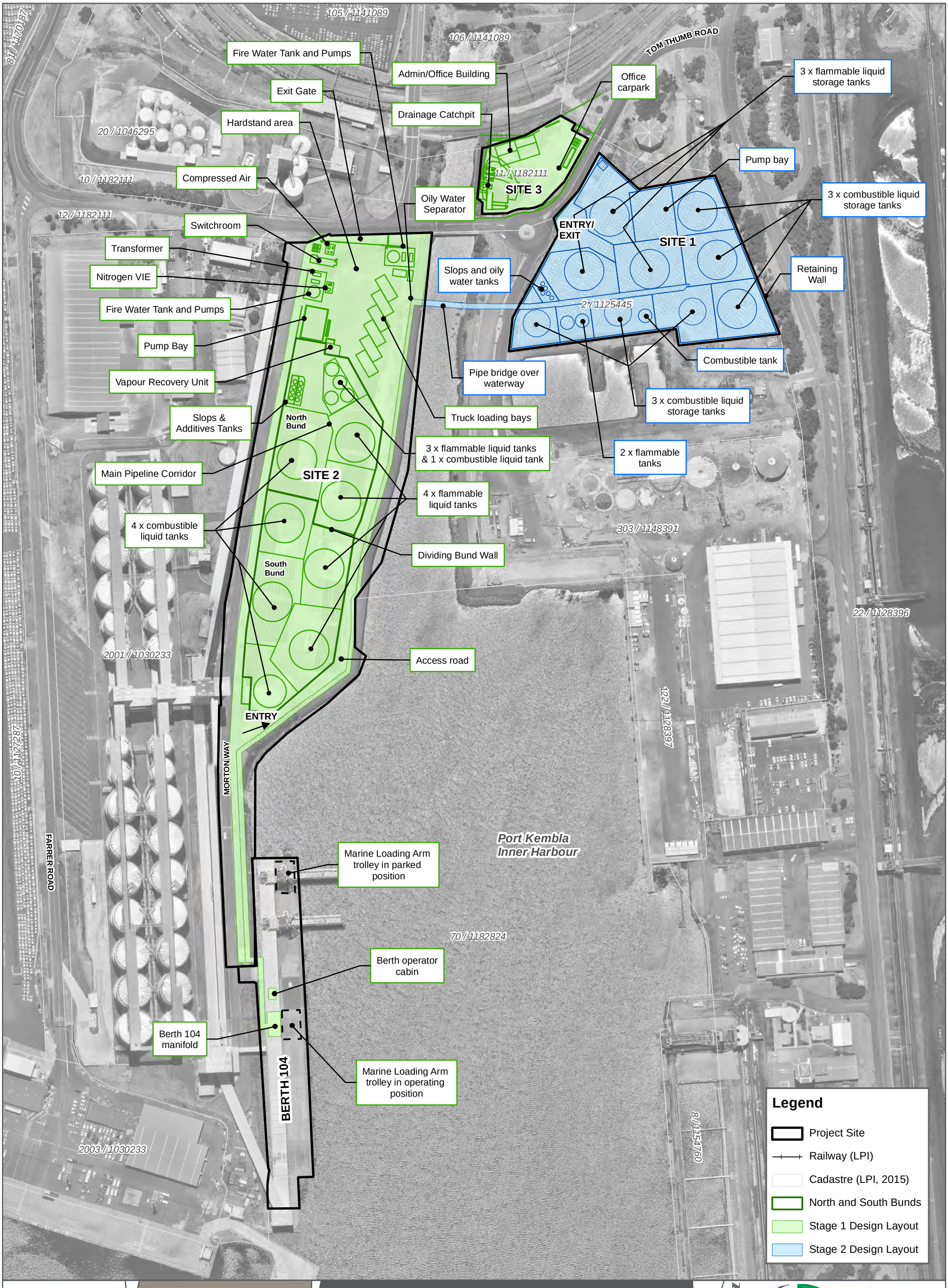



FIGURE 2-1

1:2,500 Scale at A3

Metres

0 25 50 75 100

# Development Staging Plan (MOD1)

PORT KEMBLA

Map Produced by Cardno NSW/ACT Pty Ltd (WOL)
Date: 2016-11-21
Coordinate System: GDA 1994 MGA Zone 56
Project: 82017038-01
Map: 82017038-GS-002-DevelopmentStagingPlan.mxd 04
Aerial imagery supplied by nearmap (January, 2015)

# 3 Justification of the Proposed Modification

## 3.1 Development Stages

The proposed development stages have been amended from three stages to two as described in **Section 2.2** and shown on **Figure 2-1**.

The main objectives and benefits for the amended staging strategy are:

> A main reason for the original staging strategy for the project Approval SSD 15_7264, comprising three separate stages, was that TQ would use an original Part 3A Major Project Approval (08_0083 & associated MODs) to progress some early works and construction of the 3 x 6 ML tanks on Site 1. As this original approval has now lapsed there is no longer any advantage in using the original consent to commence construction on Site 1.

> Stage 1 construction activities will be optimised by consolidating construction across 2 sites rather than all 3 sites.

> Allows a more efficient Stage 1 construction by having 2 rather than 3 stages and there is a larger space available for construction laydown areas.

> Simplified construction strategy and improved safety for Stage 2 as it would be constructed on a Greenfield site (Site 1) rather than being constructed within an operating fuel terminal on Site 2 (brownfield with hot work permits).

> Changes to staging can be made without increasing environmental impacts from those assessed in existing EIS (Cardno, 2015a) or RTS (Cardno, 2016) reports.

Should any changes to staging be required to improve constructability or operational aspects, TQ would liaise with DP&E and submit a separate staging plan outlining any changes in proposed staging.

## 3.2 Bulk Liquid Storage Tank Design and Layout

The site layout has been amended as per the minor modifications described in **Section 2** and shown on **Figure 2-1** to ensure firefighting security, reduce overall hazard and risk propagation off site and to ensure that operational efficiencies can be attained.

The main objectives and benefits for the amended site design layout include:

> The staging amendments defers the Site 1 offsite propagation risk contours identified in the PHA during Stage 1 of the project by avoiding the construction of Site 1 and the Site 1 pump bay and manifold areas.

> The fire services equipment is now separated into two separate tanks and pump systems on Site 2 which addresses a design improvement requested by Fire and Rescue NSW (FRNSW) in the RTS (Cardno, 2016). The refined site layout separates the fire water tanks and fire pumping equipment which increases the operational security of the fire system in the event of an incident involving one of the fire tank locations.

> A change in the bund wall height and the creation of two separate bunds on Site 2 to comply with potential amendments to AS1940. Amendments to AS1940 state '*the net capacity of a compound shall be at least 110% of the capacity of the largest tank or 25% of the total capacity of all tanks within the bund whichever is the greater.'* The modified bund height would address this requirement.

# 4 Legislative Review

## 4.1 Section 96 Overview

The EP&A Act provides the legislative framework for the assessment and approval of the proposed modification. The TQ bulk liquids terminal project, Approval SSD 15_7264 was obtained under Part 4, Division 4.1 of the EP&A Act. A modification is now proposed subject to Section 96(1A) of the EP&A Act, which relates to modifications involving minimal environmental impact.

Section 96(1A) includes a number of requirements that must be satisfied for the consent authority to modify an application. These requirements include:

> "(a) *it is satisfied that the proposed modification is of minimal environmental impact"*

The environmental impact of the proposed modifications is discussed at **Section 5** of this Report. These investigations identified that the proposed modification would result in minimal environmental impacts subject to appropriate mitigation and management measures as identified within **Section 5**.

> *"(b) it is satisfied that the development to which the consent as modified relates is substantially the same development as the development for which the consent was originally granted and before that consent as originally granted was modified (if at all)"*

The substantially the same tests are addressed in **Section 4.2** below, with a review of legal precedence undertaken.

> *"(c) it has notified the application in accordance with:*
>
> *(i) the regulations, if the regulations so require, or*
>
> *(ii) a development control plan, if the consent authority is a council that has made a development control plan that requires the notification or advertising of applications for modification of a development consent"*

The application would be notified by DP&E prior to determination.

> *"(d) it has considered any submissions made concerning the proposed modification within any period prescribed by the regulations or provided by the development control plan, as the case may be."*

DP&E would consider any submissions received prior to determination.

## 4.2 Substantially the same Review

A detailed review of the substantially the same test as identified at Section 96(1A)(b) is provided below.

Two legal tests are applicable to Section 96 that need to be considered before a consent authority can determine a modification. These comprise:

1. The proposed modification must not involve "*alteration without radical transformation*" (*Sydney City Council v Ilenace Pty Ltd [1984]*). Consequently, a proposed radical transformation to the approved development cannot be determined under Section 96.
2. The proposed modification, as required by Section 96(1A)(a), must be 'substantially the same development' as authorised by the original development consent.

The proposed development is not considered to be a radical transformation. However, this test is very broad and hard to qualify, with a wide range of potential modifications satisfying these criteria. Therefore, this review focuses on the second test.

To establish whether the development is 'substantially the same' as the original, a comparison between the scheme approved by project Approval SSD 15_7264 and the proposed modification has been undertaken. The comparison is located within **Section 2 i**f this document. The comparison includes identification of the modification, consideration of the magnitude of change and the associated impacts. The associated impacts are then discussed in detail at **Section 5**.

The comparison between the existing approved scheme and the proposed modification requires an understanding of the material differences between the two schemes. In the case of *Bathla Investments Pty Limited v Blacktown City Council [2008*] an approval was obtained for eight townhouses, which presented as four, single-storey buildings, some of which were attached. A modification sought a revised scheme including two storey detached dwellings, with amendments to the garage designs and parking layout. The Court noted that while there were '*numerous differences'* between the schemes, the townhouse development presented as materially and essentially the same development. Consequently, a modification was considered appropriate.

The proposed modification would result in consolidation of construction activities from three construction stages, to two construction stages, allowing a more efficient construction process. Additionally, the amendments would result in marginal changes in the location of tanks and the reconfiguration of a single large tank into two smaller tanks, as well as revision of bund walls and the location of the site utilities (refer to **Appendix A** for further details). The extent and overall storage capacity of these aspects of the project have not changed (but have in fact been slightly reduced), with only minor, immaterial changes in layout and configuration, as discussed further in the justification at **Section 3**. The development would therefore present as materially the same as the Approved development, with a modification considered appropriate.

The reconfiguration of the approved scheme was considered by the Court in the case of *Davi Developments Pty Ltd v Leichhardt Council [2007]*. The modification sought to remove a floor from a seven storey residential flat building, while increasing the main parapet height, as well as substantially reconfiguring the unit mix and rearranging the car park plan such that it was '*entirely different'*. Nevertheless, the Court considered that the fundamental characteristics and essence of the building would remain essentially the same. The proposed modification would result in minor reconfiguration of the development. However, as in the above case the character and essence of the development would remain, as for the approved, with the proposed scheme still considered a modification.

The *Davi Developments Pty Ltd v Leichhardt Council* case was supported by the Court in *Marana Developments Pty Limited v Botany City Council [2011]*. The proposed modification sought '*significant changes to the external appearance and layout of the buildings'*. However, despite significant internal changes, the minimal change to the external appearance was considered to be of great significance and the substantially the same test was satisfied.

The TQ modification would result in changes to the site configuration, however, these are not considered substantial, with only minor reconfigurations proposed, as illustrated by the design drawings at **Appendix A**. Furthermore, the revised tanks and bund walls, as well as relocation of plant would not affect the more visible elements of the site, comprising the larger storage tanks and associated piping. Consequently, a Section 96(1A) modification for the development is considered appropriate based on the *Marana Developments Pty Limited v Botany City Council* case.

In summary, the modified scheme is considered appropriate subject to the legal precedents established by the Court. Consequently, DP&E can assess and determine the proposal as a modification, with a new application unnecessary.

# 5 Environmental Assessment

## 5.1 Previous Environmental Assessments

A comprehensive assessment of environmental risks and impacts for the PK BLT was provided in the EIS (Cardno, 2015a) and with further clarification provided in the RTS (Cardno, 2016) which have been approved in SSD 15_7264.

The main environmental aspects assessed as part of the approved project EIS (Cardno, 2015a) and RTS (Cardno, 2016) include:

1. Hazard and Risk
2. Air quality
3. Noise and Vibration
4. Traffic & Transport
5. Surface Water, Waste Water and Flooding
6. Soil, Contamination and Groundwater
7. Greenhouse Gas and Climate Change
8. Biodiversity
9. Waste Management
10. Visual Amenity
11. Heritage
12. Human Health Risks
13. Socio-economic
14. Ecologically Sustainable Development
15. Cumulative Impacts.

The environmental aspects assessed in the EIS (Cardno 2015a) which supported the project Approval (SSD 15_7264) were identified after reviewing the assessment criteria outlined in the SEARs (including agency comments) and the overall project details.

## 5.2 Preliminary Environment Assessment

Each environmental aspect of the proposed project modification (in reference to **Section 2** and amended development plans provided in **Appendix A**) has been reviewed against previous impact assessments undertaken in the EIS (Cardno, 2015a) and RTS (Cardno, 2016) which supported the project Approval SSD 15_7264 to determine whether further detailed assessment is required. This analysis is provided below in **Table 5-1**.

**Table 5-1 Review of Environmental Impacts – Gap Analysis**

| Environmental Aspect | Environmental Impact Review | Further Detailed Assessment Required | Further Assessment Details |
|---|---|---|---|
| Hazard & Risk | The overall throughput for the PKL BLT remains the same as the approved development, however, as the proposed modification involves the minor relocation, removal and modification of storage tanks (size, location and fuel contents) on the site (mainly on Site 2), further detailed assessment is required.<br>A revised Preliminary Hazard Analysis (PHA) has been prepared by Sherpa Consulting to assess any changes | **Yes** | See **Section 5.2.2** and **Appendix B** |

| | | | |
|---|---|---|---|
| | in the hazards and risks arising from the proposed modification. | | |
| Air Quality | The original Air Quality assessment (PEL, 2015a) for the approved development found there are no privately owned receptors, recreation areas or on-site locations predicted to exceed the NSW EPA's average criteria for the air quality metrics assessed or the NSW EPA's noise-response criteria for odour. The proposed modification includes minor modifications to the layout of Site 2. Therefore, a more detailed assessment of Air Quality is required to ensure the operation of the bulk liquids terminal will have negligible impact on the air quality in Port Kembla and surrounding townships. | **Yes** | See **Section 5.2.3** and **Appendix C** |
| Noise & Vibration | The proposed modification includes changes to the development staging and the minor relocation of the layout for Site 2. A detailed assessment is required to ensure the proposed modification does not impact on the nearest residential areas during construction and operation of the facility. | **Yes** | See **Section 5.2.4** and **Appendix D.** |
| Traffic & Transport | As noted in **Section 2.5.1**, the construction traffic movements in the modified proposal will be reduced from that presented in the EIS. This will in fact result in an improvement to the development and as such does not require further detailed assessment as part of the proposed modification. | No | N/A |
| Surface Water | The proposed modification includes the relocation of the Oil Water Separator (OWS) from Site 3 to Site 2. This moves the licenced discharge point to Site 2. A more detailed assessment needs to be undertaken to ensure the proposal is not likely to impact on the water quality of adjoining waterways and to ensure that wastewater will be suitably managed to reduce any potential adverse impacts. | **Yes** | See **Section 5.2.6.** |
| Greenhouse Gas & Climate Change | The approved development has been designed to address potential Climate Change impacts, with no adverse impacts anticipated.<br>The proposed modification will not result in any changes to the Greenhouse Gas and Climate Change assessment controls detailed in the EIS (Cardno, 2015a), RTS (Cardno, 2016) and conditions of consent (SSD 15_7264). | No | N/A |
| Biodiversity | The proposed modification will not result in additional impacts to neighbouring aquatic ecology or habitat as all works will be undertaken in accordance with conditions of consent (SSD 15_7264) within the currently approved disturbance areas and water discharges into receiving waterways will be adequately controlled by an Environmental Protection License (EPL).<br>The proposed modification will not result in any changes to the Ecology assessment controls detailed in the EIS (Cardno, 2015a), RTS (Cardno, 2016) and conditions of consent (SSD 15_7264). | No | N/A |
| Waste Management | The proposed modification will not result in any changes to the waste management controls detailed in the EIS (Cardno, 2015a), RTS (Cardno, 2016) and conditions of consent (SSD 15_7264). | No | N/A |
| Visual Amenity | The proposal would result in marginal changes to the location of tanks and the reconfiguration of a single large tank into two smaller tanks and relocated two tanks. The modification will not result in any changes to the visual amenity mitigation controls of the approved development. | No | N/A |

| | | | |
|---|---|---|---|
| Heritage | The proposed modification will not result in any impacts to Aboriginal or European cultural heritage features as all works will be undertaken within the currently approved disturbance areas. The modification will not result in any changes to the heritage mitigation controls of the approved development. | No | N/A |
| Soils & Groundwater | The proposed modification will not result in any changes to the approved management and mitigation controls for soil and groundwater. | No | N/A |
| Utilities | The proposed modification will not result in any changes to the approved management and mitigation controls for utilities. | No | N/A |
| Human Health Risk | The proposed modification includes minor changes to the layout of Site 2. Therefore, a more detailed assessment of Air Quality is required as part of this modification. The Human Health Risk should be updated to align with the revised Air Quality assessment. | **Yes** | See **Section 5.2.5** |

Further detailed assessments were undertaken for the relevant environmental impacts identified in **Table 5-1** to ensure a thorough supporting assessment of MOD 1 is provided. These include:

1. Hazard and Risk;
2. Air Quality and Greenhous Gas Emissions;
3. Noise and Vibration;
4. Human Health Risk; and
5. Surface Water.

A summary of the detailed assessments and the resulting impact is provided below.

### 5.2.2 Preliminary Hazard Analysis

A revised Preliminary Hazard Analysis (PHA) has been prepared by Sherpa Consulting to address the 'hazard and risk' component of the Secretary's Environment Assessment Requirements (SEARs) in consideration of the proposed changes and is included in **Appendix B**.

#### *5.2.2.1 Assessment Methodology*

Considering the proposed changes identified in **Section 2**, a SEPP33 analysis was completed for Stage 1 to determine whether a PHA and transport risk assessment are required. A PHA was conducted for both Stage 1 and 2 including a Hazard Identification (HAZID) Study, Consequence Analysis, Frequency Analysis and Risk Analysis and Evaluation (see **Appendix B**). This methodology ensured the impact of external hazards and cumulative impacts was considered in the proposed site design.

#### *5.2.2.2 Assessment of Potential Impacts*

Based on the revised assessment, the PHA (**Appendix B**) concluded the following:

> Injury heat radiation and explosion overpressure contours do not extend into the nearest residential and sensitive land use areas and therefore comply with HIPAP 4 injury risk criteria.

> Individual fatality risk contours meet HIPAP 4 criteria, except for 5 x $10^{-5}$ per year individual fatality risk contour which extends into the Gurungaty waterway. The affected area is a shallow waterway restricting ship or public access with the provision of suitable fire detection measures provided in the road tanker loading bay.

> The risk of property damage and accident propagation contour (5 x $10^{-5}$ per year) extends into the Gurungaty waterway east of Site 2. These criteria apply to neighbouring potentially hazardous installations or land zoned to accommodate these installations. As the neighbouring land is a waterbody,

it does not currently contain a potentially hazardous facility and is considered unsuitable for such a facility.

- In consideration of the proposed changes at Stage 1, the Stage 2 individual fatality and property damage and propagation risk contours were assessed to occur as approved in Approval SSD 15_7264.
- The redesign of Site 2 has resulted in reduced fatality risk contours for Site 2.

#### *5.2.2.3 Environmental Management Measures*

As the proposed Project Modification will not result in any significant changes to the outcomes presented in the EIS (Cardno, 2015a) or the RTS (Cardno, 2016), no further mitigation measures are proposed as part of this modification.

### 5.2.3 Air Quality

An addendum Air Quality and Greenhouse Gas Assessment has been developed by Pacific Environment Limited (PEL) for the proposed changes and is included in **Appendix C**.

#### *5.2.3.1 Assessment Methodology*

Considering the proposed changes identified in Section **2.6.1**, the TANKS emission estimation program (as utilised in Pacific Environment, 2016) was utilised in **Appendix C** to quantify the anticipated emissions from the proposed modifications.

#### *5.2.3.2 Assessment of Potential Impacts*

Based on the assessment result, the addendum (**Appendix C**) concluded the following:

- As a result of the proposed modifications a reduction of 714 kg/yr of hydrocarbon emissions are predicted representing an approximate 1.7% decrease on the predicted tank venting emissions at the site.
- There are not anticipated to be any exceedances of the air quality criteria at any of the receptors assessed.
- Any minor change in tank venting emissions (in this case a reductions) will result in a negligible change in maximum ground level concentration predictions in the vicinity of the Project.
- The Project Modification is not anticipated to result in any material changes to the greenhouse gas emissions predicted in the EIS (Cardno, 2015a).
- It is not anticipated that the modifications to the operation of the terminal will result in any material changes to the construction assessment presented in the EIS (Cardno, 2015a).
- The conclusions of the EIS that the potential construction impacts on air quality and greenhouse gases from the Project are considered to the minimal, remains valid.

#### *5.2.3.3 Environmental Management Measures*

As the proposed Project Modification will not result in any significant changes to the outcomes presented in the EIS (Cardno, 2015a) or the RTS (Cardno, 2016), no further mitigation measures are proposed as part of this modification.

### 5.2.4 Noise and Vibration

An addendum Noise and Vibration Assessment has been developed by PEL for the proposed changes and is included in **Appendix D**.

#### *5.2.4.1 Assessment Methodology*

As described in **Appendix D**, methodologies utilised within the addendum are consistent with those described within the EIS Noise and Vibration Assessment (PEL, 2015b). In addition to these methodologies,

low frequency noise has also been assessed as part of the addendum using guidance from the *NSW Industrial Noise Policy* (EPA, 2000).

Low frequency noise levels were predicted as C-weighted noise levels with the difference between A and C weighted noise being used to predict whether low frequency impacts are likely to occur. The C-weighted noise levels were calculated for privately owned receivers for the modelled Project Modification.

#### *5.2.4.2 Assessment of Potential Impacts*

The addendum report assessed the potential impacts as a result of the proposed modification and noted the following:

- Predicted noise levels at adjacent residents are below the sleep disturbance criteria
- Cumulative impacts are noted to be similar to those predicted in the EIS (Cardno, 2015a) and meet the intrusive and amenity noise criteria. Cumulative industrial impacts are not anticipated.
- No significant operational vibration sources are anticipated to impact on the nearest residential or industrial areas from operations at the facility.
- It is not anticipated that the modifications to the operation of the terminal will result in any significant changes to the construction noise and vibration predictions presented in the EIS (Cardno, 2015a) and RTS (Cardno, 2016). The EIS (Cardno, 2015a) concluded that the construction works at the terminal will be well below the project specific assessment criteria at residential receivers.

#### *5.2.4.3 Environmental Management Measures*

As the proposed Project Modification will not result in any significant changes to the outcomes presented in the EIS (Cardno, 2015a) or the RTS (Cardno, 2016), no further mitigation measures are proposed as part of this modification.

### 5.2.5 Human Health Risk

An addendum to the Human Health Risk Assessment (HHRA) has been prepared by EnRisk for the proposed changes and is included in **Appendix E**.

#### *5.2.5.1 Assessment Methodology*

The revised Air Quality and Greenhouse Gas Assessment (AQGGA) (PEL, 2016) was reviewed to determine if the proposed modification would affect the conclusions presented in the HHRA (see Appendix F of the EIS). The acute and chronic health impacts at the 23 receptor locations were revised in accordance with the methodology outlined in the HHRA (see Appendix F of the EIS (Cardno, 2015a)) and RTS letter (EnRisk, 2016).

#### *5.2.5.2 Assessment of Potential Impacts*

The addendum report assessed the potential impacts as a result of the proposed modification and noted the following:

- Revised risk calculations suggest the total Health Index (HI) at each receptor location is below the target risk level for both acute and chronic exposure and is therefore considered acceptable.
- Conclusions presented in the EIS and RTS remain as approved (SSD 15_7264) with the assessment identifying no acute or chronic impacts on the health of the local community surrounding the project.

#### *5.2.5.3 Environmental Management Measures*

As the proposed Project Modification will not result in any significant changes to the outcomes presented in the EIS (Cardno, 2015a) or the RTS (Cardno, 2016), no further mitigation measures are proposed as part of this modification

### 5.2.6 Surface Water

The detailed Surface Water Assessment (Cardno, 2015e) presented within the EIS (Cardno, 2015a) identified potential impacts associated with hydrology, flooding, water quality, water supply and waste water in terms of existing conditions and conditions during the construction phase and operational phases of the PK BLT. A summary of this assessment is provided in Section 7.7 of the EIS (Cardno, 2015a) with the associated detailed assessment located in Appendix J of the same document. The assessment concluded with the application of the recommended mitigation measures and further detailed design of stormwater drainage systems in consultation with NSW Ports, the approved development will have minimal impacts to flow regimes, flooding and water quality.

#### *5.2.6.1 Assessment Methodology*

The Surface Water Assessment (Cardno, 2015e) was reviewed by Cardno to assess the impact of the proposed modifications on hydrology, flooding, water quality, water supply and wastewater. A revised Stormwater Management Plan (**Figure 5-1**) was developed in line with the proposed layout and design for the site.

#### *5.2.6.2 Assessment of Potential Impacts*

The review of the Surface Water Assessment (Cardno, 2015e) identified that site conditions for the proposed modification are consistent with the project Approval SSD 15_7264.

**Flooding and Hydrology**

Although the proposal seeks to increase the bund height from 1.8m to 3.9m, the development footprint and bund area remain unchanged and the proposed modification will not result in changes to the site hydrology, flood extent or discharge.

**Stormwater Management During Construction and Operation**

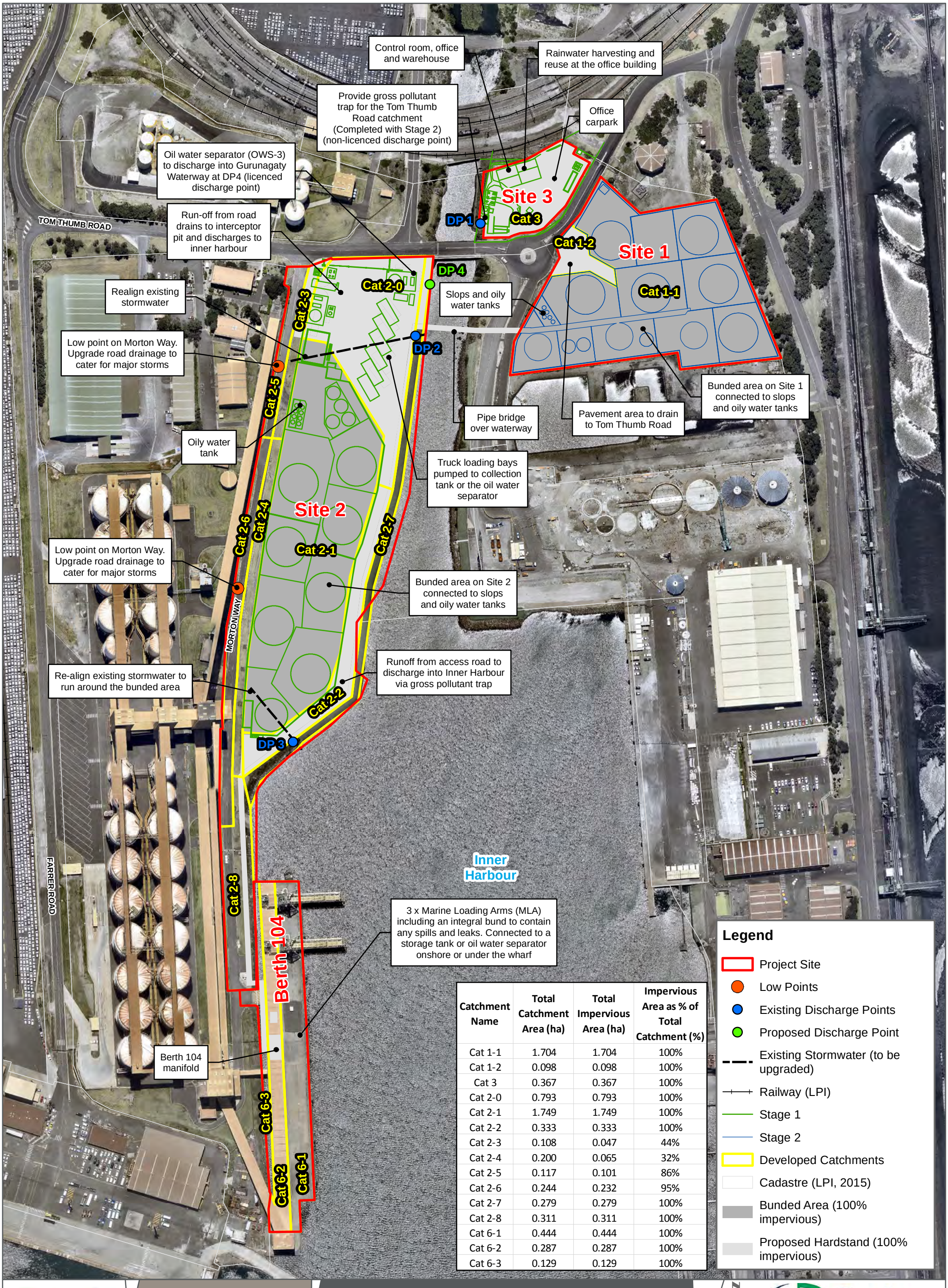
The proposed modification involves changes to the development staging with the following considerations relating to surface water:

- Retention of the existing sediment basin on Site 3 during construction (Stage 1).
- Replacement of the sediment basin with a GPT unit during Stage 2. The location, design and layout of the GPT will occur in accordance with the approved development (SSD 15_7264) as outlined in the Surface Water Assessment (Cardno, 2015e). As noted in the Surface Water Assessment in the EIS, the discharge point from the GPT is not a licensed discharge point as it caters for the road catchment only.
- Relocation of the OWS from Site 3 to Site 2 with the licensed discharge point moved to Site 2. Transfer and treatment of stormwater discharge from Site 1 at Site 2.

Site conditions regarding stormwater management during construction and operational phases are considered to be consistent with the project Approval SSD 15_7264.

#### *5.2.6.3 Environmental Management Measures*

The mitigation measures in the original project Approval SSD 15_7264, are considered to be appropriate to mitigate the risks to surface water for the proposed modification with no further impacts to the environment anticipated as a result of the proposal. The approved Surface Water Assessment (Cardno, 2015e) is considered to remain valid. The mitigation and management table has been updated to reflect the proposed development staging and site changes outlined and assessed above (see **Section 8**).




| Catchment Name | Total Catchment Area (ha) | Total Impervious Area (ha) | Impervious Area as % of Total Catchment (%) |
|---|---|---|---|
| Cat 1-1 | 1.704 | 1.704 | 100% |
| Cat 1-2 | 0.098 | 0.098 | 100% |
| Cat 3 | 0.367 | 0.367 | 100% |
| Cat 2-0 | 0.793 | 0.793 | 100% |
| Cat 2-1 | 1.749 | 1.749 | 100% |
| Cat 2-2 | 0.333 | 0.333 | 100% |
| Cat 2-3 | 0.108 | 0.047 | 44% |
| Cat 2-4 | 0.200 | 0.065 | 32% |
| Cat 2-5 | 0.117 | 0.101 | 86% |
| Cat 2-6 | 0.244 | 0.232 | 95% |
| Cat 2-7 | 0.279 | 0.279 | 100% |
| Cat 2-8 | 0.311 | 0.311 | 100% |
| Cat 6-1 | 0.444 | 0.444 | 100% |
| Cat 6-2 | 0.287 | 0.287 | 100% |
| Cat 6-3 | 0.129 | 0.129 | 100% |

**Legend**

- Project Site
- Low Points
- Existing Discharge Points
- Proposed Discharge Point
- Existing Stormwater (to be upgraded)
- Railway (LPI)
- Stage 1
- Stage 2
- Developed Catchments
- Cadastre (LPI, 2015)
- Bunded Area (100% impervious)
- Proposed Hardstand (100% impervious)

FIGURE 5-1

1:2,500 Scale at A3

Metres

0 25 50 75 100

# Stormwater Management Plan

PORT KEMBLA

Cardno

Map Produced by Cardno NSW/ACT Pty Ltd (WOL)
Date: 2016-11-21
Coordinate System: GDA 1994 MGA Zone 56
Project: 82015103-01
Map: 82015103-GS-017-StormwaterManagementPlan.mxd 09
Aerial imagery supplied by nearmap (January, 2015)

# 6 Consultation

TQ undertook a range of consultation activities with key stakeholders regarding the proposed modifications. This consultation informed the final design and layout for the modifications outlined in this document.

Comments and advice from this consultation is summarised in the **Table 6-1** below.

**Table 6-1 Consultation Summary Comments**

| Stakeholder | Date | Detail |
|---|---|---|
| NSW Ports | 15/9/2016 | Meeting to update NSW Ports on consent conditions and also to advise of TQ's intention to lodge a DA Modification. TQ advised that NSW Ports would be kept informed of the DA Modification as the documentation progressed. |
| | 14/10/2016 | Meeting on the progress of the DA Modification documentation. Preliminary status of the revised environmental assessment results was provided to NSW Ports for general information. |
| FRNSW | 12/10/2016 | Meeting with FRNSW to provide an update on the progression of items raised by FRNSW in the RTS (Cardno, 2016). The meeting included an update on the current approval status of the project and TQ's intention to lodge a DA Modification. The meeting addressed a number of comments and questions previously discussed with FRNSW regarding the development. |
| SafeWork | 31/10/16 | Email correspondence to advise SafeWork that TQ intend to submit a DA Modification regarding a change in the staging approach for the development. The intent was to keep SafeWork advised of the progress of the development. |
| GrainCorp | | A number of general discussions have been held with GrainCorp advising of TQ's intent to lodge a DA Modification. Discussions included a general description of the proposed modification and staging as well as minor changes to tank locations. |
| PKCT | 3/11/16 | Meeting with PKCT to provide an update on project status and TQ's intention to lodge a DA Modification in regards to the consolidated development staging. |
| DPE | 20/9/16 | Meeting with DPE to advise that TQ intend to submit a DA Modification regarding a change in the staging approach for the development and minor changes to tank locations. |
| | 4/11/2016 | Meeting to update DPE on the progress of the revised environmental assessment results. |
| EPA | 14/11/2016 | Meeting with EPA to advise that TQ intend to submit a DA Modification regarding a change in the staging approach for the development and minor changes to tank locations. |

# 7 Conclusion and Recommendations

## 7.1 Conclusion

TQ Holdings Australia Pty Ltd (TQ) submitted an Environmental Impact Statement (EIS) (Cardno, 2015a) in December 2015 and Response to Submissions Report (RTS) in April 2016 (Cardno, 2016) for the construction and operation of the Port Kembla Bulk Liquids Terminal (PK BLT) (the Site) at the Inner Harbour of Port Kembla, within the Wollongong Local Government Area (LGA) in NSW. This project will comprise of a bulk liquids terminal for the importation and distribution of finished fuel products.

The project was approved by the Minister of Planning on 9 September, 2016 under Part 4 (State Significant Development (SSD)) of the *Environmental Planning and Assessment Act 1979* (EP&A Act), application number SSD 15_7264.

TQ seek to modify the approved development under Section 96(1A) of the EP&A Act. This modification includes the consolidation of development staging, minor adjustments to the location, sizing and content of storage tanks and minor adjustments to the layout of Site 2 within the approved site boundary (see **Table 1-2** and **Section 2** for more detail).

It considered the proposed modification will optimise construction activities and improve safety through the consolidation of the proposed development staging (**Section 2.2**). The proposed modification to the bulk liquid storage tank design and layout at Site 2 will also provide benefits to both TQ and the wider community by improving the firefighting system security (**Section 3.2**).

As outlined in Section 4 of this report, Section 96(1A) includes a number of requirements that must be satisfied for the consent authority to modify an application. To address these requirements a comprehensive assessment of environmental risks and impacts for the PK BLT was provided in the EIS (Cardno, 2015a) and with further clarification provided in the RTS (Cardno, 2016). Each environmental aspect of the proposed project modification was reviewed against previous impact assessments (**Section 5.2**) with additional detailed assessments undertaken for Hazard and Risk, Human Health Risk, Air Quality and Greenhous Gas Emissions, Noise and Vibration and Surface Water Management as part of this report.

The detailed review found the proposal is considered to be of minimal environmental impact subject to appropriate mitigation and management measures with revised mitigation and measures provided at **Table 8-1.**

A comparison between the existing approved scheme and the proposed modification was also undertaken to establish whether the proposed development is ‘substantially the same’ as the original. This comparison found the extent and overall storage capacity of the project has not changed, with only minor, immaterial changes in layout and configuration, as discussed further in the justification at Section 3. Therefore, the proposed modification satisfies the requirements specified under Section 96 (1A) of the EP&A Act with a new application for approval considered to be unnecessary.

## 7.2 Recommendations

The Department of Planning and Environment should assess and determine the proposal as a modification, with a new application unnecessary. Should the modification be approved, the revised mitigation and management measures provided at **Table 8-1** should replace the previous version provided in the consent Approval (SSD 15_7264).

# 8 Revised Environmental Mitigation Measures

The EIS (Cardno, 2016a) and RTS (Cardno, 2016) reports submitted as part of the project project Approval SSD 15_7264 identified a range of environmental outcomes and management measures that would be required to avoid or reduce the environmental impacts.

After consideration of the environmental management measures for the project Approval SSD 15_7264 which are included in the conditions of consent, some minor adjustments to the measures are proposed below in **Table 8-1** to:

> Make additional commitment based on the minor changes to site layout and staging plans from MOD 1

> Modify wording in a consolidated table of mitigation so that the outcome of the commitment is clear.

Where new commitments have been added or new text has been added to an existing measure it has been *italicised.* Where a commitment has been deleted or text from the commitment deleted is appears as ~~strikethrough text.~~

The environmental management measures in **Table 8-1** will guide the subsequent project development phases (design and construction) of the PK BLT.

**Table 8-1 Summary of Mitigation and Management Measures (as per approved project with proposed modifications from MOD 1)**

| | Parameter | Discussion | Mitigation Measures |
|---|---|---|---|
| 1 | **Hazards and Risk** | Materials to be handled at the PK BLT include biofuels as well as petroleum based hydrocarbons and small quantities of additives with similar properties to fuels. Due to fencing and natural barriers such as waterways, there will not be a constant presence of people within these areas. This coupled with an absence of flammable and combustible material in these areas results in the offsite fatality risk due to PK BLT operations identified by the PHA as tolerable. | ▪ Ongoing consultation with PKCT is recommended to ensure that fatality and escalation risks are minimised and agreed measures are developed<br>▪ To apply the relevant recommendations arising from the final Buncefield Investigation to PK BLT site as detailed in Appendix G of the PHA (see **Appendix B** of ~~this~~ *~~the RTS~~* the *MOD1* report).<br>▪ Include in a surge analysis study during detailed design, the scenarios of high surge pressures if the ship's pumps stop working during a power failure and activation of the MLA emergency release coupling while unloading a ship.<br>▪ An Emergency Plan will be developed for the PK BLT. This plan should include the associated hazards arising from ships close to shore. |
| 2 | **Air Quality** | There are no privately owned receptors, recreation areas or on-site locations predicted to exceed the NSW EPA's average criteria for the air quality metrics assessed or the NSW EPA's nose-response criteria for odour. The results indicate that the operation of the bulk liquids terminal will have negligible impact on the air quality in Port Kembla and surrounding townships. | **Construction**<br>▪ An Air Quality Management Plan will be developed as part of the CEMP including:<br>▪ Methods to monitor the effects of construction activities<br>▪ Measures required to minimize dust and vehicle emissions during the construction of the project.<br>▪ The number and sizes of stockpiles will be kept to a minimum.<br>▪ Dust suppression shall be undertaken during construction and clearing activities, particularly during high wind conditions. Haul roads and other unsealed areas may be watered to suppress dust.<br>▪ Ensure that all vehicles and machinery are fitted with appropriate emission control equipment, maintained frequently and serviced to the manufacturers' specification.<br>▪ Minimise construction equipment idling time.<br>**Operations**<br>▪ Each shore line will be equipped with a pig launcher and receiver in order to clear fuel product into the tank and leave the line clear for the next product. Pig propulsion will be via nitrogen pressure using a reticulation system from the terminal nitrogen tank.<br>▪ The pigging facilities will be equipped with containment and sump for hydrocarbon pump out. Once pigged clear, the line is depressurised into a cyclone column that separates hydrocarbon droplets and vapours vented from the shore lines. The collected liquid is then pumped across to the slops tank, and the vapour fed into the Vapour Recovery Unit to recover the remaining hydrocarbon vapours.<br>▪ When the vessel has finished pumping and the surveyor has confirmed the ship's tank is empty and dry, the ships manifold valve is closed and the MLA cleared by draining and pumping in a closed system. The shore pipeline is then pigged to the tank, the line depressurised (as detailed above), pig removed from the receiver and the line left in nitrogen at atmospheric pressure.<br>▪ These processes are included to mitigate against potential emissions from product unloading. The pigging operations and vapour recovery underlie the assumption of not including this phase of the operational process in the emissions estimation. |

| Parameter | Discussion | Mitigation Measures |
|---|---|---|
| | | ▪ The piping design will minimise the potential for surge overpressure via the provision of expansion loops, valve closure times, check valves in tanks and product piping. Product pumps will have variable speed drives with soft start up and shut down to prevent surging.<br>▪ Pipework which is normally full with product that has closed sections will be protected by thermal relief around isolation valves. This will ensure that no product (and emissions) is lost to the environment.<br>▪ Bunds will be utilised to ensure that in the unlikely case of leakages, fuel products will not seep into groundwater and leave the site. Bunds containing pipework and equipment that is normally full with product will include level detection and hydrocarbon detection so that any leakage can be readily detected, in addition to routine inspections by operators. These site bunds will incorporate a pump out system to drain any spilled product to a closed slops handling system.<br>▪ Full contact internal floating roofs will be installed on all bulk storage tanks with flammable liquids to effectively mitigate against vapour headspace emissions during tank filling operations.<br>▪ PK BLT will utilise a vapour recovery unit to recover vapours and minimise emissions associated with the loading of fuels into road tankers. The vapour recovery unit will be located near the truck loading gantry. The recovered product will be pumped into a nominated bulk tank.<br>▪ Product will be recovered by carbon absorption in either one of two absorption vessels, which are regenerated by vacuum. At any one time, it is expected that one vessel is being desorbed while the other is on the line.<br>▪ Vapours from the vacuum process will be passed through a liquid vapour separator vessel then into a packed absorption tower which is supplied by a cold gasoline stream from the duty gasoline tank. The gasoline absorbs the vapours within the tower and the gasoline is returned to the duty gasoline tank. Residual vapours are repassed through the active absorption vessel to recover the remaining product.<br>▪ Requirements outlined in Clause 63 of the Clean Air Regulation for control equipment for large storage tanks will be implemented. The following control equipment is required:<br>▪ A drainage system comprising of a small sump or tundish fitted under each water draw-off valve and connected to a totally enclosed drain, or<br>▪ For volatile organic liquid stored in a tank with a vapour pressure ≤75 kPa the tank must have either a floating metal roof, a floating cover constructed of material impervious to vapour that floats on the liquid surface inside a fixed roof, or a vapour disposal or recovery system that meets the requirements of the Clean Air Regulation.<br>▪ For volatile organic liquid stored in a tank with a vapour pressure >75 kPa the tank must have a vapour disposal or recovery system that meets the requirements of the Clean Air Regulations.<br>▪ An operational odour response management plan should be prepared within the OEMP, to address potential response requirements in the event that adverse odour events were to occur<br>▪ The efficiency of the VRU unit will be monitored through a prescribed regime consistent with test methods as per the NSW Approved Methods for the Sampling and Analysis of Air Pollutants in NSW (EPA, 2005). |

| | Parameter | Discussion | Mitigation Measures |
|---|---|---|---|
| | | | ▪ Transport companies shall have vehicles demonstrating they have 'Compliance Plate Approval' to ensure trucks meet the national standards covering safety and emission requirements known as the Australian Design Rules (ADRs).<br>▪ Procurement policies should consider companies that have a commitment to operational and environmental improvements. |
| 3 | **Noise and Vibration** | The majority of PK BLT related traffic is expected on Springhill Road and Masters Road. Increases in traffic noise during both construction and operation would be below the traffic noise increase criteria of 2 decibels. No significant operational vibration sources are anticipated to impact on the nearest residential areas from operations on the facility. | A noise and vibration management plan within the CEMP and OEMP is recommended for the ongoing monitoring and management of potential noise impacts resulting from the Proposal. *As a minimum the noise and vibration management* plan will consider:<br>▪ The nearby residences and other sensitive land uses.<br>▪ The noise management identified in this assessment.<br>▪ Vibration limits as identified in this assessment.<br>▪ Address the potential impact from the proposed construction methods.<br>▪ Develop reactive and proactive strategies for dealing with any noise and vibration complaints.<br>▪ Management of acoustic impacts from vessels.<br>▪ Identify a site contact person to follow up complaints.<br>▪ Construction noise management measures during piling should consider: consultation, noise monitoring, feasible and reasonable noise controls such as temporary acoustic screens, orientation of plant and lower noise generating methods such as pre boring<br>▪ Validation of piling impacts through use of vibration trials during the initial piling works.<br>▪ Vibration monitoring trials to confirm safe work distances and methods.<br>▪ Develop and implement a noise monitoring and/or auditing program within the Traffic Management Plan to confirm trucks achieve noise standards during the construction and operational phases.<br>Noise management measures will include:<br>▪ Selection of quiet plant and equipment, particularly Larger Excavators and Haulage Trucks.<br>▪ Limiting the times of operation for noisier plant items to the Daytime, or Evening period.<br>▪ Scheduling noisier activity to regular hours and less noisy activity to non-scheduled hours.<br>▪ Staff and contractor education and training of road traffic noise and appropriate driving behaviours.<br>▪ Measures to minimise noise outside standard working hours that may cause sleep disturbance and subsequent potential health impacts.<br>▪ Undertaking vibration trials during the initial piling works to ensure validation of the vibration modelling.<br>▪ Site inductions highlighting minimisation of noise outside standard working hours.<br>▪ Avoiding and minimising impact when loaded and unloading equipment.<br>▪ Minimising engine start-ups and excessive revving.<br>▪ Minimising the use of reversing alarms during works outside standard working hours. |

| | Parameter | Discussion | Mitigation Measures |
|---|---|---|---|
| | | | ▪ Reschedule to a day time period any works that can potential cause excessive impact noise and therefore sleep disturbance.<br>Further noise reduction measures will be considered during the detailed design phase. |
| 4 | **Traffic and Transport** | There are no critical capacity issues arising during the Stage 1 Operation /Stage 2 Construction scenario. The traffic generated by the PK BLT ~~during Stage 3 Operations (~~full development ~~of site)~~ scenario would result in a negligible increase in traffic generation *across the local network*. | **Construction**<br>▪ Develop a detailed Traffic Management Plan for the construction stages of the project in accordance with the Traffic Control at Worksites, version 4.0 (NSW Roads and Maritime Services, June 2010). The Traffic Management Plan would include:<br>▪ Hours of haulage, which do not impose on peak periods and school drop-off and pick-up times.<br>▪ Haulage routes, in accordance to the RMS restricted access to heavy vehicles.<br>▪ Designated areas within the site for heavy and light vehicles turning movements, parking, loading and unloading.<br>▪ Sequence for implementing traffic works and traffic management devices if required.<br>▪ Safety principles for construction activities, such as speed limits around the site and procedures for specific activities.<br>▪ Assessing the need for oversize/over mass vehicle and management of their movements.<br>▪ The internal access and parking areas will be designed such that all vehicles, including the largest design vehicle (25m B-Double) are able to easily drive through the sites to ensure safe turning manoeuvres without requiring excessive reversing.<br>▪ Parking facilities will be provided in accordance with Australian Standards (AS2890 Series).<br>**Operations**<br>▪ Design internal access and parking areas such that all vehicles, including the largest design vehicle (28m B-Double) are able to easily drive through the sites to ensure safe turning manoeuvres without requiring excessive reversing.<br>▪ Any site entry gates installed shall also be setback from the road to accommodate the longest vehicle accessing each site to allow free flow of internal and external vehicles.<br>▪ TQ will utilise a truck slot booking system to prevent queueing on internal and external roads.<br>▪ Provide parking facilities in accordance with Australian Standards (AS2890 Series).<br>▪ Risk management strategies should be considered when planning for the transportation of hazardous materials.<br>▪ Risk management strategies have several aspects, including:<br>– choice of the best routes<br>– identification of the main risk contributors<br>– identification and implementation of risk reduction measures;<br>– measures to avoid avoidable risk;<br>– adoption of the most cost beneficial safeguards; and |

| | Parameter | Discussion | Mitigation Measures |
|---|---|---|---|
| | | | – ensuring appropriate and comprehensive emergency plans. |
| 5 | **Surface Water** | The Surface Water Assessment concluded that the Site is mostly free from constraints of flooding and stormwater. The Proposal is not likely to impact on the water quality of adjoining waterways and wastewater will be suitably managed to reduce any potential adverse impacts. | **Construction**<br>▪ Development of an Erosion and Sediment Control plan (ESCP) with measures to be in place prior to any works commencing at the site. The ESCP will would be prepared as part of the CEMP in accordance with the Landcom Managing Urban Stormwater; Soils and Construction Manual 2004. The ESCP would be maintained for the duration of construction, to prevent any polluted water and sediment entering receiving waterbodies.<br>▪ Installation of erosion and sedimentation control devices prior to commencement of any site works. Erosion controls would remain in place until the bare soils and surfaces are stabilised (by revegetation or other means) and removed when redundant. This needs to include the diversion of 'clean' water around the site in order to avoid treating it and also to avoid potential additional erosion from off-site sources.<br>▪ Appropriate erosion and sediment control devices would be placed down-slope of all excavation works, spoil stockpiles or works that would disturb the ground surface, down-slope of access roads that are highly utilised as well as in other areas as appropriate.<br>▪ Sedimentation is likely to be due to sheet flows occurring within the site. This type of sedimentation can be effectively controlled by using vegetated buffers (e.g. turf where appropriate), sediment barriers and sediment fences.<br>▪ Minimise the extent and duration of disturbance by means of work planning and staging.<br>▪ Disturbed areas would be restored (sealed or covered with pebbles/gravel or vegetated, as appropriate) upon the completion of the works in that area to ensure that the exposure of soils is minimised.<br>▪ Embankments and other areas subject to earthworks and grading would be revegetated with an appropriate cover crop or stabilised with other means as soon as possible following achievement of final levels.<br>▪ Where revegetation is required and where deemed feasible, locally indigenous plant species, including shrubs, grasses and other groundcovers, would be planted in appropriate locations to assist in soil stabilisation following completion of construction. Maintenance of these plantings would include regular watering and appropriate weed control to ensure the plants survive and continue to enhance the site.<br>▪ Daily visual inspections of erosion and sediment control devices to determine the condition and effectiveness of control measures. Immediate action would be taken to repair any control devices that have failed to work adequately.<br>**Operations**<br>▪ All water which has been in contact with potentially hydrocarbon-soiled surfaces within the bunded area is contained and processed to Environmental Protection Agency (EPA) standard by using an Oil Water Separator (OWS) that will be strategically located on *Site 2* ~~Site 3~~.<br>▪ ~~Sites 1 and 2 will have centralised collection sumps that will include a gravity oil separation and oil recovery system.~~ Before an intermediate bund sump transfers water to the centralised |

| Parameter | Discussion | Mitigation Measures |
|---|---|---|

~~collection sump~~ *OWS,* the pump must be locally started so that inspection for potential oil spills can take place. If a spill is detected in an intermediate bund sump the spill can be redirected away from the centralised ~~collection sump~~ *OWS* for recovery.

- Bund walls (1.8m *to 3.9m* high) will be established around the storage tank areas on Site 1 and 2. In addition, separate intermediate bunds (0.6m high) will be constructed to contain most tanks individually. All product spillage and stormwater runoff would be contained inside the bunded area. Each intermediate bund has a sump that can be ~~drained~~ *operated* individually into a central ~~bund water collection pit for the site. Free hydrocarbons are recovered in these central sumps and water from the central bund water collection pit on either Site 1 or Site 2 can then be pumped into the two stage gravity settling pit on Site 32, prior to being treated by OWS-3~~ *OWS on Site 2* and then discharged from site in accordance with an EPA license.
- Recovered hydrocarbons from the OWS system are directed to the waste oil decanter tank where they can be recovered or transferred to a waste collection vehicle for disposal.
- Hydrocarbon and waste collection piping will be designed to run above ground *where practicable* so that any potential leaks are visible and can be detected and repaired, rather than underground where a leak poses a potential ground contamination issue.
- Any underground stormwater pipes that may potentially be exposed to hydrocarbon contaminated water will be equipped with hydrocarbon compatible sealed joints to prevent infiltration into ground.
- In order to mitigate the impacts, runoff from external catchments will be captured and conveyed into *the* Inner Harbour via upgraded road drainage on Morton Way. This may include upsizing existing pipes and pits as well as installing new stormwater lines. The upgrade works will increase the total inlet capacity on Morton Way and reduce the risk of pit inlets becoming blocked by debris.
- ~~Water from the central bund water collection pit on either Site 1 or Site 2 will be pumped into the two stage gravity settling pit on Site 3, prior to being treated by an OWS and then discharged from site in accordance with an EPA license.~~ An underground Gross Pollutant Trap (GPT) will be installed on Site 3 for the treatment of stormwater flows from the existing Tom Thumb Road drainage network prior to discharging the treated stormwater into Gurungaty Waterway (non-licenced discharge point). In addition to gross pollutants and sediments, the treatment system will be designed to capture oil and grease. The GPT treatment system will be sized for the full road catchment including the western extent of Tom Thumb Road connecting to Site 3 across the bridge. Runoff from the PK BLT sites will bypass the GPT and be directed to an OWS on Site *2* instead.
- The access road on the southern and eastern extent of Site 2 will be used as a truck staging area for empty trucks waiting for loading. Runoff from this area will be discharged directly into Inner Harbour via stormwater treatment system consisting of a GPT and oil capture system to collect oil and grease from runoff. In case of spill, a clean-up will also be initiated using spill kits.
- A designated overland flow path will be provided at the low point for flows in excess of the drainage system.
- Leakage, spillage and wash down water within the bunded truck loading bays will be collected in grated pits at each bay. The bunded area at each truck bay will be sized to contain the contents

| | Parameter | Discussion | Mitigation Measures |
|---|---|---|---|
| | | | of a tanker compartment as well as normal wash down water. Any waste collected from the truck loading bay will be pumped to the above ground slops tank. ~~All waste piping from each truck loading bay remains above ground to eliminate the possibility of undetected subsurface contamination.~~<br>▪ A detailed Fire Safety Study and fire system design will be undertaken to determine optimal type and methods for collection and dewatering of foams within bunded areas. The study and design will include:<br>– Selection of the firefighting foams to be handled, stored or used (not containing perfluorooctane sulfonate (PFOS) and perfluorooctanoic acid (PFOA)).<br>– Justification for the foams selected<br>– Characterisation of any potential discharges to surface or groundwater waters<br>– An assessment of the likely impacts in the event of any discharge of contaminated fire water; and<br>– A description of all feasible and reasonable measures to minimise any discharge of contaminated fire water. |
| 6 | **Green House Gas and Climate Change** | The GHG Assessment (Appendix E *of the EIS*) concluded that the proposed development would produce a very small portion of GHG. Consequently, the PK BLT design has been developed to address potential Climate Change impacts, with no adverse impacts anticipated. | ▪ TQ will implement emission capture and abatement technology throughout the detailed engineering design and equipment procurement processes. This will include specification of floating roof tank designs, vapour recovery units and associated fuel emission capture and abatement technology to ensure the PK BLT is built to standard industry practices.<br>▪ It is also suggested by TQ that the form of transportation may incorporate rail once new infrastructure is developed to meet the demand criteria, thus reducing future greenhouse emissions from this process.<br>▪ TQ will attempt to utilise freight companies which commit to sourcing vehicles with Compliance Plate Approval. This ensures trucks meet the national standards covering safety and emission requirements known as the Australian Design Rules (ADRs). TQ will also attempt to utilise companies which have a commitment to operational and environmental improvements. |
| 7 | **Biodiversity** | Green and Golden Bell Frog (*Litoria aurea*) as the only species to have either a 'high' or 'moderate' potential to use the subject site. A Commonwealth Significant Impact Assessment and NSW Assessment of Significance found that there will be no significant impacts to Green and Golden Bell Frogs from the proposal, and a referral to the Commonwealth is therefore not required. An assessment in accordance with the Framework for Biodiversity Assessment (FBA) has been undertaken to determine the biodiversity offset requirements of the project. Mitigation measures are proposed to ensure there will be no significant impact on neighbouring aquatic ecology or habitat. | **Construction**<br>▪ A frog-exclusion fence should be put in place along the fence line to the rail corridor and around the western boundary of Site 3, limiting access for the frogs during this construction period. This fence should be consistent with the Green and Golden Bell Frog Best Practice Guidelines and the Green and Golden Bell Frog Survey (BEC 2015). It can be attached to the existing fence lines or the proposed retaining wall and should have a lip to ensure frogs do not jump over it.<br>▪ Pre-clearance surveys are recommended consistent with the Management Plan for the site (BES 2012).<br>▪ If extended periods occur between erection of the fence and construction work further pre-clearance survey is advised to clear any stranded frogs.<br>▪ During construction activities at Site 3 construction contractors should be made aware of the position of the mangrove seedling so as to reduce the potential to cause damage. |

| Parameter | Discussion | Mitigation Measures |
|---|---|---|

- Sediment control devices including silt curtains should be used during bank stabilisation works at Site 3 to prevent runoff causing increased turbidity within Gurungaty waterway and the greater port area.
- Remove and dispose of bitou bushes within the construction area via methods described within the Weeds of national Significance 'Bitou bush Current management and controls options for bitou bush (*Chrysanthemoides monilifera spp. rotundata*) in Australia' (Winkler et al., 2008).
- Appropriate hydrocarbon spill kits should be in the vicinity of construction activities to contain any spills. In the event that the spill kit is unable to control a spill and hydrocarbons enter the waterway an absorbent boom should be available to be deployed to reduce the spread of any such spill.
- Machinery and equipment associated with construction activities should be cleaned within a designated wash down area that ensures wastewater does not enter the waterway.
- Sediment control devices such as hay bales and geofabrics should be deployed throughout the construction area in the vicinity of storm water drains to reduce mobilised sediments entering the waterway.
- Follow the measures to be provided in the Pollution Incident Response Management Plan developed for the project as part of the Construction Environment Management Plan (CEMP).
- Ensure training and inductions for all personnel include Green and Golden Bell Frog awareness aspects and response requirements. Green and Golden Bell Frog management and response requirements need to be outlined within the Construction Environment Management Plan (CEMP).

**Operations**

- Potential for frog migration through the site is most likely at night-time during the summer months after heavy rain. Staff and contractors should be made aware of the Green and Golden Bell Frog Management Plan prepared by BES (2012), which should be amended to reflect future operational risks and requirements prior to operations commencing.
- Bund and sump management procedures should consider the potential for Green and Golden Bell Frog breeding within bunds.
- Ensure training and inductions for all personnel include Green and Golden Bell Frog awareness aspects and response requirements. Green and Golden Bell Frog management and response requirements need to be outlined within the OEMP.
- The site manager should be made aware of any discoveries and contact an ecologist or the Wollongong Office of Environment and Heritage so that appropriate relocation of the frog/s can be undertaken if necessary.
- Ensure that appropriate hydrocarbon spill kits are placed at various locations throughout the site to contain any spills. In the event that the spill kit is unable to contain a spill and hydrocarbons enter the waterway an absorbent boom should be available to be deployed to reduce the spread of any such spill.
- Gross pollutant traps and hydrocarbon capture should be a priority for stormwater catchments which service areas accessed by tanker trucks.

| | Parameter | Discussion | Mitigation Measures |
|---|---|---|---|
| | | | ▪ Implement a stormwater management plan that incorporates gross pollutant traps prior to waste water discharge. Employee and contractor induction should include a section dealing with the potential for gross pollutants to impact the site.<br>▪ Clean machinery and equipment associated with construction activities within a designated wash down area that ensures wastewater does not enter the waterway.<br>▪ Follow the measures to be provided in the Pollution Incident Response Management Plan developed for the project as part of the Operation Environment Management Plan (OEMP).<br>▪ Ensure that all vessels comply when appropriate with the International Maritime Organisation (IMO) Ballast Water Convention to reduce the potential of harmful aquatic organisms being discharged into Australian waters. The IMO Ballast Water Convention requires that all vessels must have and comply with a 'Ballast Water Management Plan' |
| 8 | **Waste Management** | The proposed PK BLT facility will generate both solid and liquid waste during operation. With the implementation of the identified mitigation and management measures, the waste generated by the proposed PK BLT will not have a significant adverse impact on the environment.<br>To minimise waste generation and promote recycling, a Waste Management Strategy (WMS) has been prepared in accordance with the aims, objectives and guidelines in the *NSW Waste Avoidance and Resource Recovery Strategy 2007* and NS*W Waste Avoidance and Resource Recovery Strategy 2014-2021*. | **Construction**<br>▪ No contaminated soil has been identified. If any is discovered during construction, it will be disposed of in accordance with the Unexpected Finds Protocol to be incorporated into the CEMP.<br>▪ All sewerage waste will be collected in a septic tank and trucked off site by licensed contractor until connection to existing rising main and agreement with Sydney Water has been established<br>▪ Timber formwork will be reused where possible. Any damaged or unusable timber will be recycled, or disposed at a licensed receiving facility.<br>▪ Steel will be collected and recycled.<br>▪ Standard timber pallets will be reused where possible. Any damaged or unusable timber will be recycled, or disposed at a licensed receiving facility.<br>▪ Plastics will be recycled where possible<br>▪ Excess cable will be collected and reused or recycled by the electrical installation contractor.<br>**Operations**<br>▪ TQ will adopt a paperless document management system and actively seeks to reduce the need to print paper copies where possible<br>▪ Paper and cardboard materials will be separated and stockpiled in appropriate areas on site for collection and recycling<br>▪ Metals, plastic and timber will be separated and stockpiled in appropriate areas on site for collection and recycling<br>▪ All steel and metal strapping will be recycled<br>▪ Waste oil will be stored in appropriate container on site and removed from site by licensed contractor for re-processing, recycling or appropriate disposal.<br>▪ Fuel spills will be contained and collected in bunded areas or drip trays and transferred to slops tanks for product recovery.<br>▪ Remaining slops tank contents will be pumped to oily water separator for final treatment prior to clean water discharge or removed from site by a licenced contractor. |

| | Parameter | Discussion | Mitigation Measures |
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| | | | ▪ Slops will be tested and blended with product stored on site if product specifications can still be maintained. Otherwise slops to be removed from site by licensed contractor.<br>▪ Waste water will be pumped from slops tank to oily water tank on each site. |
| 9 | **Visual Amenity** | The proposed PK BLT is located in an existing industrial area of Port Kembla's Inner Harbour that operates 24 hours per day, seven days a week. The existing industrial development surrounding the proposal provides a visual environment which is not sensitive to change. Consequently, the proposed PK BLT will have minimal visual impact on the amenity of the surrounding areas | ▪ Use of materials and paints to mimic the existing industrial development as far as reasonably practical.<br>▪ Design and implementation of lighting in accordance with:<br>– AS 4282 - 1997 Control of the obtrusive effects of outdoor lighting<br>– AS 1940 The storage and handling of flammable and combustible liquids<br>– AS/NZS 1680.5:2012 Australian and New Zealand Interior and workplace lighting, Part 5: outdoor workplace lighting |
| 10 | **Heritage** | The PK BLT site is identified as a highly disturbed and highly modified environment. There are no sites of local, state or commonwealth heritage significance identified at the site or within three kilometres of the site. Due to this lack of sites and object of historic heritage a Statement of Heritage Impact is not required for the project as the project has a low potential to impact on objects or places of European heritage. | Include the following mitigation measures in the CEMP and OEMP:<br>▪ In the event that potential Aboriginal or European artefacts are discovered during the works, all works are to cease immediately within the direct area. TQ is to immediately inform NSW Ports, the NSW Office of Environment and Heritage and a member of the Illawarra Aboriginal Land Council (if in relation to an Aboriginal place or object). Coordinate appropriate management of the site with the relevant agencies. |
| 11 | **Soils and Groundwater** | During construction, the risk of onsite soil erosion will increase due to the works resulting in exposure of soils through earthworks. There is a potential for ASS to occur in material greater than 5m below the surface. Potential impacts to groundwater are unlikely given that the bulk of the works are above ground. | **Construction**<br>▪ Development of a CEMP including a Soil and Water Management Sub-plan to manage potential erosion, sediment and groundwater impacts during construction.<br>▪ Sediment and erosion control devices should be installed to minimise transport of sediment in accordance with *Managing Urban Stormwater, Soils & Construction, Volume 1* (Landcom, 2004). These devices should be inspected regularly and immediately after rainfall to ensure effectiveness over the duration of works. Any damage to erosion and sediment controls should be rectified immediately.<br>▪ Risks associated with the disturbance of any ASS encountered during construction would be managed through an expected finds protocol outlined in the Erosion and Sediment Control Plan within the CEMP.<br>▪ Construction of hardstand areas with appropriately sized bunding around fuel storage and refuelling areas.<br>▪ Construction of appropriate enclosed and separated clean and oily water drainage systems which shall include the installation and operation of an oil/water separator.<br>▪ If groundwater is encountered during excavation, a groundwater assessment will be undertaken to determine the volume and quality of the water to determine if appropriate permits are required.<br>▪ If groundwater is to be extracted, consultation with DPI Water is required prior to extraction.<br>**Operations** |

| | Parameter | Discussion | Mitigation Measures |
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| | | | ▪ Development of an OEMP to manage and monitor potential operational phase soil and groundwater impacts, such as spills and leakages.<br>▪ Maintenance of hardstand areas with appropriately sized bunding around fuel storage and refuelling areas.<br>▪ Operation of appropriate enclosed and separated clean and oily water drainage systems which shall include the installation and operation of an oil/water separator.<br>▪ Implementation of regular maintenance inspections/audits during operation. |
| 12 | **Utilities** | The utility supply requirements for the PK BLT development will be designed to appropriate Australian Standards and relevant authority guidelines to consider the existing capacity and future performance of all utility servicing. The connection and augmentation of all utility works requirements will be designed, planned and carried out in a manner that will minimise impacts on the existing neighbouring operations. | **General**<br>▪ Continue consultation with NSW Ports and relevant service providers to discuss design, supply and access for the PK BLT utility connection requirements.<br>▪ Ensure all utilities are to be designed in accordance with appropriate standards and guidelines to consider the existing capacity and future performance of all utility servicing.<br>**Construction**<br>▪ Prior to construction, all existing utilities and their locations will be confirmed to avoid any conflicts or damage during construction.<br>▪ Any associated servicing augmentation approvals and requirements will be arranged by TQ with the appropriate servicing authorities prior to construction commencing.<br>▪ The connection and augmentation of all utility works requirements will be designed, planned and carried out in a manner that will minimise impacts on the existing neighbouring operations.<br>▪ TQ will operate the PK BLT in accordance with any utility supply agreements. |
| 13 | **Socio Economic** | The nearest residence is located 1,200m from the proposed PK BLT project site. The surrounding area consists of a range of heavy industrial and port related operations situated within<br>A number of potential impacts associated with the social amenity of the area were identified. However, subject to the mitigation measures listed throughout Section 9 of this document, these impacts will not be significant. | **Construction**<br>▪ A Construction Environmental Management Plan (CEMP) will be prepared prior to construction commencing to ensure all environmental aspects associated with construction activities are appropriately managed to minimize impacts to neighbouring operators, sensitive receptors in the vicinity of the site as well as the broader community.<br>**Operations**<br>▪ An Operational Environmental Management Plan (OEMP) will be prepared to ensure environmental aspects are appropriately managed to minimize impacts to neighbouring operators, sensitive receptors in the vicinity of the site as well as the broader community. |
| 14 | **Ecologically Sustainable Development** | The proposed development incorporates the principles of ESD through the implementation of the recommended mitigation measures detailed within the specific environmental assessments. Consequently, the proposal aligns with the ESD requirements identified within Clause 7(4) of Schedule 2 of the EP&A Regulation and would not create a significant environmental impact. The | **Construction**<br>▪ A CEMP will be prepared prior to construction and will contain procedures to address risks and incidents during construction, as well as operation. Procedures would be developed for incidents including product spills, flooding, excavation of contaminated material uncovering of heritage items or relics.<br>**Operations**<br>▪ An OEMP, storm water drainage plan and WMS will be prepared to ensure environmental aspects associated with the capture and management of runoff and waste, air quality and |

| | Parameter | Discussion | Mitigation Measures |
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| | | project does not present any significant impact on the local community. | noise are appropriately managed to minimize impacts to neighbouring operators, sensitive receptors in the vicinity of the site as well as the broader community. Where access to property is to be blocked temporarily, the contractor would advise the affected parties in advance of the work. |
| **15** | **Cumulative Impact Assessment** | The individual impact assessments demonstrate that the Proposal, in conjunction with existing and known future developments, would not have a significant level of impact. Based on the assessment provided, the works will have minor cumulative impacts on the existing environment during the course of construction. | ▪ Works will be undertaken in accordance with the mitigation measures outlined in the EIS and the contractors CEMP and OEMP. |

# 9 References

Cardno (2015a) *Environmental Impact Statement: Proposed Port Kembla Bulk Liquids Terminal (SSD 7264)*. Prepared for TQ Holdings Australia Pty Ltd.

Cardno (2015b) *Traffic Impact Assessment: Proposed Port Kembla Bulk Liquids Terminal (SSD 7264)*. Prepared for TQ Holdings Australia Pty Ltd.

Cardno (2015c) *Traffic Impact Assessment: Proposed Port Kembla Bulk Liquids Terminal (SSD 7264)*. Prepared for TQ Holdings Australia Pty Ltd.

Cardno (2015d) *Route Selection Assessment: Proposed Port Kembla Bulk Liquids Terminal (SSD 7264)*. Prepared for TQ Holdings Australia Pty Ltd.

Cardno (2015e) *Surface Water Assessment: Proposed Port Kembla Bulk Liquids Terminal (SSD 7264)*. Prepared for TQ Holdings Australia Pty Ltd.

Cardno (2015f) *Visual Impact Assessment: Proposed Port Kembla Bulk Liquids Terminal (SSD 7264)*. Prepared for TQ Holdings Australia Pty Ltd.

Cardno (2015g) *Soil and Groundwater Impact Assessment: Proposed Port Kembla Bulk Liquids Terminal (SSD 7264)*. Prepared for TQ Holdings Australia Pty Ltd.

Cardno & EcoPlanning (2015) *Ecological Impact Assessment: Proposed Port Kembla Bulk Liquids Terminal (SSD 7264)*. Prepared for TQ Holdings Australia Pty Ltd.

Cardno (2016) *Response to Submissions Report: Proposed Port Kembla Bulk Liquids Terminal (SSD 7264)*. Prepared for TQ Holdings Australia Pty Ltd.

EnRisks (2015) *Human Health Risk Assessment: Proposed Port Kembla Bulk Liquids Terminal (SSD 7264)*. Prepared for TQ Holdings Australia Pty Ltd.

Pacific Environment (2015a) *Air Quality and Greenhouse Gas Assessment: Proposed Port Kembla Bulk Liquids Terminal (SSD 7264)*. Prepared for TQ Holdings Australia Pty Ltd.

Pacific Environment (2015b) *Noise and Vibration Assessment: Proposed Port Kembla Bulk Liquids Terminal (SSD 7264)*. Prepared for TQ Holdings Australia Pty Ltd.

Sherpa Consulting (2015) *Preliminary Hazard Analysis: Proposed Port Kembla Bulk Liquids Terminal (Stage 3 Development))*. Prepared for TQ Holdings Australia Pty Ltd.