ENSR | AECOM

Prepared for:

Marstel Terminals Newcastle Pty Ltd

Po Box 175
Altona VIC 3018

Environmental Scoping Report Marstel Terminals Newcastle Bulk Liquid Storage Facility

Port of Newcastle

ENSR Australia Pty Ltd (ENSR)

20 June 2008

Document No.: N6048701_FinalRep_25June08

Distribution

Environmental Assessment Scoping Report Marstel Terminals Bulk Liquid Storage Facility Port of Newcastle

25 June 2008

Copies	Recipient	Copies	Recipient
1	**Jeff Hibbert** **Engineering Manager** **Martsel Terminals** PO Box 175 ALTONA Vic	1	**Ms Deana Burn** **Department of Planning** **Major Development Assessment** GPO Box 39 SYDNEY NSW 2001
1	**ENSR Australia** File Copy		

By

ENSR Australia Pty Ltd (ENSR)
ABN: 34 060 204 702

Renae Gifford
Associate Environmental Scientist

Technical Peer Reviewer: **Date:** 25/6/08

Michael England
Senior Principal, National Practice Leader
Environmental Planning

"This page has been left blank intentionally"

Contents

FIGURES

1.0 Introduction

Marstel Terminals Newcastle Pty Ltd (Marstel) proposes to construct a bulk liquids storage facility (terminal facility) on land managed by the Newcastle Port Corporation (NPC) in the Port of Newcastle, NSW. The proposed facility will be used for the receival, storage, blending and distribution of high quality fuels and biofuels for customers throughout the Hunter Region. The capital costs associated with the facilities are approximately $ 47 million.

Under the provisions of Part 3A of the *Environmental Planning and Assessment Act 1979* (EP&A Act; amended 2005), Marstel intends to seek project approval for the proposed development. Marstel have previously gained project approval for a similar development on Kooragang Island, NSW. The subject site however has significant advantages to the previous site, including access to existing port and pipeline infrastructure.

1.1 Background

The consumption of fuel and biofuels in the Hunter Valley, and throughout Australia, is increasing. With the refining capabilities in Australia operating at maximum production, the increasing demand for fuel will need to be met through imports, which will in turn require waterfront terminalling facilities.

The existing fuel terminal facilities in Newcastle receive fuel via truck or pipeline from Sydney. Vehicle access from fuel facilities in Sydney is limited by route restrictions for hazardous bulk liquids, and the fuel pipeline is currently carrying capacity loads. The alternative transport route available to Newcastle facilities is via ship.

Biofuels (biodiesel and ethanol) are generated from renewable, organic sources. The use of fuels blended with biofuels can result in environmental benefits, including reduced exhaust emissions of some toxic pollutants and reductions in greenhouse gas emissions.

1.2 Project Context

Marstel wishes to develop a terminal facility that will primarily be used for the cost-effective import, blending and distribution of high-quality fuel and biofuels to the Hunter Region. Unleaded petrol, marine fuel oil and diesel will be received by ship. Ethanol and biodiesel will be primarily sourced from Australian markets and delivered by truck or ship. The fuels will be stored in bulk tanks prior to blending and distribution throughout the Hunter Region. The proposed project will increase the availability of more environmentally-friendly fuels and increase competition in the local fuel market.

1.3 Location

The terminal facility is to be located on part of the former BHP Steelworks site, approximately 5 km north/west of the Newcastle CBD as shown in **Figure 1**. The land on which the facilities are to be located will be leased from Newcastle Port Corporation.

The nearest residential area is located at Mayfield (see **Figure 2**), with the closest receptors approximately 900m from the proposed terminal site. Neighbouring industry includes OneSteel and Koppers Coal Tar Products to the west.

1.4 Approval Process

The proposed development potentially meets the criteria of a Major Project under Schedule 1 of *State Environmental Planning Policy 2005* (SEPP 2005) as:

> *Bulk storage facilities with a capital investment of more than $20 million*
>
> *(Group 3, Clause 10).*

The proposal is, therefore, eligible for assessment under Part 3A of the EP&A Act, with the Minister as the decision-making authority. A project approval is sought for the proposed development.

1.5 Purpose and Structure of Report

The purpose of this report is to characterise the proposed project and provide an overview of its potential effects on the environment and the community. Additionally, this Environmental Assessment Scoping Report (EASR) is intended to provide the Department of Planning (DOP) and other statutory authorities with sufficient information to establish the key environmental issues associated with the proposed project. The information contained in this report will be used to determine whether the project meets the criteria for Major Project status under State Environmental Planning Policy (SEPP) 2005 and to develop the Director-General's Requirements for the Environmental Assessment.

The structure of this EASR is outlined below:

- **Sections 1** and **2** provide an introduction to the proposed project, including a description of the proposal and its main components;
- **Section 3** describes the legislation applying to the proposed project;
- **Section 4** provides details of preliminary consultation undertaken with regulatory authorities, the community and neighbouring industry;
- **Sections 5** and **6** report on the environmental implications of the proposal, including the baseline situation and anticipated impacts;
- **Section 7** outlines the potential effects of the proposal on the community in terms of social, heritage and cultural impacts, together with the economic implications of the proposal;
- **Section 8** assesses the potential environmental risks associated with the proposed project and prioritises them; and
- **Section 9** presents a summary of the findings of the EASR and provides a conclusion on the level of environmental assessment required to support the preliminary project application.

1.6 The Proponent

Marstel is an independent bulk liquids storage and handling company that has been operating for 20 years, specialising in handling hazardous bulk liquids and edible oils. Marstel operates three terminals in Australia and two in New Zealand. Marstel seeks to diversify into the fuel terminalling sector in order to grow its business base.

Marstel places the highest priority on safety, operational integrity and good environmental practice. Documented work procedures and management systems have been developed for all of Marstel's terminals to ensure its operations are conducted safely. The Coode Island facility has been recognised as a world best practice operation for safety and environmental protection. Operator selection and training, emergency response procedures, risk management procedures and incident reporting are all key areas of emphasis in Marstel's management systems, which support the Company's quality, safety and environmental objectives.

2.0 Characterisation of the Project

2.1 Overview

The proposed project involves the construction of a terminal facility that will be used for the import, blending and distribution of high quality fuels and biofuels. The terminal facility will be designed to receive fuels and biofuels via ship and truck, which will be stored in bulk storage tanks prior to blending and distribution to customers. The proposal also includes the refuelling of ships via barge whilst in dock within the Port of Newcastle. The terminal will be designed for an estimated throughput of approximately 500 million litres (megalitres, or ML) of fuel per year.

2.2 Project Objectives

The purpose of the project is to develop a world-class bulk fuels and biofuels terminal in Newcastle, which will help industries in the Hunter Region to grow with more cost-competitive fuel, greater efficiencies and a stable fuel supply. Marstel's vision is to secure a thriving and vibrant Hunter community built with economically, socially and environmentally sustainable industry.

The products imported, stored and dispatched from the terminal will conform to the Australian Fuels Standards. Product quality control systems will be adopted to ensure that the products meet grade at all stages of the supply chain and when delivered to customers.

2.3 Justification of Site Location

Newcastle was chosen as the location for the proposed facilities due to commercial and access benefits. The main advantages of the location are:

- The existing port infrastructure and availability of land close to berthing facilities;
- Easy access to locations throughout the Hunter Region from the port;
- Population growth;
- The growing industrial base; and
- The supportive business development environment.

The proposed terminal facility is located close to a berthing facility, and can receive and distribute product directly from the ship via a relatively short pipeline. The ability for Marstel to receive product from ships and supply this product to end users will provide a cost-effective supply chain that will provide future growth opportunities for the terminal once it is established.

In contrast, the Sydney region suffers from congested roads, limited transport routes for liquids with low flash points (such as fuels) and a lack of vacant land close to the port facilities.

2.4 Site Information

2.4.1 Description

The proposed terminal facility is to be located on the former BHP Steel works site, in Mayfield. The site abuts the Hunter River to the north and adjoining industry to the west as indicated in **Figure 2**.

2.4.2 Ownership

The site will be leased from NPC. The pipeline will be located within an existing pipeline corridor which is also owned by NPC.

2.4.3 Access

The site is close to berthing facilities; product can therefore, be transferred between the berth and the main site via a pipeline. Road access will be via a newly constructed road access to Industrial Highway. There are currently two intersections being considered, which is an intersection at Crebert Street, or an alternate intersection at Ingall Street. The proposed intersection will be determined once a traffic study has been completed that identifies the preferred intersection and following consultation with NPC, RTA and NCC. The results of the traffic study will be incorporated into the Environmental Assessment and the preferred intersection identified. Construction of the preferred intersection does not form part of this Proposal; it would be undertaken through broader master plan development of the former BHP Steelworks site.

2.4.4 Security

The site will be bounded by a chain wire mesh fence with a razor wire top. Access to the site will be via two automatic traffic gates that will be opened by terminal staff or access cards (issued to inducted contractors). An in-ground induction loop will trigger the gates to open for vehicles leaving the site. Emergency egress points will be located at manually-opened gates and the main traffic gates. The site will have low-level, inward-directed floodlighting at night in addition to operational task lighting.

2.4.5 Operational Hours

Marstel will be seeking approval for 24-hour operations. Shipping operations will be undertaken as required, which may be at any time or day of the week. Ship refuelling via barge will also be undertaken as a 24-hour operation.

2.4.6 Interfaces

The terminal facility site will require servicing infrastructure such as potable water, electricity, communications, gas and sewage. Electricity to service the terminal facility will be obtained from the local grid; distribution boards will be supplied from an on-site transformer linked to the high voltage electricity supply. On-site backup capability (batteries and engine-driven generator) will be installed to feed key safety-related systems to ensure the safe operation of the tanks during power outages. The fire system will be powered by diesel. Potable water will be obtained from Hunter Water via pipeline, and an on-site septic system will be required for the treatment of effluent. Gas will be required for the hot water boiler to heat the fuel oil and biodiesel tanks and will be piped to the site. Access to the required infrastructure will be detailed in the Environmental Assessment.

As these interface services are currently unavailable to the site, negotiations with NPC will determine the easement route. This will be in accordance with master planning for the site and the existing consent conditions.

2.4.7 Decommissioning

The proposed facilities have an intended operational life of 100 years. The materials from which the facilities are to be constructed are recyclable and readily decommissioned.

2.5 Key Components

2.5.1 Storage, Tanking and Terminals

An existing unused port berth will be used (Mayfield 3.5 Wharf) for interim ship berthing and product discharge as indicated on **Figure 2**. The current berth is located approximately 875 m east of the proposed terminal facility, and is to be upgraded by NPC prior to operation of the terminal. Ships will discharge through two eight-inch multi-product flexible hoses connected to a dedicated manifold on the wharf. The hoses will be rated for 14 bar working pressure. The current maximum pump pressure available from ships serviced is 9 bars, and the hose burst pressure is approximately five times the working pressure.

The hoses will be handled using the ship's crane or shore-based mobile cranes. One 400 mm diameter wharfline with a pig breech at the wharf will allow for the transfer from ships of diesel, ULP, biofuels and marine fuel oil to the terminal facility below existing above ground pipeline supports which are currently used by Koppers. The 400 mm diameter line will terminate at a pig receiver and main product receipt manifold on site.

Unleaded and diesel will be delivered to the terminal facility via the wharfline as indicated on **Figure 2**. The pipeline will be 'pigged' clear after each diesel and unleaded petrol discharge. Marine fuel oil will be delivered to the terminal facility and dispatched to the interim barge berth via the same pipeline. The line will remain "charged" with fuel oil until pigged clear prior to a diesel / ULP ship discharge.. Shipping and truck loading operations will be controlled by a computerised control system that will be pre-programmed to enable feasible concurrent operations.

Diesel and biodiesel fuel will respectively be stored in one 25 ML and two 3 ML atmospheric steel storage tanks, venting to atmosphere. The fuel oil will be stored in a 25ML tank which will be heated via a natural gas fired hot water boiler. Unleaded and premium unleaded petrol will be stored in separate 12 ML steel tanks with internal floating roofs that will minimise vapour emissions and retain petrol quality. Ethanol will be stored in a 3 ML steel tank, also fitted with an internal floating roof. All tanks will be designed to meet the requirements of the Protection of the Environment Operations (Clean Air) Regulation in relation to the control of volatile organic liquids.

Each tank will have:

- Auto level gauging;
- High/low level alarms;
- Multi-level temperature measurement;
- Multi-level sampling equipment;
- Water draining; and
- Low-level product drains for maintenance purposes.

All tanks will be located within bunds. Stormwater is piped to a stormwater collection system and is checked for quality prior to discharge.

2.5.2 Marine Fuel Oil Dispatch

As required, marine fuel oil will be dispatched from the facility via the same pipeline as the delivery. Marine fuel oil will be pumped from the terminal facility to a barge that will be docked at either the Mayfield 3.5 wharf or an alternate interim berth to the west as indicated in **Figure 2.** Loading of the barge will be undertaken with the use of flexible hosing between the manifold at the end of the pipeline and the barge. The barge will have a total capacity of 1000 tonnes, however will typically carry loads of between 300-400 tonnes. It is anticipated that the barge will be at the berth for 4 hrs during each loading and transfer event. The marine fuel oil will be used to re-fuel ships moored around the Port of Newcastle, and prior to their departure.

2.6 Road Tanker Gantry

A three-bay road tanker gantry is proposed for the terminal site, with each bay capable of multi-product loading of a 50,000 litre B-double road tanker in 40 minutes. The gantry will be fed from the product tanks via dedicated pumps and lines. Each gantry bay will be fitted with three diesel, one unleaded petrol and one premium unleaded petrol bottom loading arms, with each arm supporting additive injection facilities.

The facility will be operated by the vehicle driver using swipe card gantry access. The vehicles will be fitted with overfill and static protection. A dead-man button requiring regular activation by the vehicle driver will be integrated into the gantry emergency shutdown system. Various component interlocks will ensure safe operation during all phases of the vehicle loading operation.

The truck fill stand will take vapours from the road tankers during loading via a vapour recovery unit (VRU). Product will be reclaimed and pumped back into the system, thereby removing atmospheric emissions.

2.7 Physical Form

The site layout is shown in **Figure 3**. The primary elements of the terminal facility are the seven 17 m high storage tanks, two 15 m high fire water storage tanks and the truck-loading gantry. Details of the main structures on site are provided in **Table 1**. Above-ground pipework will also be installed utilising existing pipe supports in the locality for the transfer of fuels from the Mayfield 3.5 wharf to the terminal facility. The length of the pipework will be approximately 875 m, located on concrete supports below the existing supports that are approximately 3 m above the ground surface.

The fuel storage tanks will be constructed on foundations fitted with a tell-a-tale drains to detect under-floor leaks. The tank storage area will be surrounded by concrete bund walls approximately 2.5 m high, with intermediate bunds 0.6 m high designed in accordance with AS 1940. The bunds will be lined with a Claymax or HDPE liner and crushed rock, and sealed with a sprayed layer of non-combustible bituminous compound to create a barrier above the soil and groundwater and aid the collection of stormwater.

Table 1: Proposed Site Structures

Structure	Approximate Size	Storage Volume	No.	Description
Diesel tanks	44 m diameter; 17 m high	25,850 m^3	1	Steel tanks with white exterior
Unleaded Petrol	30 m diameter 17 m high	12,000 m^3	2	Steel tanks with white exterior
Ethanol/biodiesel tanks	16 m diameter; 17m high	3,420 m^3	3	Steel tanks with white exterior
Marine Fuel Oil	44 m diameter 17 m high	25,850 m^3	1	Steel tank with white exterior
Office and amenities	16 m x 9 m; 5 m high	720 m^3	1	Steel wall and roof cladding; colourbond finish
Truck-loading gantry	25 m x 16.5 m; 8 m high	3,300 m^3	1	Steel frame with colourbond cladding (wall and roof)
Workshop / MCC	11 m x 9 m; 5 m high	495 m^3	1	
Fire pump house	10 m x 5 m; 5 m high	250 m^3	1	
Fire water storage tanks	16 m diameter; 15 m high	3,015 m^3	2	Steel tank with galvanised finish

2.8 Environmental Controls

Marstel has implemented an extensive suite of environmental controls at its other bulk terminal facilities, with similar procedures and equipment to be installed at the proposed Mayfield terminal facility. These controls cover loading and unloading of road tankers, ship transfer operations, stormwater management and fire management as detailed in **Sections 2.9** – **2.12**.

Marstel is an environmentally responsible company, and will develop a comprehensive environmental improvement plan in consultation with key stakeholders including the community, neighbouring industry and regulators. Marstel will implement a program of continuous improvement for environmental performance, and will demonstrate management of the process through setting environmental objectives and measuring performance against those targets. Management will ensure that all team members are fully trained for their respective positions, with a full and clear understanding of their environmental responsibilities and the associated regulatory controls for industry.

2.9 Road Tanker Loading/Unloading

All loading and unloading activities will be undertaken by the inducted and trained Road Tanker drivers. A dead-man button will be installed, with operations aborted if this button is not pushed every three minutes. Contractors, drivers and site visitors will undergo inductions in site safety, emergency systems, and environmental issues prior to being allowed on site. Procedures governing the types of tankers allowed on site and their proximity to other tankers will also be implemented. Loading and unloading operations will begin and end on low flow settings, with the product pumps starting once a feedback signal is received that indicates all the in-line valves are open. Valves will fully open to the receiving tank once a percentage volume of liquid has been transferred.

2.10 Ship Transfer Operations

The wharf transfer line will be pressure-tested to ensure their integrity prior to the arrival of each ship and before products are transferred. All ship unloading operations will be undertaken initially under low flow conditions while additional checks are conducted to ensure the unloading operation is occurring appropriately. Hourly line walks and regular control room checks and wharf monitoring will also be implemented.

2.11 Stormwater Management

The majority of the site will be sealed and Marstel will seek to discharge clean stormwater to the Hunter River via an existing box culvert stormwater drain. In order to prevent pollution of waters from stormwater from the site, Marstel intends to implement a stormwater management system. Key aspects of the stormwater management system will include:

- A first flush system retention pit to capture oil and grease from the road tankers on the paved roadways;
- A remote retention pits to collect water from the road tanker fill areas, pump bays and inlet manifold area;
- Testing of water quality prior to release to the API separator pit then pumped to the outlet pit to river discharge;
- Prevention of spills;
- Water quality monitoring;
- System maintenance;
- Handling and disposal of contaminated fire water;

- A CPI separator for treatment of water drained from petrol and diesel tanks and the first flush and tanker fill stand remote retention pits that will be pumped to the API separator for final testing before release to the Hunter river;
- Contingency plans for the management of contaminated stormwater; and
- Staff training.

Proposed water quality testing measures include:

- Visual inspections of stormwater within the bunded areas for grease, foam, visible oil, and litter;
- In-field testing of bund water quality prior to its release to API separator pit;
- Laboratory analysis of samples from the API separator pit; and
- Comparison of the results against water quality criteria prior to release of the water.

Site stormwater from the bunded areas and roads will be segregated. Bund stormwater will be retained in the bund until tested and released via the API separator, where it will be further tested before release to the Hunter River via a final litter/oil/sediment interceptor. Stormwater from service roads will also pass through this interceptor prior to discharge to the river. Paved road services will be contoured such that stormwater from the paved roadway is captured in a first flush system that will capture stormwater for the first 20 mm of a rain event, and thereafter divert, to either the Hunter River or the access road drainage system. The captured first flush water will then be treated / separated on site with any waste oils / solids sent off site for disposal. The remaining water will be retested and, subject to meeting the water quality criteria, discharged to the river via the CPI and API separators.

The same procedures will apply to water in the bunds that fail to meet the applicable water quality criteria.

2.12 Fire Management

The terminal facilities will be designed to minimise safety risks and hazards associated with operations, and will also be fitted with extensive fixed and portable fire-fighting capability. Water will be stored on the terminal site in a tank for fire-fighting purposes sourced from Hunter Water. Two diesel-driven fire pumps and a water ring main will provide firewater to tank and road gantry deluge systems, fixed monitors, fire hose reel sets and fire hydrant connections. The truckfill stand and pump bays will have fixed automatic foam deluge protection activated by infrared flame detectors. The scope of the fire system will be determined by a fire safety study approved by the NSW Fire Brigade.

2.13 Construction Details

2.13.1 Program of Works

The target completion date for construction of the terminal facility is November 2009, following an anticipated construction period of approximately 15 months.

2.13.2 Outline of Construction Methods

Construction activities required for the project will include the following:

- Excavation of areas for tank foundations (details dependent on the results of the geotechnical study);
- Construction of reinforced concrete bund walls;

- Preparation of the bund floor (excavation, backfilling with crushed rock, installation of liner, additional backfilling with crushed rock and priming/sealing);
- Installation and diversion of services and infrastructure, including stormwater drainage lines;
- Construction of internal roadways (excavation, compacting of road base; pouring of concrete pavement (reinforced) for main driveway;
- Construction of a pipeline below existing supports to transfer materials between the berth and the storage facility; and
- Construction vehicle movements.

Much of the material will be prefabricated and installed on site, particularly fuel facility components, thereby minimising the construction activities required on site.

The tanks will be fabricated and erected on their foundations. Following the welding and testing of the floor plates, the tank structures will be formed by welding together the rings in a staged approach, with temporary bracing added until the structure is completed and the roof is installed. The structure will be tested by x-ray, then filled with water and pressure tested in accordance with API650-11th edition.

"This page has been left blank intentionally"

3.0 Statutory Planning

3.1 Local Matters

The site is located within the Newcastle Local Government Area, and is subject to the provisions of the Newcastle Local Environmental Plan (LEP 2003). The map to LEP 2003 shows the site is located within the 4(b) – Port and Industry zone. The objectives of the 4(b) zone are:

(a) *To accommodate port, industrial, maritime industrial, and bulk storage activities which by their nature or the scale of their operations require separation from residential areas and other sensitive land uses.*

(b) *To require that development of land within 750 metres from the high-water mark of the shores of the Port of Newcastle, capable of docking ocean-going vessels, is used for purposes that:*

(i) *require a waterfront location that provides direct access to deep water, or*

(ii) *depend upon water-borne transport of raw materials or finished products, or*

(iii) *have a functional relationship that necessitates proximity to the activities described above.*

(c) *To facilitate sustainable development through the application of industrial ecology.*

(d) *To provide for other development which will not significantly detract from the operation of large scale industries or port-related activities, that is primarily intended to provide services to persons employed in such industries and activities.*

The proposed project is defined as a 'liquid fuel depot' under the provisions of clause 37 of LEP 2003. Liquid fuel depots are permissible within the 4(b) zone. The proposal is also consistent with the zone objectives.

3.2 Regional Matters

The Regional Environmental Plan (REP) of relevance to the subject site is Hunter REP 1989. The aims of the Hunter REP are:

(a) *to promote the balanced development of the region, the improvement of its urban and rural environments and the orderly and economic development and optimum use of its land and other resources, consistent with conservation of natural and man made features and so as to meet the needs and aspirations of the community,*

(b) *to co-ordinate activities related to development in the region so there is optimum social and economic benefit to the community, and*

(c) *to continue a regional planning process that will serve as a framework for identifying priorities for further investigations to be carried out by the Department and other agencies.*

The objectives of the Hunter REP in relation to industrial development are:

(a) *to ensure that sufficient zoned and serviced industrial land is provided in locations appropriate to the needs of industry, while ensuring protection of the environment, and*

(b) *to promote the distribution of employment in secondary industry in a manner compatible with the availability of services and distribution of population.*

The objective of Part 7 (Division 1) of the Hunter REP is to control development such that air, noise and water pollution are minimised. As the potential environmental impacts of the proposed project are considered to be unlikely to significantly increase local pollution as discussed in **Section 5**, the proposal is considered to be consistent with the relevant objectives and principles of the Hunter REP.

3.3 State Matters

State Environmental Planning Policy (Major Projects) 2005

SEPP 2005 identifies developments that are considered to be Major Projects under Part 3A of the Environmental Planning and Assessment Act 1979. The approval authority for a Major Project is the Minster for Planning.

The primary aim of SEPP 2005 is:

> *To identify development of economic, social or environmental significance to the State or regions of the State so as to provide a consistent and comprehensive assessment and decision making process for that development.*

Schedule 1 of SEPP 2005 identifies the major development classifications. These classifications include

> *Bulk storage facilities with a capital investment of more than $20 million*
>
> *(Group 3, Clause 10)*

The cost of establishing the bulk storage facilities is estimated at $47 million. As such, the project is eligible for declaration as a Major Project, making the Minister the approval authority for the proposed project.

State Environmental Planning Policy (SEPP) 2007 – Infrastructure

The aim of this Policy is to facilitate the effective delivery of infrastructure across the State by:

(a) *improving regulatory certainty and efficiency through a consistent planning regime for infrastructure and the provision of services, and*

(b) *providing greater flexibility in the location of infrastructure and service facilities, and*

(c) *allowing for the efficient development, redevelopment or disposal of surplus government owned land, and*

(d) *identifying the environmental assessment category into which different types of infrastructure and services development fall (including identifying certain development of minimal environmental impact as exempt development), and*

(e) identifying matters to be considered in the assessment of development adjacent to particular types of infrastructure development, and

(f) providing for consultation with relevant public authorities about certain development during the assessment process or prior to development commencing.

The proposed development by Marstel Terminals is consistent with the aims of this SEPP, as it is utilising current vacant land for a beneficial use.

State Environmental Planning Policy (SEPP) 11 – Traffic Generating Development

The aim of SEPP 11 is to provide the traffic management authority with the opportunity to provide feedback on certain traffic-generating developments before a consent authority makes a determination about a development application.

Schedule 1 of the policy lists types of development to which this policy applies, including:

(j) transport terminals, bulk stores, container depots or liquid fuel depots.

The proposed project would therefore, be forwarded to the Roads and Traffic Authority (RTA) and Newcastle City Council (NCC) for comment. The proponent intends to consult with the RTA and NCC prior to the submission of the EA to ensure relevant issues are addressed.

State Environmental Planning Policy (SEPP) 33 - Hazardous and Offensive Development

SEPP 33 was designed to ensure that sufficient information is provided to consent authorities to determine whether a development is hazardous or offensive. Conditions can then be imposed on the development to reduce or minimise adverse impacts. Any development application for a potentially hazardous development must be supported by a Preliminary Hazard Analysis (PHA).

The document *Applying SEPP 33 – Hazardous and Offensive Development Application Guidelines* was prepared by the Department of Urban Affairs and Planning in 1994 to provide assistance in implementing SEPP 33. The Guidelines recommend a 'risk screening' method for determining whether a proposal is hazardous, and provide guidance on assessing potentially offensive development proposals.

The facility will store both flammable and combustible materials on site, with proposed capacity that renders the proposal subject to the requirements of SEPP 33 as a potentially hazardous facility. A PHA will therefore be prepared for the EA as outlined in **Section 7.0.**

State Environmental Planning Policy (SEPP) 55 - Remediation of Land

SEPP 55 promotes the remediation of contaminated land to reduce the risk of harm to human health or other environmental systems. Clause 7 of SEPP 55 requires a consent authority to consider whether the land is contaminated and whether it is suitable (or can be made suitable) for the proposed development.

A Contaminated Site Management Plan has been developed for the entire former BHP Steelworks site. This has included the construction of a groundwater barrier around the higher contaminated parts of the site and remediation and capping of the surface areas with the application of crushed rock. Construction of the terminal site will not interfere with any of the remediation works undertaken on site, with structures to be placed above the capping layer.

3.4 Commonwealth Matters

As well as any state-based approvals required, actions that may significantly affect matters of national environmental significance (NES) require approval from the Commonwealth under the *Environment Protection and Biodiversity Conservation* (EPBC) Act 1999. The EPBC Act lists seven matters of NES that must be addressed when assessing the environmental impacts of a proposal. These matters are:

- World heritage properties;
- National heritage places;
- Ramsar wetlands of international significance;
- Threatened species and ecological communities;
- Migratory species;
- Commonwealth marine area; and
- Nuclear actions (including uranium mining).

As the proposed project is not anticipated to have a significant impact on any of these matters, no approvals would be required under the EPBC Act. It should be noted, however, that a Ramsar wetland is located on Kooragang Island approximately 5 km from the development sites (discussed further in **Section 6**).

3.5 Approvals Required

The site has been previously cleared as part of the demolition and remediation works undertaken on site, and the proposed project will utilise currently unproductive prime portside industrial land. Only the permits/approvals outlined below are, therefore, expected to be required for the proposed project.

Protection of the Environment Operations Act (POEO) 1997

Schedule 1 of *Protection of Environment Operations Act 1997* outlines activities that require an Environment Protection Licence (EPL). The proposed project will require an EPL for petroleum works as it has an intended petroleum storage capacity greater than the 2,000 tonne threshold specified in POEO. The proposed project may also meet the criteria for shipping facilities (bulk) as the planned throughput of the terminal is 500 ML per annum.

4.0 Involvement Stakeholder

Extensive consultation was undertaken with representatives from a number of government departments, industries and the community during the preparation of the EA for the Kooragang Island site. Community members that were consulted during this process have been contacted prior to the submission of this EASR to indicate Marstel's intention to relocate to the subject site.

Marstel is committed to acting as a responsible corporate citizen, and strongly believes that regular communication with residents and neighbouring industries is central to the creation of harmonious relationships. Marstel also supports community involvement in decision-making processes surrounding the environmental future of the development area.

Further consultation with regulatory authorities and the community will be undertaken during the preparation of the Environmental Assessment. The following agencies are likely to be consulted:

- NSW Maritime;
- NPC;
- DECC;
- Department of Water and Energy;
- Newcastle City Council;
- NSW Fire Brigade; and
- Roads and Traffic Authority.

These agencies would be invited to advise key requirements relating to their statutory responsibilities, to be considered in the EA.

"This page has been left blank intentionally"

5.0 Physical and Pollution Effects

5.1 Air

5.1.1 Baseline Conditions

Air quality in Newcastle is dominated by motor vehicle emissions, but is also affected by the major industry located around the port area. Sources of air emissions include the Orica and Incitec plants, and the Tomago Aluminium smelter. Additional pollutant sources include dust emissions from the coal and grain terminals, and odour from seed processing (Cargill). There are three fuel storage facilities in Newcastle: Caltex (Wickham), BP (Carrington) and Shell (Hamilton), which are located adjacent to or near to residential areas.

The pollutants of prime concern in NSW are ozone and particulates, with levels of these pollutants approaching or exceeding the national standards prescribed in the National Environment Protection Measure for Ambient Air Quality (NEPM) on occasion. Pollutant levels in Newcastle, however, are generally acceptable, with few exceedances noted (NSW State of the Environment 2006, DEC).

5.1.2 Potential Impacts

The main potential sources of air emissions associated with the proposed development are vapour emissions from the storage and transfer of fuels (volatile organic compounds, or VOCs, which are precursors of photochemical smog and ozone formation), odour emissions from the marine fuel oil and fugitive dust emissions from the construction works.

In order to manage potential operational impacts of the facility, Marstel intends to implement a number of design features and control mechanisms. These include the design of storage tanks to minimise emissions, such as through the use of internal floating roofs for petrol tanks, and the use of a Vapour Recovery Unit (VRU) for the truck filling process.

The VRU will be designed to meet 1 - 10 milligrams of VOC release per litre of product loaded, or 1 –10 grams per cubic metre of vapour vented. The VRU is classified suitable to be installed in hazardous areas, has no flame to serve as an ignition source, and has no supplemental fuel requirements or trade-off pollutants. The units are accepted worldwide as standard for evaporative hydrocarbon vapour control, with proven reliability and easy operation and maintenance. The US EPA has recognised VRU technology as being both the Best Demonstrated Technology and Maximum Available Control Technology, and use of these systems, therefore, represents best practice.

Odours will be managed through a specifically designed odour control system that will be determined prior to the submission of the EA. The site will utilise the best technology available to attain the odour limits identified by DECC.

The control of dust emission during construction will be managed by procedures outlined in a Construction Environmental Management Plan (CEMP) prepared for the facilities.

An Air Quality Impact Assessment (AQIA) will be prepared for the EA, which will identify sources of air emissions and assess the potential effects on sensitive receptors from the operation of the facility. Dispersion modelling will be undertaken in accordance with the guidelines published by the DECC (DEC, 2005). The AQIA will assess the effectiveness of design features and control mechanisms to be implemented on site in order to mitigate potential impacts to air quality. The AQIA will also include an assessment of greenhouse gas emissions likely to be generated by the facility.

5.2 Surface Water

5.2.1 Baseline Conditions

The Hunter River Estuary has been significantly modified by urban and industrial activity, but remains an important resource for recreation and industry. The main threats to water quality include erosion and sedimentation, weed infestation, and rubbish and other pollutants transferred in stormwater runoff (State of Environment Report 2004/2005, Newcastle City Council).

5.2.2 Potential Impacts

The main threats to water quality from the operation of the terminal facilities involve accidental spillage of product and the release of contaminated stormwater. Potential construction impacts include sedimentation which will be addressed in the CEMP.

The bunding required for the terminal facility will create impervious surfaces. Captured stormwater cannot be reused in operational procedures, and the facilities will not have areas suitable for disposal by irrigation. As such, there are no practical alternatives to the discharge of captured stormwater.

Based on the control measures to be implemented to prevent pollution of waters from the facilities, whereby stormwater quality will be monitored and undergo a controlled discharge process (see **Section 2.11**), no significant impacts on water quality in the Hunter River are expected. Water quality impacts from the construction and operation of the proposed facilities will be addressed in the EA.

5.3 Groundwater

5.3.1 Baseline Conditions

The uppermost aquifer on the former Steelworks site is semi-confined with the top of the water table being one to two metres below the existing surface and mostly within the fill materials. Groundwater flow is to the northeast to northwest for the northern two-thirds of the former Steelworks site and to the east to south for the remainder of the former Steelworks site. Groundwater flow velocity in the fill aquifer is relatively slow and is estimated to be in the order of five metres/year (SKM, 2004).

An area of the former Steelworks site known as Area 1 contains a groundwater plume and was the most highly contaminated part of the site. To contain groundwater contamination in this area a deep subsurface low permeability Barrier Wall was constructed, extending from the ground surface to the bottom of the natural sand and alluvial deposits of the Hunter River (30 metres to 49 metres). Part of this barrier wall underlies the eastern part of the proposed site.

5.3.2 Potential Impacts

Construction of the project will occur in accordance with the requirements of the Contaminated Site Management Plan (CSMP) prepared for the former BHP Steelworks site. Dewatering may be required if groundwater is encountered during excavation of the pipeline or the stormwater pit. This is considered unlikely considering the minimum depth to groundwater previously encountered, and may depend on the seasonal fluctuation and tidal movements.

Groundwater management will also be undertaken in accordance with *NSW Groundwater Quality Protection Policy, DLWC 1998*. Control measures will be implemented to ensure the protection of the existing groundwater aquifer on site and these will be discussed in the EA.

5.4 Soil and Stability

5.4.1 Baseline Conditions

The site of the proposed development is on part of the former BHP Steelworks. There has been extensive investigation of this area during the decommissioning and remediation phases of the site. Soils in the area are highly disturbed and are characterised by fill material underlain by marine and estuarine sediments.

5.4.2 Potential Impacts

The quality and stability of the soils on the sites may be affected by the following activities:

- Earthworks, including installation of stormwater drainage channels and services;
- Construction of foundations for the storage tanks; and
- Tank leakage/spillage during operation.

A Contaminated Site Management Plan (CSMP) is applicable to the site, which sets out requirements in respect of the design, delivery, completion, verification, use and maintenance of works to be carried out on the former Steelworks site. Information from this CSMP relevant to the subject site will be incorporated into the EA.

The construction of the proposed terminal facility will involve minimal excavation of *in situ* soil. The foundations of the tanks will be constructed through pile driving which will not involve xcavation of soil that will require handling on site. It is envisaged that all other terminal facility infrastructure will be placed above the existing crushed rock capping layer. Mitigation measures to reinstate the integrity of the existing capping layer will be included in the final design and operation of the facility as required.

The Construction Environment Management Plan (CEMP) prepared for the facility will include erosion and sediment control measures, and the Environmental Management Plan prepared for the site will include procedures for maintenance and routine checks for leakage of tanks, bunds and fuel transfer equipment.

5.5 Noise and Vibration

5.5.1 Baseline Conditions

The proposed project is to be located within an industrial area adjacent to a working port. The recent noise monitoring program undertaken as part of a noise assessment for the proposed third coal loader on Kooragang Island (Resource Strategies, 2006) described the existing noise environment of the residential and industrial areas surrounding the port. Industrial noise at the sensitive locations of Mayfield and Carrington was attributed to the Kooragang Island industries. Night-time amenity levels at the sensitive receptor locations of Mayfield and Carrington were found to be generally below acceptable amenity criteria.

5.5.2 Potential Impacts

Construction and operation of the proposed facility has the potential to create noise through the use of equipment and increased traffic (road and ship), while vibration may be caused by the pile-driving activities during the construction phase.

Noise associated with the operation of the terminal facility will be the proposed project's main source of impact to potentially sensitive receptors. The main noise-generating equipment, however, are the fuel pumps. As the pumps will be separated from the tanks and the sensitive receptors by a concrete bund wall 1.8 - 2 m in height, noise impacts from the project will not be significant.

Operation of the facility is expected to be within the existing noise profile of the area, with no cumulative increase in impact expected. A noise impact assessment will be prepared for the EA, which will develop noise goals for the project, assess the potential impacts (site-specific and cumulative) from the project, and identify mitigation measures where required. The noise impact assessment will address noise and vibration associated with the construction and operation of the proposed facility, and traffic noise (including trucks and ships). The assessment will identify the need for mitigation measures including a bund or other structures which may influence noise impacts.

6.0 Biological Effects

The proposed terminal site is currently unoccupied, and is currently being covered with crushed rock as part of the site's remediation strategy.

Threatened plant species have not been identified in previous environmental assessments conducted on the site. A number of threatened fauna species were listed on the DECC Wildlife Atlas however have not been identified on the site.

The site is located within 5 km of the Kooragang Island Nature Reserve, which forms part of the Ramsar-listed Hunter Estuary Wetlands. The wetlands are an important area for migratory and Australasian wetland species, including species protected under the Agreement Between the Government of Japan and the Australian Government for the Protection of Migratory Birds and Birds in Danger of Extinction and their Environment (JAMBA) and the Agreement Between Australia and the People's Republic of China for the Protection of Migratory Birds and Their Environment (CAMBA).

The proposed project is unlikely to have a significant effect on native flora and fauna as the site is highly modified and contains little habitat value for native species. The proposed project incorporates measures to reduce off-site impacts and it is, therefore, unlikely that the works will affect the Kooragang Nature Reserve or other native flora and fauna in the areas surrounding the site. A flora and fauna assessment is therefore not considered necessary for the project, and will not be undertaken as part of the Environmental Assessment.

"This page has been left blank intentionally"

7.0 Community Effects

7.1 Hazards and Risks

The fuels that are proposed to be stored at the facility are classified as Dangerous Goods under the Australian Dangerous Goods Code (ADG). The quantities of fuel to be stored exceed the threshold levels detailed in the Department of Planning's guidelines *Applying SEPP 33 – A Hazardous Industry Guideline* (the Guidelines). A review of the proposed fuel storage quantities and distances of storage facilities from site boundaries was undertaken in accordance with the Guidelines.

Based on the site layout (**Figure 3**), a 12 megalitre (ML) petroleum storage tank will be located approximately 15 m from the site boundary. Under the ADG, petroleum is classified as a Class 3 flammable liquid, packaging group (PG) II. **Figure 4** (below) indicates the threshold levels outlined in SEPP 33 to be used to determine whether the storage of Class 3 PG II materials is potentially hazardous.

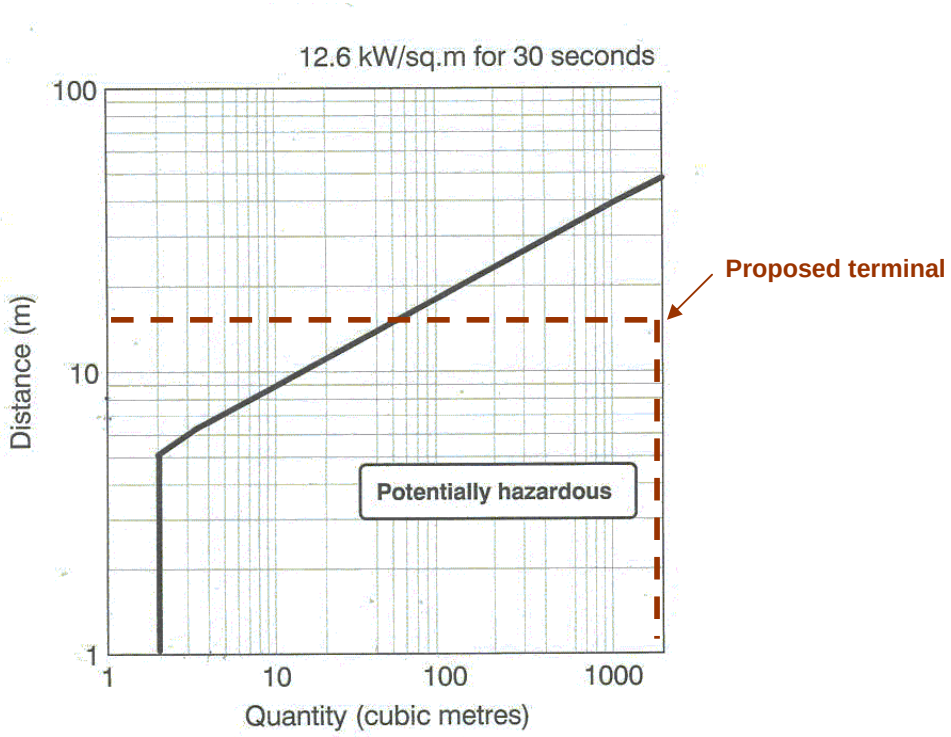


Figure 4: Class 3PGII and PGIII Flammable Liquids

As shown in **Figure 4**, the proposed storage of petroleum at the site is potentially hazardous and a Preliminary Hazard Analysis (PHA) will, therefore, be undertaken as part of the EA. The PHA will be conducted in accordance with the methodology prescribed in *Hazardous Industry Planning Advisory Paper (HIPAP) 6 – Hazard Analysis Guidelines* (NSW Department of Planning, 1992). These HIPAP Guidelines require the assessment of risks to surrounding land to demonstrate whether the site is potentially hazardous or actually hazardous. The PHA will incorporate consideration of risks to adjacent industries from ignition of flammable fuels and subsequent fire.

As detailed in HIPAP 6, this will be performed by the following processes:

- Hazard identification;
- Consequence analysis;
- Frequency analysis;
- Risk assessment;
- Comparison of risks with criteria; and
- Risk review and reduction where required.

Based on existing knowledge of the industries adjacent to the proposed development, and the risk contours associated with those industries, the cumulative risk of the proposed project is not expected to differ from the existing risk profile.

7.2 Socio-economic Impacts

The proposed project will generate positive economic benefits for Newcastle and the Hunter Region through the significant capital investment and establishment of port infrastructure. The facility will support the development and growth of the Hunter Region, and fits with the Lower Hunter Regional Strategy (Department of Planning, 2006), by:

- Providing key infrastructure for the region, indirectly strengthening employment opportunities;
- Stimulating business growth and development through the cost-effective supply of fuel and biofuels;
- Creating port infrastructure that reinforces the region as a strategic eastern seaboard gateway;
- Making the Hunter Region a more environmentally sustainable trading hub by placing fuels storage closer to the end user, thereby reducing the amount trucked from Sydney and lowering overall supply chain costs; and
- Supplying high quality biofuels to the region.

Local specialist consultants will be engaged wherever practical during the approvals process, and suitably qualified local building and engineering contractors will be used during construction.

The number of permanent staff required to operate the facility is minimal, with 2 - 3 employees on-site during operation plus tanker drivers, and approximately 12 additional staff required when ship unloading operations are underway. The facility will, however, indirectly generate employment in the region through increased economic activity (driven by the flow-on benefits for industry of a cost-effective fuel supply) and the ready access to an independent bulk liquids terminal.

Regional industries will directly benefit from access to competitive fuel prices, which will provide indirect benefits to the Hunter in the form of potential for increased investment in infrastructure and services. In particular, the increased profitability of heavy industry, agribusiness and the transport and freight sectors derived from the increased competition in the fuel supply market will have significant positive flow-on economic consequences for the Hunter Region.

These economic benefits will contribute to the economic well-being of the region, and serve to promote stability.

7.3 Resource Implications

Public access is currently restricted to the site. The proposal will not have a negative impact on public access during either construction or operation of the facilities. Furthermore, the proposed works will not result in a significant use of community resources and will provide additional fuel supplies to the region. The proposed project will require minimal use of natural resources, including land, energy and water.

7.4 Heritage and Cultural Impacts

An investigation of potential archaeological materials located on the former BHP Steelworks site was conducted as part of the EIS for remediation of the site. Heritage resources that were identified and to be maintained within the steelworks site for the development of an interpretation facility were the archaeological site of the Hunter River Smelting Co and the Chief Engineer's Office and the Pattern Store. These items are not located on the proposed project site, hence no further heritage assessment is required.

7.5 Land Use and Visual Impacts

The terminal facility is to be located on land that is designated as suitable for port and industrial facilities under the Newcastle LEP 2003, and is consistent with the relevant provisions of the Hunter Regional Environmental Plan 1989. The appearance of the proposed project will be consistent with the existing industrial landscape of the area. The site will be located in an area that will not be easily visible from public view corridors.

An assessment of visual impacts will be included in the EA, and mitigation measures will be developed to minimise these impacts where feasible. Landscaping will be undertaken in accordance with Newcastle DCP 2005.

7.6 Traffic

The proposed terminal facility will require the use of public roads and shipping channels in the port. While the proposed project will increase the amount of heavy vehicle traffic on Industrial Drive, this increase is not expected to significantly affect traffic volumes. Access points to the proposed sites are not located on main roads, and are not considered to be in sensitive locations in relation to traffic and transport.

Traffic movements during the construction phase of the development will be minimal, as much of the material, particularly fuel facility components, will be prefabricated.

During operation of the terminal facility, daily traffic movements will consist of fuel tanker deliveries and the movements of employees and visitors. Estimated truck movements when the terminal facility is operating at maximum capacity (500 ML) will be in the order of 28 B-double movements per day, consisting of 24 trucks for product dispatch and 4 trucks for product receipt (biodiesel and ethanol). Ship movements will be in the order of 20 vessels per year for imports of fuels and marine fuel oil and 3-4 barge movements of marine fuel oil per day.

A traffic assessment will be undertaken to establish that the surrounding road network is adequate to accommodate the proposed traffic generated from the terminal facility.

"This page has been left blank intentionally"

8.0 Environmental Risk Appraisal

8.1 Identification of Issues

As identified in **Sections 5** – **8** of this report, the main issues associated with the project are:

- Air quality;
- Water;
- Noise;
- Traffic; and
- Hazards.

8.2 Prioritisation of Issues

8.2.1 Approach

The prioritisation of issues for the proposed project was based on the need to recognise that a higher degree of assessment is required for the issues with the highest severity and greatest possible consequences. **Table 2** shows the issues prioritisation matrix used to identify priorities. Each issue was given a ranking between one and three for the severity of effects and the perceived consequence of those effects if left unmanaged. These two numbers were added together to provide a numerical ranking for the issue that was used to categorise each issue into high, medium and low priorities.

Table 2: Issues Prioritisation Matrix

Severity of Effects	Consequence of Unmanaged Effects		
	3 High	2 Medium	1 Low
1 Low	4 (Medium)	3 (Low)	2 (Low)
2 Medium	5 (High)	4 (Medium)	3 (Low)
3 High	6 (High)	5 (High)	4 (Medium)

8.2.2 Assessment

The ranking of the environmental issues associated with the proposed development is shown in **Table 3**. The allocation of risk is based upon the following considerations:

Severity of Risk

Low: localised implications; imperceptible or short term cumulative impacts.

Medium: regional implications; modest or medium term cumulative impacts.

High: inter-regional implications; serious or long term cumulative impacts.

Consequences of Unmanaged Effects

Low: minor environmental change; offsets readily available.

Medium: moderate adverse environmental change; offsets available.

High: important adverse environmental change, offsets not readily available.

It should be noted that the rankings were determined in the absence of the proposed mitigation measures and design features.

Table 3: Prioritisation of Environmental Issues

Issue	Severity	Consequence	Priority
Air quality	2	2	4 (Medium)
Surface water quality	2	2	4 (Medium)
Groundwater quality	1	2	3 (Low)
Soils and stability	1	2	3 (Low)
Noise	1	2	3 (Low)
Biological Effects	1	1	2 (Low)
Hazards	2	3	5 (High)
Social & Economic	1	1	2 (Low)
Resource Implications	1	1	2 (Low)
Indigenous heritage	1	2	3 (Low)
Non-Indigenous heritage	1	2	3 (Low)
Traffic	2	2	4 (Medium)
Land Use	1	1	2 (Low)
Visual impacts	1	1	2 (Low)

8.3 Scoping of Issues

The above analysis of potential issues related to the terminal facility confirms the key issues that would be subject to detailed assessments. The key issues are:

- Air quality - quality and odour;
- Surface water quality;
- Hazards; and
- Traffic.

9.0 Findings

The terminal facility project involves the construction and operation of a bulk liquid storage facility on part of the former BHP Steelworks site. The facility will be used to receive, store, blend and distribute fuels to customers throughout the Hunter Region. The Proponent has developed a thorough understanding of the scope of potential environmental impacts of the facility, and has implemented effective management strategies at its other facilities in Australia and New Zealand.

The EA for the proposed facilities will focus on the key potential impacts identified in **Sections 5** – **8**. This EASR has identified the key environmental issues as:

- Hazards and risk;
- Surface water quality;
- Noise; and
- Air quality.

These issues would be considered through specialist assessment included in the EA. Other environmental issues, such as groundwater, soils, heritage and ecology, will also be considered in the EA, but will require a lower level of assessment than the key environmental issues.

"This page has been left blank intentionally"

Figures

"This page has been left blank intentionally"

G:\Jobs\N6\N40400_N60499\N60487\EASR\N6048701 F1 07 04 2008 TO www.ensr.com.au

ENSR | AECOM

0 20km

NPWS estate
State forest

Figure 1 | **Regional Context**

Marstel Terminals Pty Ltd

Environmental Assessment Scoping Report

Newcastle Bulk Liquid Storage Facility

Port of Newcastle

G:\Jobs\N6\N40400_N60499\N60487\EASR\N6048701 F2 25 06 2008 TO www.ensr.com.au

ENSR | AECOM

0 500m

Proposed road alignment (not to scale)

Fuel pipeline

Figure 2 | **Site Location**

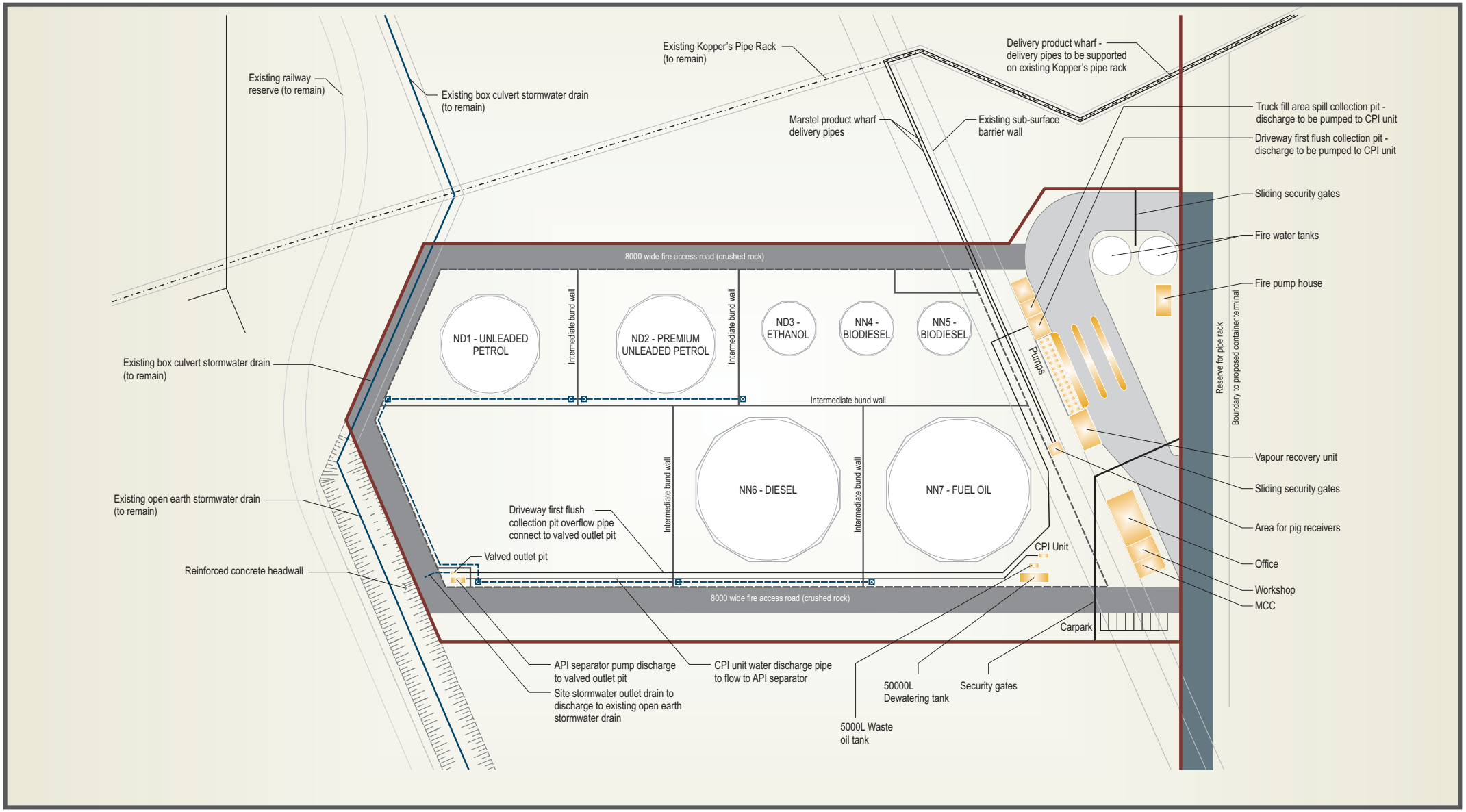
Marstel Terminals Pty Ltd

Environmental Assessment Scoping Report

Newcastle Bulk Liquid Storage Facility

Port of Newcastle

G:\Jobs\N6\N40400_N60499\N60487\EASR\N6048701 F3 15 04 2008 TO www.ensr.com.au



ENSR | AECOM

0 40m

- Lease boundary (fenced)
- Internal concrete driveway
- 10m wide road (by Port Authority)
- Valved drainage pit
- Perimeter bund wall
- 100mm diameter drainage lin

Figure 3 | Proposed Site Layout

Marstel Terminals Pty Ltd

Environmental Assessment Scoping Report

Newcastle Bulk Liquid Storage Facility

Port of Newcastle

Worldwide Locations

Australia	+61-2-8484-8999
Azerbaijan	+994 12 4975881
Belgium	+32-3-540-95-86
Bolivia	+591-3-354-8564
Brazil	+55-21-3526-8160
China	+86-20-8130-3737
England	+44 1928-726006
France	+33(0)1 48 42 59 53
Germany	+49-631-341-13-62
Ireland	+353 1631 9356
Italy	+39-02-3180 77 1
Japan	+813-3541 5926
Malaysia	+603-7725-0380
Netherlands	+31 10 2120 744
Philippines	+632 910 6226
Scotland	+44 (0) 1224-624624
Singapore	+65 6295 5752
Thailand	+662 642 6161
Turkey	+90-312-428-3667
United States	+1 978-589-3200
Venezuela	+58-212-762-63 39

Australian Locations

Adelaide
Brisbane
Canberra
Darwin
Mackay
Melbourne
Newcastle
Sydney
Singleton

www.ensr.aecom.com