



OPERATIONAL ENVIRONMENTAL MANAGEMENT PLAN

Stolthaven Newcastle

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Table of Contents

1 INTRODUCTION.....	5
1.1 Environmental Policy.....	5
1.2 Scope of the OEMP.....	5
1.3 Objectives of the OEMP and Regulatory Framework.....	6
1.4 Document Control.....	7
1.5 Amendment Approval Process	7
1.6 Review.....	7
2 SITE AND AREA DESCRIPTION.....	7
2.1 Site History and Previous Environmental Works.....	7
2.2 Surrounding Land Uses	8
2.3 Regional and Local Geology.....	8
2.4 Acid Sulfate Soil Potential	9
2.5 Surface Water Receptors	9
2.6 Site Drainage General.....	9
2.7 Meteorological Data.....	9
3 DESCRIPTION OF SITE OPERATIONS.....	10
4 CORPORATE RESPONSIBILITY	11
5 ENVIRONMENTAL MANAGEMENT RECORDS	11
5.1 Operational Performance Records.....	11
5.2 Independent Environmental Audit	11
5.3 Hazard Audit	12
5.4 Staff Training.....	12
5.5 Environmental Complaints.....	12
6 POTENTIAL ENVIRONMENTAL RELEASES ASSOCIATED THE SITE OPERATIONS	12
6.1 Noise Emissions.....	12
6.2 Air Emissions	13
6.3 Discharge to Water.....	13
6.4 Discharge to Land	13
7 STORMWATER ASPECTS AND MANAGEMENT PLAN	13
7.1 Site Activities and Areas that Could Potentially Impact Stormwater Quality	13
7.2 Stormwater Runoff and Areas Containing Contaminated Soils	14
7.3 Stormwater Management Overview	14
7.3.1 Stormwater Quality Control Devices.....	14
7.3.2 Stormwater Management Plan (SWMP).....	16
8 GROUNDWATER MANAGEMENT PLAN	18
9 MANAGEMENT OF CONTAMINATED SOILS	20
9.1 Contaminated Soils Management Plan	21
9.2 Post Site Development Contaminated Soils Management Plan.....	22
10 ACID SULFATE SOIL MANAGEMENT PLAN	23
11 WASTE MANAGEMENT PLAN.....	23

12 STORAGE AND HANDLING OF COMBUSTIBLE GOODS	25
13 REFERENCES	25

ANC	Acid Neutralizing Capacity
ANZECC	Australian and New Zealand Environment and Conservation Council
AST	Aboveground storage tank
DNRW	Department of Natural Resources and Water
DP&E	Department of Planning and Environment
DO	Dissolved Oxygen
EC	Electrical Conductivity
EMR	Environmental Management Register
EMS	Environmental Management System
EPA	Environmental Protection Agency
ERA	Environmentally Relevant Activity
ESA	Environmental Site Assessment
EVs	Environmental Values
IDAS	Integrated Development Assessment
LOR	Limit of Reporting
µg/L	micrograms per litre
mg/kg	milligrams per kilogram
mg/L	milligrams per litre
M7	Mayfield 7 Berth
NATA	National Association of Testing Authorities
NEPM	National Environment Protection Measure
NMP	Noise Management Plan
PoN	Port of Newcastle
Ppm	parts per million
NSW EPA	New South Wales Environmental Protection Agency
SWMP	Stormwater Management Plan
TDS	Total Dissolved Solid
TPH	Total Petroleum Hydrocarbon
WMP	Waste Management Plan
WQO	Water Quality Objective

1 INTRODUCTION

This Operational Environmental Management Plan has been prepared for the major bulk liquids storage facility owned and operated by Stolthaven Terminals at the Port of Newcastle, New South Wales, Australia.

The bulk diesel storage facility is located on property leased from The Port of Newcastle at the Mayfield Precinct previously occupied by the BHP Billiton steelmaking facility.

The storage terminal consists of:

- Ship unloading facilities at the Mayfield Berth 7 wharf facility.
- A delivery pipeline from Mayfield 7 Berth to the terminal.
- Nine storage tanks from 5m3 to 18'000m3.
- There are seven 18'000m3 bulk storage tanks for storage of diesel, two storage tank for the storage of bio-diesel 500m3 and 4'500m3, a 30m3 slops tank within main bund area and a 50m3 additive tank within the load gantry area with secondary containment.
- 4-bay automated truck loading and unloading facility.
- Pumping capacity for bulk tanker (truck) loading.
- Appropriate drainage and spill containment systems.
- Fire protection systems.
- Current operations utilise the land area of Lot 1, 2 & 39. The site also holds lease on Lots 36, 37,38 & 40 for future construction.

1.1 Environmental Policy

All Stolthaven sites, businesses and functions are required to comply with this policy. Stolthaven (SHVN) operates, maintains and continually improves the company's SHEQ management system to achieve defined objectives and ensure compliance and development of SHEQ requirements.

It's our goal to provide high quality storage and distribution services whilst safeguarding the safety, health, environment and security of our employees, our contractors, our neighbours, the public, customers and their valued products. This requires a culture in which SHEQ is part of everything we do, underpinned by visible leadership.

All employees are to comply with applicable regulations, participate and actively contribute to achieve our goals:

- Work safely, in full compliance with applicable laws, regulations and SHVN SHEQ management system;
- Own and others' safety is not compromised. No work is so urgent that it cannot be done safely;
- Prompt reporting and registration of incidents, unsafe acts, unsafe conditions, near misses and non-conformities;
- Investigate, follow up and share learnings to prevent reoccurrence;
- Initiate improvements contributing to operational excellence of the organization.

SHVN strives to develop an organisation and culture in which:

- We strive not to harm anyone, annoy or alarm our neighbours and minimize impact to the environment;
- We manage risks by systematic control, prevention and elimination of hazards;
- We ensure the elements of process safety management (PSM) and the importance of their interaction to achieve the goal of zero process-related incidents are fully understood, implemented and monitored;
- We have a goal to eliminate all injuries;
- We provide flawless customer service by ensuring delivery of high-quality services;
- We protect customer property and consider customer information as confidential;
- We establish a culture in which creativity and innovation is encouraged;
- We provide our employees safe and productive workplaces;
- We initiate regular training to enhance the skills, experience, SHEQ awareness and safety behaviour;
- We maintain strong and positive relationships with Government Authorities, regulatory agencies and local communities where we operate;
- We seek an open dialogue with our stakeholders, business partners and customers concerning our policy, principles, goals and objectives. We strive to be an ethical and socially responsible organization and pursue excellence in all our business activities.

1.2 Scope of the OEMP

The Operational Environmental Management Plan (OEMP) has been prepared by Stolthaven Australia for the operation and maintenance of the Stolthaven Newcastle Terminal. The OEMP provides an overview of operations at the terminal and outlines the environmental management controls established to ensure compliance with all environmental acts and regulations.

Operations to which this OEMP Apply

The operations to which this OEMP applies are:

- The operation of approved established terminal & the new combustible fuels wharf line which connects the existing terminal to Mayfield Berth No. 7, as approved under SSD_7065. The operation of the wharf line also includes the following ancillary elements:
 - o Fire and safety systems
 - o Lighting and CCTV
 - o Power and communications systems
 - o Fencing.

Note: The operation of any other elements of the project approved under SSD_7065 would be subject to additional updated to this OEMP, review and approval by the Department of Planning and Environment.

1.3 Objectives of the OEMP and Regulatory Framework

The objectives of this OEMP are to:

- Prevent, reduce and effectively manage potential impacts to the environment resulting from operations and maintenance of the Stolthaven Newcastle Terminal;
- Promote environmental awareness amongst Stolthaven employees and contractors to ensure that operations and maintenance of the Stolthaven Newcastle Terminal is conducted with due diligence to the environment, and;
- Comply with conditions in the Mayfield Concept Plan Approval, Development Consent SSD 7065 and Environmental Protection Licence 20193, and:

Include information covering those controls established to minimise environmental impacts from operations and includes the following provisions:

Conservation & Heritage Legislation

- Environmental Protection & Biodiversity Conservation Act, 1999 (Cth)
- Threatened Species Conservation Act, 1995 (NSW)
- Endangered Species Protection Act, 1992 (Cth)
- Noxious Weeds Act, 1993 (NSW)
- Water Act, 1912 (NSW)
- Heritage Act, 1977 (NSW)
- Aboriginal & Torres Strait Islander Heritage Protection Act, 1984 (Cth)
- National Parks and Wildlife Act, 1974 (NSW)
- Water Management Act, 2000 (NSW)

Pollution & Waste Management Legislation

- POEO Act, 1997 (NSW)
- POEO Amendment Act, 2011 (NSW)
- Pesticides Act, 1999 (NSW)
- Waste Avoidance and Resource Recovery Act, 2001 (NSW)

Contaminated Land Legislation

- Fulfil the criteria outlined in the New South Wales Protection of the Environment Operations Act 1997, (POEO)
- Fulfil the criteria outlined within the Contaminated Land Management Act 1997

Hazardous Substances

- Environmentally Hazardous Chemicals Act, 1985 (NSW)
- Dangerous Goods Act, 1975 (NSW);
- Provide a framework for practically addressing and monitoring potential environmental impacts during the operation of the fuel storage facility;
- Align with Port of Newcastle's Pollution Incident Response Management Plan (PIRMP) for Mayfield 7 Berth;
- Reference to Newcastle Environmental Management Strategy 2013 (Newcastle City Council);
- Assist the New South Wales Environmental Protection Authority (EPA), Port Authorities and other relevant government agencies in assessing compliance with relevant legislative standards and policies; and
- Evidence that operations at the bulk fuel storage facility can be conducted in an environmentally responsible manner.

The objectives of the OEMP are as outlined in the consent conditions SSD 7065 schedule D, condition D4 and noted in the table below;

Consent Condition	
<i>The Applicant shall update the existing Environmental Management Strategy (EMS) for the Site to include the Development, to the satisfaction of the Secretary. The EMS shall:</i>	
Requirement	Response/Relevant Section
a) be submitted to the Secretary for approval prior to operation of the Development;	Noted
b) be prepared by a suitably qualified and experienced expert;	Australasian SHEQ Manager, with local SME
c) provide the strategic framework for environmental management of the site;	As documented within
d) identify the statutory requirements that apply to the site;	Section 1.3
e) describe the role, responsibility, authority and accountability of all key personnel involved in the environmental management of the Site;	Section 4 Sections 7.3.2, 8, 9.1, 9.2, 11 (responsible person)
f) describe in general how the environment performance of the Site would be monitored and managed;	Section 5 & 5.1 Sections 7.3.2, 8, 9.1, 9.2, 11 (performance monitoring)

g) describe the procedures that would be implemented to:	Section 5.5
<ul style="list-style-type: none"> keep the local community and relevant agencies informed about the operation and environmental performance of the Site; receive, handle, respond to, and record complaints resolve any disputes that may arise in relation to operations at the Site; respond to any non-compliance manage cumulative impacts 	
h) include management plans under condition D5 of this consent; and	Inclusive and additional plans actioned
i) be provided to the PON once approved by the Secretary, including any approved amendments to the EMS	Noted

1.4 Document Control

The OEMP is a controlled document and will be managed in accordance with Stolthaven's Document Data Control System.

1.5 Amendment Approval Process

As the OEMP forms an integral part of the Conditions of Operations no amendments to the EMP will be issued until the following approvals are obtained:

- Principal's Authorised Person normally the Regional Safety Health and Environmental Manager
- Where required relevant authorities e.g. PoN, OEH, Local Council, DoP

1.6 Review

The Site Operational OEMP will be reviewed for adequacy by the General Manager or delegated auditor as part of the Stolthaven Internal Audit process.

2 SITE AND AREA DESCRIPTION

The site is located within the Mayfield Precinct which consists of 5 sub-precincts within 90ha of strategic portside land. Mayfield precinct on which the Stolthaven terminal is located is has been identified as a general cargo, bulk liquids, project and dry bulk trade precinct.

The site lies near the mouth of the Hunter River, approximately 5 kilometers (km) north-west of the Newcastle Central Business District and is characterised by a combination of port and industrial land.

The Port of Newcastle is Australia's first commercial port with which started with the export of coal in 1799. Since that time growth and expansion has been a consistent characteristic of the port, and it is now Australia's major bulk export ports and the world's largest coal export facility.

The surrounding area was initially used for agriculture by early European settlers around the 1830's. (Dames & Moore, 1999; Umwelt, 2003a). Since then the surrounding area was sporadically used for dredge spoil disposal associated with early harbour works. BHP ventured into steel making and commissioned a steelwork mill at Newcastle which opened in 1915. 84 years later, in 1999, the Newcastle Steelworks closed down.

Port of Newcastle has a vision for the site that will increase trade through the Port and includes expansion of the terminals business and cargo handling infrastructure to support general cargo and bulk products.

Between 2011 and 2017 the Hunter Valley Research Foundation estimates that port operations revenue will rise from \$665.6 million per annum to more than \$1.3 billion per annum (in 2013 dollars)

Over this time port operations are estimated to indirectly generate an additional \$2.5 billion throughout the regional economy. A site locality map is provided as Figure 1. The layout of the site is illustrated in Figure 2 issued 1st of May 2015.

2.1 Site History and Previous Environmental Works

The terminal facility is located on part of the former BHP Steelworks Site. BHP was located on the Site from 1915 to 1999. In July 2002, ownership of that part of the former Steelworks Site known as the Closure Area Site was transferred to the State Government. In March 2007, the Hunter Development Corporation (formerly the Regional Land Management Corporation Pty Ltd (RLMC)) was created by the Government to manage the day-to-day activities of former BHP and other Crown lands in the Lower Hunter Region, including remedial and redevelopment works for the Closure Area Site (SKM 2004).

On 14 June 2001, under former Section 21 of the Contaminated Land Management Act 1997 (CLM Act), the Environment Protection Authority (now part of the NSW Office of Environment and Heritage: OEH) declared the Closure Site to be a remediation site. A Remediation Action Plan (RAP) was prepared by SKM in 2004 to address contamination issues associated with soils and groundwater. A

Voluntary Remediation Agreement (VRA No 26025) for the remediation of the Site was issued by the Environmental Protection Authority (EPA) on 30 August 2005. Hunter Development Corporation (HDC) has undertaken to fulfil these remediation commitments. For the purposes of remediation, the Closure Site has been delineated into two distinct areas:

- Area 1: This is the inner area bounded by the subterranean barrier wall and the Hunter River and is approximately 30 ha.
- Area 2: This is the remainder of the Mayfield Concept Approval Site, outside of the subterranean barrier wall.

In March 2008 a Contaminated Site Management Plan (CSMP) for the Intertrade Industrial Park and the Closure Area of Former Steelworks Site Mayfield was prepared by HDC. The CSMP provides a common framework to be applied across the whole of the Site for the design, implementation, completion, use and maintenance of remediation and project works. HDC is reliant on other landowners, agents and occupiers to enforce the conditions of the CSMP. Stolthaven are therefore required to abide by and enforce the conditions of the CSMP.

In mid-2008, HDC completed Stage 1 of the remediation works. Stage 1 dealt with the majority of contamination risks located within Area 1, and included the following activities:

The construction of an underground barrier wall to three sides of Area 1.

- The barrier walls lie up to 49 m deep and 1.5 km long, and function by reducing groundwater flow to the Hunter River.
- The placement of low permeability capping (10-9m/s) to reduce the infiltration of groundwater.
- The construction of new major stormwater drains at the east and west ends of the site.
- Associated demolition, land forming and environmental works.

Stage 2 of the remediation works was completed on 24 October 2012. Stage 2 activities involve further capping, land forming, and surface drainage works. The Hunter River Remediation Project (HRRP) has been undertaken by BHP Billiton. This has involved the dredging and onshore treatment of contaminated sediments in the Hunter River at Mayfield Berths 1 and 2. The sediment removal work was completed by mid-2011 with remediation of the Site completed by 2012. Site activities were completed on the HRRP early 2012, with all capping works completed for the Stolthaven Terminal site, well before HRRP dredging operations had ceased. Soil vapour intrusion determinations were conducted by AECOM in areas on both sides of the barrier wall as required by the consent conditions, which required human health risk assessment for any new buildings constructed. Soil vapour wells were established in both Area 1 and Area 2 and confirmed further remedial works to mitigate vapour intrusion risks, were not required. Note, the Mayfield Concept Plan Approval and associated CSMP is now owned and managed by the Port of Newcastle.

Nine ground water monitoring wells have been installed on Stolthaven leased land, as per requirements outlined in the site's Environment Protection Licence, 20193. Ground water and surface water monitoring is conducted quarterly, in compliance with the requirements of the Environment Protection Licence.

2.2 Surrounding Land Uses

The surrounding land use is industrial development, which is indicated in Figure 1. The surrounding land uses include:

- North – Hunter River and Port Waratah Coal Services Coal Loaders.
- South – Currently vacant land which would be developed as part of the master planning for the Site.
- West – Liberty One Steel operations.
- East – Predominantly vacant industrial land and Koppers Australia pipeline.

The nearest residential area is located at Mayfield (see Figure 3), with the closest receptors approximately 900m from the Terminal Site. Other residential areas in proximity to the Site include Carrington, Wickham and Tighes Hill.

2.3 Regional and Local Geology

The Hunter Region includes a variety of land types and portions of a number of river catchments. The economically vital catchment of the Hunter River occupies approximately 75 per cent of the Region and is almost wholly contained within the Region. The Lower Hunter (defined as the area covered by the Cessnock, Lake Macquarie, Maitland, Newcastle and Port Stephens LGAs) includes the Port of Newcastle and the wide flood plain of the Hunter River. It contains several, early-settled population centres: the settlers farmed the rich alluvial soils of the plains and also used the river for transport. A disadvantage of this settlement pattern became evident during the 19th century when Maitland was repeatedly inundated by severe floods. Flood mitigation works in the Hunter catchment, particularly since the disastrous 1955 floods, have reduced their impact.

The Hunter Region is a transitional area between the Early Permian and Middle Triassic rocks of the Sydney Basin (in the south), and the Paleozoic rocks of the New England Fold Belt (to the north). These two major geological areas are separated by a fault line, the Hunter-Mooki Thrust Fault.

The Permian-age rocks, located in the central and south-eastern areas of the Region, are part of the Sydney Basin. They form the main part of the Hunter Valley and feature numerous coal seams of varying thicknesses and depths. These Permian rocks were formed in willow marine and estuarine environments and therefore contain salt. This salt content has a direct influence on the level of salinity of many streams found on the central valley floor. (source: Australian Geomechanics Society)

2.4 Acid Sulfate Soil Potential

According to the Newcastle Local Environmental Plan 2012, Acid Sulfate Soils Map, Acid Sulfate Soils Map – Sheet ASS_004, due to the surrounding landform and nearby occurrence of acid sulphate soils (ASS), the site is located on land and is considered likely to contain ASS.

The Stolthaven bulk fuel terminal site is situated within this map unit. Although only limited ASS testing has been conducted in the locality of the Stolthaven Site the surrounding landform and nearby occurrence of ASS would indicate their likely presence within this area.

2.5 Surface Water Receptors

The nearest surface water receptor is the Hunter river located on the boundary of the Site. The Hunter river discharges into the Tasman Sea. The larger port area is located near important coastal wetlands and immediately adjacent to the Hunter Wetlands National Park. The wetlands are important as both a feeding and roosting site for a large seasonal population of shorebirds and is a waylay site for transient migrant birds. This wetland is declared a RAMSAR site.

2.6 Site Drainage General

Rainfall falling within the site terminal boundary, drains into the existing stormwater drainage system located outside of the west site boundary by overland flow or through the site's subsurface drainage system or through the SPEL Pureceptor P040 water treatment system. The layout of site's drainage system is shown in Figure 4.

Stormwater runoff from the site locality, originating from Lot 3 (Figure 5) and other open areas, flows through open stormwater drains that ultimately discharge directly into existing stormwater drainage system located outside of the west site boundary. It is not clear what stormwater quality controls (if any) are present to treat stormwater runoff originating from Neighbouring sites.

The site stormwater management plan and control procedures are implemented in accordance with the requirements set out in the AECOM Concept Stormwater Management Strategy (July 2015).

Rainfall falling within the Mayfield 7 Berth operational area is captured and released through the berth's SPEL Pureceptor P050 water treatment system (Figure 5). Outside of the operational area the berth rainwater will run off into the Hunter River.

Key aspects of the stormwater management system include:

- A first flush system pit to capture oil and grease from the road tankers on the paved roadways.
- Remote retention pits to collect water from the road tankers fill areas, pump bays and inlet manifold area.
- Testing of water quality in controlled areas prior to release to the site Puraceptor then discharged to the existing stormwater drainage system, which is located outside of the west site boundary.
- Water quality monitoring.
- System maintenance.
- Contingency plans for the management of contaminated stormwater.
- Staff training.

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.
- Laboratory analysis of first flush samples in accordance with the Environmental Protection Licence (20193).
- Comparison of the results against water quality criteria prior to release of the water.
- Roadways trafficked by tankers to be loaded / unloaded are contoured such that stormwater from the paved roadway is captured in a first flush system that capture stormwater for the first 20 mm of a rain event, and thereafter divert to the access road stormwater system and, subsequently, to the Hunter River. The captured first flush water could then be treated / separated onsite with any waste oils /solids sent offsite for licensed disposal.

2.7 Meteorological Data

Rainfall data for the region was obtained from the Bureau of Meteorology's Newcastle Signal Station weather station (site number 061055). Mean monthly rainfall and median rainfall (since commencement of monitoring in 1862 to 2020) is summarised in the table below.

Rainfall Data

Statistics	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
Mean rainfall (mm)	88.7	107.1	119.4	116.2	114.3	118.9	91.9	72.7	71.9	72.6	70.7	79.8	1118.0
Decile 5 (median) rainfall (mm)	69.6	87.8	94.8	92.3	101.0	94.2	78.4	57.5	57.0	63.7	65.1	62.6	1047.6
Mean number of days of rain ≥ 1 mm	8.1	8.2	9.2	9.2	8.9	9.2	8.1	7.3	7.2	7.7	7.7	7.5	98.3

3 DESCRIPTION OF SITE OPERATIONS

The Stolthaven Mayfield operations comprise of Diesel and Biodiesel loading, unloading and storage using the following facilities;

- Ship unloading/loading facilities at the Mayfield 7 Berth.
- There are seven 18'000m3 bulk storage tanks for storage of diesel, two storage tanks for the storage of bio-diesel 500m3 and 4'500m3, a 30m3 slops tank within main bund area and a 50m3 additive tank within the load gantry area with secondary containment.
- 4 bay automated truck loading and unloading facility with the ability to blend biofuels and inject additives.

Operational activities carried out on this site include the receipt, storage and despatch of bulk fuel (diesel).

The following table summarises the site infrastructure, included as part of this environmental review that is subject to environmental management and/or may present a risk of contamination of soil and groundwater and atmosphere.

Current site infrastructure.

Site infrastructure	Description	Location
Mayfield 7 Berth	275 mtr open deck, quay line berth. Operational area contained by concrete bunding.	Mayfield 7 Berth adjacent to Stolthaven site.
Import/Export Pipeline	1 x 400mm (nb) carbon steel pipeline at 260 mtrs in length	Pipeline running in South to North direction from Terminal to M7 berth.
Tank farm	<ul style="list-style-type: none"> • Seven 18'000m3 bulk storage tanks for storage of diesel; • Two bulk storage tanks for the storage of bio-diesel, 500m3 and 4'500m3 in size; • One 30m3 slops tank within main bund area; • One 50m3 additive tank within the load gantry area with secondary containment; <p><i>The bulk storage vessels are contained within a bund of vertical concrete walls and the bund floor has a 600mm thick clay liner.</i></p>	Majority of the site
Tanker filling gantry	Four bay load gantry with a dedicated RIB for capture of all spills with the gantry loading There is also a vapour diversion line between the relevant storage tanks and the tanker filling gantry for the release of vapour through an elevated line with a detonation arrestor	Eastern side of the site
Slops Tank 30m3	Product slops from compartment draining's and dewatering tank.	West of load gantry
First flush pit and RIB	Capture of spills from load gantry and hardstand area north of load gantry	North of load gantry.
Puraceptors	Bund water from all bunds will go through puraceptor. Hydrocarbon detector with automated shutdown. Water quality is checked before release from the bund. Puraceptor is released to outfall drain	West side of the site & M7 Berth

Terminal Feature	Description
Access	Direct pipeline access from Mayfield 7 Berth
Capacity	131,000,000 litres (max)
Tanks	9 tanks 5 m3 to 18000 m3
Accreditation	Working toward a Major Hazardous Facility/Safety Case
Draught	14.0 metres (at berth)
Products	Diesel/ Biodiesel/Diesel additives
Services	Bulk liquid storage; bulk loading and unloading of road tankers and unloading ISO-tankers
Ownership	100%
Status of Terminal	30-year lease from PON

General Operations

The terminal operates 24 hours a day, seven days a week. The site is partially automated and manned depot with daily checks being made by Stolthaven personnel.

Primary site operations include:

- the bulk storage of distillate fuel (diesel) at the site;
 - Seven 18'000m3 bulk diesel storage tanks.
 - A 4'500 m3 and 500m3 bio diesel storage tank.
 - A 50m3 additives tank.
- the bulk transfer of diesel fuel from berthed ships to the site's above ground storage tanks (ASTs); and
- the filling of road tankers with diesel products.

Environmental aspects associated with the operations are detailed under the appropriate sections of this report and included within the site Environmental Aspects and Impacts Report.

4 CORPORATE RESPONSIBILITY

In accordance with the Stolthaven Safety Health Environmental and Quality Policy

The Australian General Manager assumes responsibility through management process, for the implementation of best practice of the environmental management during the operations at the site, which include:

- the prevention of environmental harm to waters;
- the prevention of excessive noise and air impurity emissions;
- the prevention of excessive waste;
- staff training; and
- compilation of environmental management records and the reporting of any entries therein to the relevant authority, in accordance with the procedure for such assessment in this document.

5 ENVIRONMENTAL MANAGEMENT RECORDS

Any environmental management records derived in accordance with the management plans outlined herein will be provided to the relevant administrating authority or other person(s), consensually or as lawfully required.

Environmental management for site operations will be based upon continuous review of records maintained under this document. The concept of "continual improvement" applies to the management plans outlined herein, whereby it may be reviewed and altered where appropriate in order to take advantage of new technologies or improvements in operating methods that will enhance the performance of the environmental management undertaken at the site.

5.1 Operational Performance Records

Stolthaven will submit an Annual Environmental Review to the Department of Planning and Environment on an annual basis, capturing the sites environmental performance which will incorporate;

This review will:

- a) be prepared in consultation with PON;
- b) describe the operations that were carried out in the past year;
- c) analyse the monitoring results and complaints records of the development over the past year, which includes a comparison of these results against the:
 - relevant statutory requirements, limits or performance measures/ criteria;
 - monitoring results of previous years; and
 - predictions in the EIS
- d) identify any non-compliance over the last year, and describe what actions were (or are being) taken to ensure compliance;
- e) identify any trends in the monitoring data;
- f) identify any discrepancies between the impacts predicted in the EIS and the actual impacts of the Site and analyse the potential cause of any significant discrepancies; and
- g) describe what measure will be implemented over the next year to improve the environmental performance of the Site.

5.2 Independent Environmental Audit

Every three years, unless the Secretary directs otherwise, Stolthaven will undertake an Independent Environmental Audit of the Site. This Audit will include;

- a) be conducted by a suitably qualified, experienced, and independent person whose appointment has been endorsed by the Secretary;
- b) include consultation with PON;
- c) assess the environmental performance of the Site, and its effects on the surrounding environment;
- d) determine whether the Site is complying with the relevant standards, performance measures and statutory requirements, including the Mayfield Concept Plan;

- e) review the adequacy of the Stolthaven EMS for the Site, compliance with the consent (SSD 7065), and any other licences and consents; and, if necessary;
- f) recommend measures or actions to improve the environmental performance of the Site, and/or any plan/ program required under this consent.

Within three months of commission the audit, or as otherwise agreed by the Secretary, Stolthaven must submit a copy of the audit report to DP&E, EPA and PoN with a response to any recommendations contained in the audit report.

5.3 Hazard Audit

A Hazard Audit consistent with the Department's Hazardous Industry Advisory Paper No. 5 Hazard Audit Guidelines is required to identify and manage any cumulative hazards across the Mayfield concept plan. Timing shall be determined in consultation with the PoN. The site's last Hazard audit was completed in May 2016 at the request of the PoN.

5.4 Staff Training

All staff (contracted and/or directly employed) are inducted to the site as per the Site Induction Procedure and informed of their environmental responsibilities prior to commencing work. Staff responsible for handling combustible liquids or hazardous materials are also trained in the relevant Australian Standards and legislation.

5.5 Environmental Complaints

Complaints in relation to the environmental management of the site's operations will be registered on a site-specific form and dealt with according to the Stolthaven Accident and Incident Reporting procedure and include:

- the date and time of the complaint;
- the method by which the complaint was made;
- any personal details of the complainant which were provided by the complainant or, if no such details were provided, a note to that effect
- the nature of the complaint
- location of complainant during time of incident, and general area in which the incident was located
- if known, identification of non-project related activities and location at time of incident
- meteorological conditions at the time of the incident
- the action taken by Stolthaven in relation to the complaint
- any follow-up contact with the complainant
- if no action was taken by Stolthaven, the reason why no action was taken.
- advising the enquirer and any authorities of relevant jurisdiction as to whether any remedial action is required in respect of their enquiry;
- verification of the effectiveness of any remedial action taken in respect of an enquiry; and
- if the enquiry requires immediate action, the Site must implement emergency response as per the site's Emergency Response Procedures.

Any environmental complaint derived in accordance with the management plans outlined herein will be provided to the relevant administrating authority or other person, consensually or as lawfully required.

All Environmental Reports, including the Annual Environmental, Groundwater & Noise Reports, complaint register, and contact numbers are available on Stolthaven's web site:

<https://www.stolt-nielsen.com/en/our-businesses/stolthaven-terminals/terminal-network/stolthaven-newcastle/>

6 POTENTIAL ENVIRONMENTAL RELEASES ASSOCIATED THE SITE OPERATIONS

6.1 Noise Emissions

The existing acoustic environment of the site locality is influenced by sounds originating from a variety of sources including environmental sources (i.e. wind and wildlife), industrial activities including those associated with an existing coal storage and export operations.

The predominant noise sources associated with Stolthaven Terminal's Site bulk fuel terminal operations will include heavy vehicular traffic including the use of air compression braking; and alarms during emergencies.

The closest potentially noise sensitive receivers to the site are residences located approximately 1 to 1.5 kilometres to the south and south-east of the site in Mayfield and Mayfield East.

The level of activity associated with the bulk fuel terminal operations is not considered to be of a magnitude that would increase the background sound levels of the existing acoustic environment.

Baseline data for noise monitoring results can be found in the site's Operational Noise Management Plan

Noise and Vibration Control Measures

A Noise Management Plan (NMP) including operational controls has been developed and implemented to minimise environmental impact and avoid nuisance to nearby residential areas, particularly from machinery, vehicles and warning sirens. The established control measures include the following:

- describe the measures that would be implemented to ensure compliance with the relevant conditions of the EPL;
- development of an operational noise monitoring program to measure the performance of the operational controls against the relevant conditions of the Development Consent;
- detail procedures to receive, record and respond to complaints;
- describe the contingencies that would be implemented, and the timing for implementation,

- should non compliances be detected; and
- be provided to the PON for the provision of input into the broader Mayfield Concept Plan Site Noise requirements.

All practical measures will be taken to minimise the generation of noise and vibrations from within the site so that it remains within acceptable levels set by the respective EPL and Development Consents.

6.2 Air Emissions

The Site is operated in accordance with the Air Quality Management Plan which was prepared in consultation with PON and consistent with the Mayfield Site Air Monitoring Program. The Mayfield Site Air Quality Monitoring Program uses the existing EPA monitoring system as a basis. The need for site specific monitoring to be implemented for projects in the Mayfield Concept Plan area is determined on a case by case basis during the planning and approval of each project.

Air emissions associated with the operation of the bulk fuel terminal will include hydrocarbon vapour releases from the ASTs venting to atmosphere. Any vapour relief from the filling of bulk vehicles is directed to a vent stack fitted with detonation arrest equipment. Stolthaven has committed to the installation of a vapour recovery unit in the future expansion to flammables products or increase to combustible volumes.

Hydrocarbon vapours have a greater density than air and therefore tend to accumulate within low lying areas, indoor environments and confined spaces. Stolthaven operations operate a Hot Work Permitting system that incorporates gas testing to ensure that the accumulation of hydrocarbon vapours does not impact upon the health and safety of site personnel.

Further detail of the controls for Air Emissions are captured in the Site's Air Quality Management Plan.

6.3 Discharge to Water

Activities associated with the operation of the bulk fuel terminal have the potential to discharge impacted water to receiving waterways if not properly managed. Spills and leaks during the storage and handling of fuel product at the site will be managed to ensure that the quality of adjacent receiving waterways are not impacted upon.

This document, coupled with Stolthaven's Emergency Response Plan, Pollution Incident Response Management Plan and Procedures outlines infrastructure and management procedures that are established to ensure that surface water runoff from the site does not impact upon the qualities of the receiving waterway (Hunter River).

Stolthaven have established an on-going groundwater monitoring program. This document outlines monitoring requirements, action trigger levels and associated corrective actions to ensure that groundwater does not affect the quality of adjacent waterways via groundwater migration.

Baseline data for discharge water quality and volume can be found in the site's Stormwater Management Plan.

6.4 Discharge to Land

Activities associated with the operation of the bulk fuel terminal have the potential to cause soil impact if not properly managed. Spills and leaks that may occur during the storage and handling of fuel product at the site are managed to ensure that any impact to soil is contained and remediated to ensure that the groundwater environment and the quality of adjacent receiving waterways are not adversely impacted upon.

This document, coupled with Stolthaven's Emergency Response and Evacuation Plan, Pollution Incident Response Management Plan and Procedures outlines infrastructure and management procedures that are established to minimise soil impact. In the event that soil impact does occur, this document outlines procedures to manage soil contamination so that the environmental qualities of the surrounding locality are not affected.

Baseline data for Groundwater Monitoring results are captured Ground Water monitoring report issued quarterly.

7 STORMWATER ASPECTS AND MANAGEMENT PLAN

7.1 Site Activities and Areas that Could Potentially Impact Stormwater Quality

Site activities, which if not appropriately managed, could potentially impact the quality of stormwater runoff from the site include:

- receiving, storage and dispensing of bulk fuels;
- heavy vehicular movements;
- excavation and stockpiling of contaminated soils and/or soil containing hydrocarbon impact; and
- emergency procedures (fire water foam).

The site separates areas into "contaminated", "dirty" and "clean" based on their potential to impact upon stormwater quality. Areas classified as "contaminated" contain chemicals that could potentially affect the chemical composition of the stormwater quality (dissolve contaminants, pH, etc.). Areas classified as "dirty" have the potential to affect the physical nature of the stormwater runoff (increase suspended solids). Areas classified as "clean" do not have any potential to affect the quality of stormwater runoff entering/exiting these areas e.g. greenfield area.

Areas of the site that could potentially impact upon the quality of stormwater leaving the site include:

- the AST farm via stormwater runoff coming into contact with diesel spills/leaks;
- the wharf line manifold area at either end via stormwater runoff coming into contact with leaked diesel;
- the concrete driveways via stormwater runoff coming into contact with heavy metals (brake pad dust) and hydrocarbons (engine drips) typically adsorbed to sediments;
- the truck loading area via stormwater runoff coming into contact with diesel spills/leaks;
- spill collection via stormwater runoff coming into contact with spilt/leaked diesel and/or emergency firefighting foam;
- product pump pits via stormwater runoff coming into contact with spilt/leaked diesel; and
- areas containing contaminated soils during any earth works conducted at the site.

Note that any soil disturbance works will be managed to ensure that the works do not impact upon stormwater quality. The management of stormwater from these areas and during excavation works are outlined in the stormwater management plan outlined below.

7.2 Stormwater Runoff and Areas Containing Contaminated Soils

As part of the remediation activities taken on-site, a capping layer has been applied in order to contain contaminants within the soil. A Geosynthetic Clay liner is installed under everything in the terminal that is not asphalted or concrete finished. The Permeability of the liner is 4×10^{-11} m/s which exceeds the 500mm clay capping requirement of 1×10^{-9} m/s. Detail is provided in figures 7 and 8 below. As part of the Contaminated Site Management Plan (CSMP) specific control measures have been outlined for the maintenance of the integrity of the capping layer. These control measures are adopted as part of the on-going site environmental management controls. These are noted below:

Key Environmental Performance Objectives	
1	Ensure the integrity of the capping layer is preserved.
Key Environmental Considerations	
1	A breach in capping layer as a result of failure of control procedure resulting in exposure to potential contamination.
Environmental Action and Management Measures	
1	No excavation work will be allowed on site without an excavation permit and/or notification. The authorisation process will include notification via PON to consider if capping integrity could be compromised by the proposed work.
2	Any breach of capping integrity will be recorded within the Stolthaven Incident reporting and recording system and managed as per the Stolthaven incident management procedure.

7.3 Stormwater Management Overview

In order to protect the quality of the receiving water ways from the terminal runoff stormwater is directed into stormwater drains or enters via overland flow. The quality of the stormwater runoff from the site is managed via:

1) adherence to the stormwater management plan that has been prepared in respect of the site's proposed operations, which specifies:

- management objectives;
- management tasks and actions;
- performance criteria;
- performance monitoring;
- correction actions;
- reporting and review procedures; and
- responsible person(s) and organisation(s).

7.3.1 Stormwater Quality Control Devices

- Clean Areas. Stormwater falling onto "clean" areas including open and/or grassed areas of the site are segregated from other areas and the stormwater re-used or discharged directly to the existing stormwater drainage system located outside of the west site boundary existing. Other areas which can be designated as clean (i.e. open grassed areas) are segregated from operational area (as outlined below) and runoff water discharged through overland drainage and open drainage channels to the existing stormwater drainage system located outside of the west site boundary.
- Tank Farm Bunds. Concrete covered bund walls exist around the site's bulk storage tank farm. Water collected within the bunded areas is channeled through the site's stormwater system and passes through the puraceptor system for the removal of any separated fuel and gross pollutants before discharging into the existing stormwater drainage system located outside of the west site boundary.

To ensure the quality of stormwater collected within the tank farm bunds, the outlet from the bunds is kept closed at all times. Bund discharge valves are locally operated. Stormwater discharge from the bunded areas is completed on an as needed basis such as after rainfall events. A visual inspection is carried out if there is no observable sheen ("rainbow") noted on the water collected within the tank farm bunds, the water then passes through the drainage system (through the a grated and screened bund outlet pit, via a remotely operated isolation valve into the puraceptor system before discharging into the existing stormwater drainage system located outside of the west site boundary).

Any release from the bunded areas are monitored to ensure that if, in the unlikely event, a spill or leak from the ASTs occurs at the same time stormwater is being released from the bunds, appropriate emergency procedures (i.e. close bund outlet pit) are followed to ensure leaked product does not enter nearby waterways via the stormwater system.

- Mayfield 7 Berth. The Mayfield 7 Berth has a bunded area for the operational activities. The concrete bund is capable of containing a 309'000 litre spill including fire foam/water. The area drains into a sump pit that is connected to the berth's puraceptor system for the removal of any separated fuel and gross pollutants before discharging into the Hunter river. During shipping operations, the puraceptor is isolated using a gate valve located at the sump pit as a secondary precaution, as the puraceptor will automatically close (internally) if hydrocarbons are detected. If rainwater is required to be released during shipping operations the water discharge

must be monitored at all times, completing the same checks as outlined in the Tank Farm Bund detail above. Outside of shipping operations the valve will be left opened to prevent the bunded area from overflowing.

- Puraceptor system. Located at the Berth and Terminal these units are a full retention separator that treats all flows and is sized to contain more than the anticipated oil spillage enabling it to be operational at all times. It has two chambers a coalescer and is fitted with an automatic closure device specifically design to treat and contain oil spills making it suitable for high risk applications.
- Product Inlet/Outlet Pump Bunds. The diesel transfer pumps are bunded to contain any leaks from the pumps. These bunds allow collected rainwater to drain to the site's RIB interceptor before passing through the site Puraceptor system and discharging into the existing stormwater drainage system located outside of the west site boundary. The drainage line from the pump pit's valve to the stormwater drainage system is normally closed thereby removing any chance for liquid collected within these pits from entering the stormwater system. Any liquid waste collected within the pits is pumped out and recovered via the site dewatering system or disposed of by an appropriately licensed waste collector.
- Concrete Staff Driveway and Trafficked Areas. The concrete driveway and internal site concrete parking area is surrounded by kerb and channelling, which directs stormwater runoff from this area into the site stormwater system via grated screens. The screens act to remove coarse materials associated with vehicular traffic. Stormwater then flows through the underground stormwater system before entering the existing stormwater drainage system located outside of the west site boundary. Rock baffling is installed around the pipe's discharge point to prevent scouring and erosion.
- Overland Flow. An earthen bund exists on the site's southern boundary. This bund ensures that overland flow from the area adjacent to the site's southern boundary and clean areas within the along the sites southern boundary is channelled through the surface water outlet pipes before discharging into existing stormwater drainage system located outside of the west site boundary. This prevents uncontrolled potentially sediment laden stormwater runoff from entering Hunter River via existing stormwater drainage system located outside of the west site boundary. In addition to this bund vegetative strips and geo-fabric is installed around the entrance of the surface water outlet pipe. The purpose of the filter strips is to remove suspended sediment that may be contained within the surface water runoff before it leaves the site. To prevent scouring and erosion at the outlets of the surface water outlet pipes, a combination of rock baffling and geo-fabric is placed around each stormwater exit point.
- Truck Loading Area. The truck loading area is covered and fully bunded to prevent stormwater runoff from entering this area and to fully contain any spills within the area. Any stormwater runoff that enters the truck loading area drains into the existing spill collection pit as detailed. The spill collection pit has a volume of 140m³ (combining an empty First Flush Pit and Spill Pit up to RL 3.50 which is RL of the gantry pits, this volume does not include pipework and pit capacity) which is greater than the volume required (9m³) in the Australian Standards for the containment of a major leak/spill from a fuel road tanker.
- Truck Loading Entry/Exit Area The first 20mm of rainfall captured in the roadway before and after the Truck loading area is collected in the First Flush Pit. Once this initial volume is captured the remaining stormwater is automatically drained into the site's existing storm water drainage. The volume captured in the First Flush Pit is tested as per the site EPL requirements. If the water is within specification it is then released via the site's Puraceptor, if failed it is either re-tested or removed from site using an approved waste transporter.
- Metal Litter Grates/Screens. Metal litter grates and screens are fitted to inlets to the site's stormwater drainage system. These metal litter grates will prevent gross pollutants (bags, bottles, cans etc.) from entering the drainage system where they could cause blockages and/or be transported to downstream water bodies. The ongoing monitoring and maintenance of these metal litter grates/screens is detailed in the site maintenance schedule.
- Emergency Procedures. An Emergency Response and Evacuation Plan and Procedures document has been developed. If an emergency occurs within the bunded areas of the site, the majority of product and fire fighting liquid (foam and/or water) will be contained. The stormwater outlets in the AST tank farm are normally in the "closed" position, outside of draining operations, and liquid present within the truck loading area will drain to the spill collection pit. Spill kits and equipment are positioned around the site to ensure timely management of any spills that may occur at the site.
- Excavation of Contaminated Soils. A Contaminated Soils Management Plan (CSMP) for small to medium size excavations has been included below. The CSMP details management, testing and monitoring requirements as per the existing area CSMP to ensure that the excavation of potentially contaminated soils do not impact upon human health, air quality and/or the quality of adjacent water ways. As noted within the existing area CSMP for any demolition and/or significant excavation works proposed for the site, a project specific site-based management plan will be developed with consideration being given to the potential presence of impacted soil beneath existing structures. In addition to the above, all inlets to the site's stormwater system incorporate signage that advises of the fate and environmental consequences of any material that enters the stormwater. Standard wording that is commonly used for this purpose is "Dump No Waste, Stormwater to River".

7.3.2 Stormwater Management Plan (SWMP)

Management Objective	<p>The objectives of this SWMP are to preserve the environmental values of the receiving water by:</p> <ol style="list-style-type: none"> 1) collecting, directing and releasing stormwater runoff from the site in a controlled manner that does not cause accelerated erosion processes; and 2) minimising the transportation of water borne pollutants beyond the boundaries of the site and into adjacent waterways. 3) Comply with the broader Mayfield Concept Plan "Concept Stormwater Management Strategy, AECOM, 9th July 2015".
Management Tasks and Actions	<p>The specific stormwater management tasks that are implemented at the site to achieve the objectives of the SWMP are summarised below.</p> <ol style="list-style-type: none"> 1) Metal and silt traps are to be kept clear of trapped litter and silt. To be included in structured monitoring program. 2) Develop and establish a maintenance plan that includes monthly visual inspections of all stormwater drains and quarterly inspections on pollution control devices. 3) Develop and establish a maintenance plan that includes monthly visual inspections of the Site access road. To inspect for spillages associated with site operations such as fuel, prevent accumulation of course contaminates and potential discharge to receiving waters. 4) Ensure/confirm isolation of the drains from the product pump pits so that liquid collected within these areas is contained and does not drain into the stormwater system. Monitor any liquid collected within the site pump pits to ensure no untreated liquid waste enters the site stormwater. 5) Monitor isolation of the drainage line from the site's existing gantry spill collection pit. 6) Regular monitoring of Site grating at all stormwater inlets to confirm operating as design. 7) Carry out periodic inspect of the earthen bund located along the south site boundary. Any breaches in the bund are to be repaired and reinforced with geo-fabric/vegetation where required. This will ensure that all overland flow is directed through the surface outlet for sediment removal treatment before leaving the site. No sediment laden stormwater runoff is to leave the site. 8) Inspect, as required, of the Site stormwater CPS (Coalescing Plate Separator) to ensure effective treatment of contaminated stormwater from the RIB and FFRP. The CPS is designed to treat immiscible liquids (O/G) where a visible sheen ("rainbow") is present. 9) A procedure outlining the site's water sampling requirements including the RIB, FFRP and CPS units, will be available and personnel trained in this procedure accordingly. 10) The bund valves are to be left in a "closed" position unless authorised to "open" by the Site Superintendent or Ncl Operations Manager. The procedure for managing liquid collected within the bunded area is as follows. <p>In the event that liquid is present within the AST bund, a visual inspection of the bunded area will be undertaken to check for the presence of a separate fuel layer or sheen ("rainbow"). Record observations in the site's water release log.</p> <p><i>Note: if a fuel layer is noted on top of the surface of the collected water, the bund water will not be released. An investigation of the origin of the contaminant will be undertaken. If deemed significant, the Site shall follow the site's Emergency Response Plan, Pollution Incident Response Management Plan (PIRMP) and Procedures immediately as the presence of a fuel layer could mean a product loss from the AST(s) or associated fuel lines.</i></p> <p style="text-align: center;"><u>Do not open the valve from the bund outlet pit.</u></p> <p>If no sheen or odour is noted during the visual inspection of the water collected in the AST bundled areas, open the bund outlet pit to allow the water to drain into the site's puraceptor treatment system. Bunds must be monitored during discharge. Once the bund has been drained, the bund outlet pipe valve is to be closed.</p> <p>In the event that a product loss occurs at the same time the bundled area is being drained, the bund outlet pit drain/isolation valve is to be closed immediately to contain the loss within the bundled area. If product inadvertently enters the site puraceptor, then the puraceptor auto valve will close, isolating and containing product and preventing discharge to the receiving waters. Clean-up of the product loss will then need to be undertaken as soon as possible after the event and in accordance with the site emergency procedures to ensure product does not enter the nearby water ways.</p> <p><i>Note: If unable to close the isolation valve, activation of the site Emergency Stop Device will close the puraceptor to ensure containment of lost product.</i></p> <ol style="list-style-type: none"> 11) As part of the site maintenance plan, a monthly inspection of all roofed areas must be conducted to determine the adequacy of the guttering. Guttering that is in poor condition is to be re-placed. 12) Management procedures detailing the controls implemented/established during any fuel/chemical spills that may occur at the site are outlined in Stolthaven's Emergency Response Plan, Pollution Incident Response Management Plan and Procedures document. All site personnel and contractors working within the terminal will have an understanding in the procedures and reporting requirements to be undertaken in the event of a product spill or leak. 13) Appropriate spill kits are located in and near fuel storage areas. Fuel/chemicals (including firefighting foam/water are not to enter the site's stormwater system in the event of a leak or a spill. 14) Follow the requirements of the CSMP for any demolition and/or excavation works with consideration being given to the potential presence of contaminated soil at the site. The CSMP details appropriate environmental controls to ensure that contaminated soils do not impact upon stormwater quality and that contaminated sediment does not

	<p>migrate off site. Contaminated soils are not to impact stormwater quality, enter the site's stormwater system or move off site.</p>																														
Performance Criteria	<p>For stormwater monitoring the concentration of pollutant discharges must not exceed the limits as specified in section L3 of the site Environmental Protection Licence (No.20193).</p> <p>The performance criteria to be applied in respect of assessing the implementation of this SWMP are the ANZECC (2000) Australian and New Zealand Water Quality Guidelines for Fresh and Marine Waters, 95% Species Protection Marine Waters Criterion.</p>																														
Performance Monitoring	<p>Performance monitoring is undertaken on site to confirm the efficiency of the stormwater runoff quality controls. Performance monitoring of this SWMP involves visual inspection of the site and areas receiving runoff from the site.</p> <p>Performance monitoring is undertaken during and after rainfall events. Indicators of potential adverse water quality impact will include:</p> <ul style="list-style-type: none"> • Evidence of erosion and scouring around the stormwater pipe discharge outlets. • Changes in clarity, colour and odour of receiving waters. • Presence of debris/rubbish/flora and fauna stress. • Presence of an oily film on water surface. • Orange/brown coating on banks, water surface or substrate. <p>Physio-chemical water quality measurements will be undertaken in the event that visual observations indicate that runoff from the site may have adversely affected the qualities of the receiving waters.</p> <p>In order to confirm that stormwater measures implemented at the site do not impact upon the environmental values (EVs) of Hunter River, samples are collected following a rainfall event that results in sufficient stormwater discharge to collect surface water samples. Samples are analysed against the approved methods publication ANZECC (2000) Australian and New Zealand Water Quality Guidelines for Fresh and Marine Waters, 95% Species Protection Marine Water Criterion and AECOM Concept Stormwater Management Strategy (July 2015) unless another method has been approved by the EPA in writing.</p> <p>Point 5 water quality parameters monitored include:</p> <table border="1"> <thead> <tr> <th>Pollutant</th><th>Units of Measure</th><th>Frequency</th><th>Method</th><th>100 percentile concentration limit</th></tr> </thead> <tbody> <tr> <td>Dissolved Oxygen</td><td>Milligrams per litre</td><td>Weekly during any discharge</td><td>Grab sample</td><td>>2</td></tr> <tr> <td>Oil and Grease</td><td>Milligrams per litre</td><td>Weekly during any discharge</td><td>Grab sample</td><td>10</td></tr> <tr> <td>PH</td><td>Milligrams per litre</td><td>Weekly during any discharge</td><td>Grab sample</td><td>6.5-8.5</td></tr> <tr> <td>Total Suspended Solids</td><td>Milligrams per litre</td><td>Weekly during any discharge</td><td>Grab sample</td><td>30</td></tr> <tr> <td>Volume</td><td>Megalitres per day</td><td>Continuous during discharge</td><td>Special method 1</td><td>n/a</td></tr> </tbody> </table> <p>Note: Special method 1 refers to EPA 2004, Approved methods for the sampling and analysis of water pollutants in New South Wales.</p> <p>Sample results are assessed by a suitably qualified environmental consultant or where agreed using trained and verified in-house resource. Failed test results will be resampled and tested using the same method.</p>	Pollutant	Units of Measure	Frequency	Method	100 percentile concentration limit	Dissolved Oxygen	Milligrams per litre	Weekly during any discharge	Grab sample	>2	Oil and Grease	Milligrams per litre	Weekly during any discharge	Grab sample	10	PH	Milligrams per litre	Weekly during any discharge	Grab sample	6.5-8.5	Total Suspended Solids	Milligrams per litre	Weekly during any discharge	Grab sample	30	Volume	Megalitres per day	Continuous during discharge	Special method 1	n/a
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Corrective Actions	<p>In the event that performance monitoring indicates that the stormwater runoff quality controls are not achieving compliance with the performance criteria, the following actions will be implemented in line with Stolthaven Incident and Accident Reporting Procedure.</p> <ul style="list-style-type: none"> • Immediate notification must be made by telephoning the Environmental Line Service on 131 555. • Reporting in accordance with part 5.7 of the Protection of the Environment Operations Act 1997. • Determine the cause(s) of non-compliance to relevant criteria. • Implement specific corrective measures, which may include replacement or maintenance of erosion and sediment control structures and/or stormwater quality improvement devices, removal of any fuel or liquid waste spillage, collection and removal of any fugitive litter, etc. <p>Relevant validation monitoring to verify that corrective measures have been implemented and are achieving the required</p>																														

	performance level.
Responsible Person(s)/ Organisation(s)	<p>Stolthaven, through the Australian General Manager, will assume overall responsibility for the execution and ongoing implementation of this SWMP. To meet these responsibilities the Australian General Manager will appoint a suitably qualified and experienced person, the Ncl Operations Manager or Site Superintendent who assumes responsibility for the implementation of the SWMP at the site.</p> <p>Duties that the manager or supervisor performs in relation to the implementation of the stormwater management plan include:</p> <ul style="list-style-type: none"> • Visual quarterly inspections and cleaning (when required) of stormwater pollution control devices installed at the site; • ensuring that daily housekeeping and appropriate cleaning/waste disposal methods are being followed at the site; • ensuring that operations undertaken at the site do not cause contaminants to be released to areas where stormwater runoff could come into contact with them; • reporting of actual or potential failure of stormwater runoff quality controls to the Stolthaven Australian General Manager and up-line management. <p>Stolthaven Ncl Operations Manager and Site Superintendent will be responsible for staff training; environmental monitoring against criteria; record keeping; and auditing and reviewing the SWMP against site operations on a regular basis.</p> <p>The Group SHEQ Manager will be responsible for incident investigation and corrective action implementation, auditing and review of the SWMP against changes in Environmental Laws and Regulations on an annual basis.</p> <p>It is the responsibility of all site personnel and contractors undertaking works at the site to ensure that the measures of the SWMP are adhered to. Any activities that are not currently undertaken at the site will need to be assessed for their potential to cause impact to stormwater runoff quality and managed appropriately.</p>
Reporting/ Review Procedure	<p>Any site personnel or contractor that becomes aware of an actual or potential failure in the stormwater runoff quality controls will report this matter to the Ncl Operations Manager or Site Superintendent who will immediately take appropriate corrective actions immediately as defined within the Site Emergency Procedures.</p> <p>The results of all performance monitoring will be recorded in the sites operational logs.</p> <p>Stolthaven will provide the detailed results from the Environmental Monitoring Program in an annual Environmental Management Report as detailed in Section 5.1 of this document. Stolthaven is also required to undertake an Independent Environmental audit as per section 5.2 of this document every three years, or as determined by the Secretary.</p> <p>Stolthaven will also supply to the EPA an annual return in the approved form as noted in site EPA licence 20193. The annual return for the reporting period will be supplied to the EPA no later than 60 days after the end of each reporting period.</p> <p>The nature of any corrective actions that are implemented in respect of protecting stormwater quality runoff and the results of validation monitoring conducted in respect thereof, will be recorded in the Site's Action Register.</p> <p>In the event that a failure of stormwater runoff quality controls results in environmental harm then this matter is also to be reported to the relevant section of the Local Authority and EPA, DP&E and PoN. This must be done in accordance with the noted requirements of the Site EPA Permit 20193 and SSD7065.</p> <p>Any enquiries concerning the impact that Stolthaven operations may have upon the qualities of receiving waters that are received by the Australian General Manager/Ncl Operations Manager from members of the public or officers of the Council or any other relevant statutory authority will be noted in the Environmental Management Register and managed as per Stolthaven Incident and Accident Reporting procedure.</p> <p>Relevant officers of the Council, EPA or PoN will be provided access to the site and the operational logs/data in order to review the implementation and performance of the SWMP.</p>

8 GROUNDWATER MANAGEMENT PLAN

Figure 6 shows the location of the groundwater monitoring wells that are installed at the site.

The utilisation areas referred to in the table below are identified for the purpose of monitoring groundwater conditions.

EPA Identification Number	Type of Monitoring Point	Location Description
1	Groundwater Monitoring	Groundwater monitoring well described as 49 on the plan titled: General layout for Stage 2 EPA Licence (No. 20193)
2	Groundwater Monitoring	Groundwater monitoring well described as 50 on the plan titled: General layout for Stage 2 EPA Licence (No. 20193)
3	Groundwater Monitoring	Groundwater monitoring well described as 51 on the plan titled: General layout for Stage 2 EPA Licence (No. 20193)

4	Groundwater Monitoring	Groundwater monitoring well described as 52 on the plan titled: General layout for Stage 2 EPA Licence (No. 20193)
16	Groundwater Monitoring	Groundwater monitoring well described as 91 on the plan titled: General layout for Stage 2 EPA Licence (No. 20193)
17	Groundwater Monitoring	Groundwater monitoring well described as 92 on the plan titled: General layout for Stage 2 EPA Licence (No. 20193)
18	Groundwater Monitoring	Groundwater monitoring well described as 93 on the plan titled: General layout for Stage 2 EPA Licence (No. 20193)
19	Groundwater Monitoring	Groundwater monitoring well described as 94 on the plan titled: General layout for Stage 2 EPA Licence (No. 20193)
20	Groundwater Monitoring	Groundwater monitoring well described as 95 on the plan titled: General layout for Stage 2 EPA Licence (No. 20193)

In order to protect the quality of the receiving water ways, which groundwater beneath the site discharges into by groundwater migration, the quality of the groundwater conditions beneath the site are managed through the application of:

- 1) periodic (quarterly) monitoring and assessment of groundwater conditions beneath the site; and
- 2) adherence to the groundwater management plan, the requirements and conditions of the Site Environmental Protection Licence 20193 under section 55 of the Protection of the Environment Operations Act 1997 ad prepared in respect of the site's proposed operations, which specifies:

- management objectives;
- management tasks and actions;
- performance criteria;
- performance monitoring;
- correction actions;
- reporting and review procedures; and
- responsible person(s) and organisation(s).

Groundwater Management Plan (GMP)

Management Objective	To avoid potential detrimental impacts to the water qualities and ecology of downstream aquatic habitats that can result from the migration of impacted groundwater from beneath the site. To fully comply with the conditions of the Site Environmental Protection Licence 20193.																						
Management Tasks and Actions	<p>The specific groundwater management tasks that are to be implemented at the site to achieve the objectives of the GMP are summarised below.</p> <ol style="list-style-type: none"> 1) For the purpose of this GMP, all groundwater monitoring wells should be maintained in an operational condition. In the event of damage to monitoring wells, the Ncl Operations Manager must ensure that the monitoring wells are reinstated prior to the next scheduled monitoring event to maintain continuity of monitoring information. 2) It is the responsibility of the Ncl Operations Manager to ensure that quarterly groundwater monitoring events are undertaken at the site to confirm site data and trends analyses. Results will be compiled and included in reporting as per the conditions of the Site Environmental Licence 20193. 3) At the completion of four rounds of groundwater monitoring events, a report will be submitted to the Group SHEQ Manager providing information on groundwater conditions beneath the site, including monitoring results, an assessment of groundwater contamination and recommendations for further action (if required). Groundwater analyses will include: <table border="1" data-bbox="673 2089 1662 2312"> <thead> <tr> <th>Pollutant</th> <th>Units of Measure</th> <th>Frequency</th> <th>Sampling Method</th> </tr> </thead> <tbody> <tr> <td>BTEX</td> <td>mg/L</td> <td>Quarterly</td> <td>Representative</td> </tr> <tr> <td>PH</td> <td>pH</td> <td>Quarterly</td> <td>Representative</td> </tr> <tr> <td>Standing water levels</td> <td>m</td> <td>Quarterly</td> <td>In situ</td> </tr> <tr> <td>Total petroleum hydrocarbons</td> <td>mg/L</td> <td>Quarterly</td> <td>Representative</td> </tr> </tbody> </table> <p>Samples are analysed against the approved methods publication ANZECC (2000) Australian and New Zealand Water Quality Guidelines for Fresh and Marine Waters, 95% Species Protection Marine Water Criterion and Patterson Britton & Partners (2007) Preliminary Design Stormwater Strategy unless another method has been approved by the EPA in writing.</p> <p>All laboratory analyses must be performed by an appropriately certified laboratory (e.g. NATA or similar). All groundwater monitoring and reporting is to be conducted by a person with relevant qualifications and experience.</p>			Pollutant	Units of Measure	Frequency	Sampling Method	BTEX	mg/L	Quarterly	Representative	PH	pH	Quarterly	Representative	Standing water levels	m	Quarterly	In situ	Total petroleum hydrocarbons	mg/L	Quarterly	Representative
Pollutant	Units of Measure	Frequency	Sampling Method																				
BTEX	mg/L	Quarterly	Representative																				
PH	pH	Quarterly	Representative																				
Standing water levels	m	Quarterly	In situ																				
Total petroleum hydrocarbons	mg/L	Quarterly	Representative																				
Performance Criteria	For screening purposes, the performance criteria to be applied in respect of assessing the implementation of this GMP are the ANZECC (2000) Australian and New Zealand Water Quality Guidelines for Fresh and Marine Waters, 95% Species Protection Marine Waters Criterion.																						
Performance Monitoring	<p>Performance monitoring will be undertaken on a quarterly basis. Indicators of potential adverse groundwater quality impact will include (but may not be limited to) the following.</p> <ul style="list-style-type: none"> • Evidence of non-aqueous phase liquid (NAPL) (e.g. separate fuel layer) on the groundwater table. • Changes in clarity, colour and odour of groundwater. • Increases in concentrations of dissolved phase impact. 																						

	<p>In addition to the table above groundwater quality parameters to be monitored may include:</p> <ul style="list-style-type: none"> • dissolved oxygen concentrations • temperature <p>Sample results will be assessed by a suitably qualified environmental consultant.</p>
Corrective Actions	<p>In the event that performance monitoring indicates any impacted groundwater or/and groundwater is migrating beyond the property boundary at a level that could potentially cause adverse health and environmental impacts, the following actions will be implemented.</p> <ul style="list-style-type: none"> • Immediate notification must be made by telephoning the Environmental Line Service on 131 555. • Reporting in accordance with part 5.7 of the Protection of the Environment Operations Act 1997. • Determine the cause(s) of non-compliance to relevant criteria (e.g. source of groundwater contamination, new or historic). • Implement specific corrective measures, which may include active groundwater remediation/hydraulic control or capture technologies, groundwater delineation, revised health risk assessments and/or fate and transport modelling. <p>Relevant validation monitoring to verify that corrective measures have been implemented and are achieving the required performance level.</p>
Responsible Person(s)/ Organisation(s)	<p>Stolthaven, by the Australian General Manager, will assume overall responsibility for the execution and ongoing implementation of this GMP. To meet these responsibilities the Australian General Manager will appoint a suitably qualified and experienced person, Ncl Operations Manager/supervisor who will assist in the implementation of the GMP at the site.</p> <p>Duties that the Ncl Operations Manager/ Site Superintendent performs in relation to the implementation of the GMP include:</p> <ul style="list-style-type: none"> • ensuring that groundwater monitoring wells are not damaged during normal operations, notify the Australian General Manager so that necessary repairs can be made; and • ensuring that operations undertaken at the site do not cause contaminants to be released to groundwater. <p>Stolthaven Ncl Operations Manager and Site Superintendent will be responsible for staff training; environmental monitoring; record keeping; and reviewing the GMP on a regular basis against site performance.</p> <p>Stolthaven Group SHEQ Manager will be responsible for incident investigation and corrective action implementation; auditing and reviewing the GMP on a regular basis against Environmental Law and Regulatory requirements.</p> <p>It is the responsibility of all site personnel and contractors undertaking works at the site to ensure that the measures of the GMP are adhered to.</p>
Reporting/ Review Procedure	<p>The results of all performance monitoring will be recorded in a Site's Operational Logs.</p> <p>The nature of any corrective actions that are implemented in respect of protecting groundwater quality and the results of validation monitoring conducted in respect thereof, will be recorded in the site's Action register.</p> <p>In the event that impacted groundwater migrates offsite and results in environmental harm then this matter is also to be reported to the relevant section of the Local Authority, PoN and NSW EPA as per conditions within EPA permit number 20193 and as per Protection of the Environmental Operations Act 1997 and the Protection of the Environmental Legislation Amendment Act 2011.</p> <p>Any enquiries concerning the impact that Stolthaven operations may have upon the qualities of receiving waters that are received by the Australian General Manager or the Ncl Operations Manager/ Site Superintendent from members of the public or officers of the Council or any other relevant statutory authority will be noted in the Environmental Management Register and managed as per Stolthaven's Incident and Accident Reporting procedure and as detailed within the site Environmental Licence 20193.</p> <p>Relevant officers of the Council, PoN and NSW EPA will be provided access to the site and the Environmental Management Register in order to review the implementation and performance of this GMP.</p>

9 MANAGEMENT OF CONTAMINATED SOILS

Contaminants of Concern

The Contaminants of Concern identified below the capping material on site are a result of the historical steelworks operations across the site. The prime contaminants are detailed in the Hunter Development Corporation, Contaminated Site Management Plan 2009, and are summarised as follows:-

- Contaminated soil and waste materials containing elevated levels of Polycyclic Aromatic Hydrocarbons (PAH's), Lead, Manganese and zinc.
- Soil and waste materials containing Semi-Volatile Organic Compounds (SVOC's), Volatile Organic Compounds (VOC's), coal tar, petroleum compounds and various heavy metals;
- Isolated areas with asbestos or Polychlorinated Biphenyl (PCB) contaminated fill material.

It has been determined that elevated levels of PAH are the contaminant of concern that are the most prolific across the site below the capping layer.

Capping – Specification

The capping material is an inert layer of material that has been emplaced site wide to prevent the infiltration of surface water as well as providing a physical barrier to the contaminated material below.

There are different types of capping in different areas of the site and the different permeability specifications for Area 1 and Area 2.:

- **Developed areas of the diesel terminal:** Capped with permanent paving, either concrete or asphalt. GCL and two coat seal installed. Minor areas of VENM cap within perimeter drains. See WAE drawings for details.
- **Undeveloped area to the south of the diesel terminal:** Capped with 500 mm of VENM with a permeability requirement of 1×10^{-7} m/s.
- **Undeveloped area between the diesel terminal and Berth 7:**
 - o Area 2 west of barrier wall - Capped with 400 mm of VENM cap with a permeability requirement of 1×10^{-7} m/s and topped with cap protection layer;
 - o Area 1 east of the barrier wall - Capped with pavement cap comprising a 300 mm subgrade replacement layer, a 100 mm crushed concrete layer and a high performance two coat bitumen seal with a permeability requirement of 1×10^{-9} m/s.

Existing Soil Conditions

As part of the Contaminated Site Management Plan (CSMP) specific control measures will be applied to operational activities. These control measures are established as below:

9.1 Contaminated Soils Management Plan

Contaminated Soils Management Plan

Management Objectives	To avoid potential detrimental impacts to human health, the water qualities and ecology of downstream aquatic habitats, that can result from the disturbance and movement of impacted soil.
Soil Investigations (Pre-Excavation)	No maintenance related excavation work will be allowed on site without an excavation permit being completed. The excavation permit will require specific consideration of the cap integrity. Any soil excavated on the site must be assessed for contaminants of concern to determine if the material is contaminated to allow for the identification of appropriate management and disposal/re-use options. Representative sampling and analysis of soil from excavation in contaminated areas must be managed by a suitably qualified and experienced person in accordance with Contaminated Land Management Act 1997, Protection of the Environment Operations Act 1997 Contaminated soil must not be removed off site without a disposal permit. Specific conditions are noted within the Hunter Development Corporation, Contaminated Site Management Plan 2009.
Training and Orientation	Training and orientation sessions will be conducted for all personnel involved in the excavation, transport or handling of soils or earthworks on the site. The training sessions will be conducted prior to the excavation of any soils on the site. The sessions will be designed to ensure that all staff are: aware of the soil contamination issues involved on the site; able to recognise potential soil contamination on the site; and aware of their responsibilities in managing the contaminated soil.
Maintenance and Inspections	The top layer and drainage of the site will be inspected on a quarterly basis for the following – <ul style="list-style-type: none"> • Erosion of drains, bunding/berms and run offs • Site ponding, not to exceed 25 m² • Silt fencing integrity
Management Tasks/Measures	Management of excavations that occur in areas where potentially contaminated soils could be present will involve the following. <ol style="list-style-type: none"> 1. Work procedures conducted on the site should be in accordance with relevant Occupational Health and Safety (OH&S) Regulations. Any engaged companies/contractors should prepare a site-specific Health and Safety Plan covering their workers at the site. Personnel working at or visiting the site during any excavation works should undergo a site induction procedure, which communicates potential hazards and exposure pathways associated with the contaminants of concern at the site. Communicate potential hazards associated with contaminated soil at the site to all personnel working at or visiting the site prior to undertaking and during, excavation works proposed to be undertaken at the site. 2. Measures that can be undertaken to assist in minimising exposure of site maintenance workers to soil and water contaminants include: <ul style="list-style-type: none"> avoid handling of potentially contaminated soil or groundwater; wash hands before eating, drinking or smoking; avoid activities that may introduce soil to the mouth, such as nail biting; store and consume food and drink in a designated clean area; remove soiled clothing and footwear before entering a designated clean area and before leaving the site; and use personal protective equipment as required. In addition to hard hats, safety boots and safety glasses, this equipment may include: <ol style="list-style-type: none"> a) impermeable gloves, if handling potentially contaminated soil or water; b) long sleeved shirt and long trousers; c) dust masks; d) respirators and appropriate cartridges; e) store personal protective equipment in a clean place to avoid contamination; and f) replace gloves and masks regularly, and other equipment as required g) hearing protection
Performance Monitoring	Records of any analytical results, odour monitoring and dust surveillance, and classification of the soils and the fate of the excavated material will be recorded in the Project Environmental Management Log. The records will be made available upon request to authorised personnel.
Corrective Actions	A non-conformance resulting from the receipt of a complaint, generation of visible dust or odours at the site boundary may result in one or more of the following corrective actions being implemented. <ul style="list-style-type: none"> • Immediate notification must be made by telephoning the Environmental Line Service on 131 555. • Reporting in accordance with part 5.7 of the Protection of the Environment Operations Act 1997. An evaluation of the non-conformance to improve remedial strategies to prevent recurrence. Address complaint and respond to the complainant with proposed mitigation measures. Use a vapour barrier or mist suppressant to reduce the odour emissions. Undertake additional analyses of soil, water and air samples. Notification of relevant government authorities, if required.

	The nature of any corrective measures that are implemented in respect of the CSMP and the results of any validation monitoring conducted in respect thereof will be recorded in the Environmental Management Register.
Performance Review	The review of the CSMP will involve inspection of the site, particularly areas where excavations are being undertaken, and the site Environmental Management Log. In this respect the site Environmental Management Log will provide written, signed and dated account of any works that have involved the potential disturbance of contaminated soil and the management measures taken in respect thereof. Analytical, odour and dust surveillance monitoring records contained within the site Environmental Management Log will also be reviewed to assess the performance of the CSMP.
Responsible Person(s) or Organisation(s)	The General Manager, via the Project/Ncl Operations Manager, will assume responsibility for ensuring that: the CSMP is fully implemented at all times during any excavations undertaken at the site; and any circumstances, events and/or corrective actions related to the causation or avoidance of environmental harm associated with disturbance of contaminated soils are reported in the Environmental Management Log. All persons involved in any excavation works that becomes aware of an actual or potential disturbance of contaminated soil or failure of management controls will report this matter to the Ncl Operations Manager and/or General Manager.

9.2 Post Site Development Contaminated Soils Management Plan

Post site development Stolthaven will establish Environmental Management Controls covering handling of contaminated soils and potentially contaminated soils within the Site boundary.

These control measures are established as below:

Management Objectives	To avoid potential detrimental impacts to human health, the water qualities and ecology of downstream aquatic habitats, that can result from the disturbance and movement of impacted soil.
Soil Investigations (Pre-Excavation)	<p>No maintenance related excavation work will be allowed on site without an excavation permit being completed. The excavation permit forms part of Stolthaven Permit to Work system.</p> <p>The excavation permit will require specific consideration of the cap integrity.</p> <p>Any soil excavated on the site must be assessed for contaminants of concern to determine if the material is contaminated to allow for the identification of appropriate management and disposal/re-use options.</p> <p>Representative sampling and analysis of soil from excavation in contaminated areas must be managed by a suitably qualified and experienced person in accordance with Contaminated Land Management Act 1997, Protection of the Environment Operations Act 1997</p> <p>Contaminated soil must not be removed off site without a disposal permit.</p>
Training and Orientation	<p>Training and orientation sessions will be conducted as part of the Site permit to work system. The sessions will be designed to ensure that staff authorised under Stolthaven permit to work system are:</p> <ul style="list-style-type: none"> • aware of the soil contamination issues involved on the site; • able to recognise potential soil contamination on the site; and <p>aware of their responsibilities in managing the contaminated soil.</p>
Management Tasks/Measures	<p>Management of excavations that occur in areas where potentially contaminated soils could be present will involve the following.</p> <ol style="list-style-type: none"> 1. Work procedures conducted on the site should be in accordance with relevant Occupational Health and Safety (OH&S) Regulations. Any engaged companies/contractors should prepare a site-specific Health and Safety Plan covering their workers at the site. Personnel working at or visiting the site during any excavation works should undergo a site induction procedure, which communicates potential hazards and exposure pathways associated with the contaminants of concern at the site. 2. Measures that can be undertaken to assist in minimising exposure of site maintenance workers to soil and water contaminants include: <ul style="list-style-type: none"> • avoid handling of potentially contaminated soil or groundwater; • wash hands before eating, drinking or smoking; • avoid activities that may introduce soil to the mouth, such as nail biting; • store and consume food and drink in a designated clean area; • remove soiled clothing and footwear before entering a designated clean area and before leaving the site; and • use personal protective equipment as required. <p>In addition to hard hats, safety boots, safety glasses and hearing protection, this equipment may include:</p> <ol style="list-style-type: none"> a) impermeable gloves, if handling potentially contaminated soil or water; b) long sleeved shirt and long trousers; c) dust masks; d) respirators and appropriate cartridges; e) store personal protective equipment in a clean place to avoid contamination; and <p>replace gloves and masks regularly, and other equipment as required</p>

Performance Monitoring	<p>The Environmental Management Log and permit to work records will provide written, signed and dated account of any works that have involved the potential disturbance of contaminated soil and the management measures taken in respect thereof.</p> <p>Records of any analytical results, odour monitoring and dust surveillance, and classification of the soils and the fate of the excavated material will be recorded in an Environmental Management Log. The records will be made available upon request to authorised personnel.</p>
Corrective Actions	<p>A non-conformance resulting from the receipt of a complaint, generation of visible dust or odours at the site boundary will be managed as per Stolthaven Incident and Accident Reporting Procedure and also may result in one or more of the following corrective actions being implemented.</p> <ul style="list-style-type: none"> • Immediate notification must be made by telephoning the Environmental Line Service on 131 555. • Reporting in accordance with part 5.7 of the Protection of the Environment Operations Act 1997. • Address complaint and respond to the complainant with proposed mitigation measures. • Undertake additional analyses of soil, water and air samples. • Notification of relevant government authorities, if required. <p>As per Stolthaven Incident and Accident Reporting Procedure the nature of any corrective and/or preventative measures that are implemented will be recorded.</p>
Responsible Person(s) or Organisation(s)	<p>The General Manager, via the Engineering Manager and Group SHEQ Manager, will assume responsibility for ensuring that:</p> <ul style="list-style-type: none"> • the management controls noted above are implemented during any excavations undertaken at the site; and <p>any circumstances, events and/or corrective actions related to the causation or avoidance of environmental harm associated with disturbance of contaminated soils are investigated and reported as per Stolthaven Incident and Accident Reporting Procedure.</p>

NOTE: - A stockpile of Level 1 material remains located on the site as a legacy of the Mayfield 7 berth construction project. This stockpile will be reinterred (built into a revised landform) on the site (within the Stolthaven leased area) within 12 months of the Mayfield 7 berth construction works being completed. The location and configuration of this revised landform will comply with the requirements of the Contaminated Site Management Plan (CSMP) and the final design of which will be approved by the Site Auditor prior to the works to reinter the stockpile.

10 ACID SULFATE SOIL MANAGEMENT PLAN

The ongoing operations and management of the Site would not adversely impact the soil profiles on the Site provided that the identified control measures are implemented.

The soils on the Site comprise fill material underlain by marine and estuarine sediments and Tomago coal measures. According to a report produced by SKM in 2004, reclamation fill on the Site included copper slag and ashes, iron and steel-making slags and process wastes, boiler ash, general waste and building debris from industrial facilities and sand dredged from the South Arm of the Hunter River.

The Site has been subject to numerous site investigations to determine soil contamination during the decommissioning and remediation phases of the Site. These identified areas of contamination related to the previous activities undertaken at the BHP Steel works. Contaminants of concern in the soil profile below the capping later were primarily Polycyclic Aromatic Hydrocarbons (PAHs). Metals, petroleum hydrocarbons and VOCs may also be present (SKM 2004). Any residual contaminants will not be impacted by the Stolthaven operation nor would the operation be impinged by the presence of any contaminants. In the event that ASS soils are identified at the site, the hierarchy of ASS management principles as set out in with the NSW Acid Sulfate Soil Technical Manual Soil Management Guidelines will be adopted which is as follows.

- Avoidance
- Minimisation of disturbance
- Neutralisation
- Hydraulic separation
- Strategic reburial

11 WASTE MANAGEMENT PLAN

The objective of the waste management plan (WMP) is to develop a plan to address the following matters.

- Assist with conditions of the Site Environmental Licence 20193, section L4, L4.1, L4.2
- Appropriate methods to prevent, treat and dispose of waste.
- Align with and comply with Stolthaven Environmental Management Procedure BCS-HSE-10
- Minimisation of waste generated at the site, where possible.
- Solid waste will be limited to spent materials ex. CPS (Coalescing Plate Separator), sediment collected within the RIB and puraceptor, and general refuse that will be disposed of in appropriate receptacles and removed by local waste contractors.
- Liquid waste collected within the product pump pits and spill collection pit.
- Septic tank waste.

Spillage of bulk product during fuel transfer or AST failure is covered under the site's Emergency Response Plan and Procedures document, which details how waste generated during these events is to be managed.

Although manned by full time staff it is not anticipated that a large volume of general refuse waste will be generated at the site. However, this WMP has been developed to manage the handling and disposal of waste as it arises at the site.

Waste management at the Newcastle Bulk Storage facility will focus on appropriate methods to prevent, treat and dispose of waste. Waste generated at the site will be minimised and recycled, where possible.

Waste Management Plan

Objective / Target	To minimise the level of waste generated at the site and to appropriately contain and remove waste for lawful disposal.
Management Strategy	<p>To implement an appropriate waste management program targeting the following issues.</p> <p>Reduction in volumes and waste, and recycling waste wherever possible.</p> <p>Provision and maintenance of sufficient waste receptacles to allow waste to be separated according to type for subsequent removal for recycling or lawful disposal.</p> <p>Separation of stormwater and potentially contaminated liquid waste to minimise the amount of liquid waste requiring either on-site treatment or off-site disposal.</p> <p>Containment of any potentially contaminating materials stored on the site.</p>
Tasks / Actions	<p>The following actions will be implemented during the site's operations in order to achieve the above objectives:</p> <ol style="list-style-type: none"> 1) At the end of each working week all refuse not required on the site will be separated according to type and will be deposited within designated receptacles or enclosures. 2) The storage capacity of each waste receptacle or enclosure will be monitored weekly and arrangements made for the collection and subsequent removal from the site for recycling or lawful disposal when the effective storage capacity of any receptacle or enclosure is met. 3) Appropriate use of the waste receptacles provided will be monitored bi-weekly to ensure that only allowable waste types are being disposed of into the nominated receptacles. 4) Any regulated waste (such as oily rags, etc) removed from the site will be monitored and recorded. 5) Any chemicals (such as cleaning fluids, degreaser etc) will be stored in sealed containers within the office and/or the site shed on impervious surfaces with and located in away from water, drains and pits. 6) All bulk storage of combustible liquids will be in accordance with the appropriate Australian Standards. 7) Liquid waste collected within the product pump pits and spill collection pit is to be assessed for the presence of a separated fuel layer. If a separated fuel layer is present, then the waste is passed through an oil/water separator (dewatering) whereby the separated fuel/oil is to be collected and lawfully disposed of off-site. Separated water will pass through the on-site CPS (Coalescing Plate Separator) for treatment prior to transfer to the site's RIB and then discharged via the site puraceptor. 8) The RIB and Site Puraceptor will be inspected every three months to assess the level of any accumulation of silt and debris removed from stormwater runoff. Material collected will be removed by a licensed waste collector as required. 9) Safety data sheets, for any product being handled will be retained at the site at a location known to all personnel and will be referred to in the event of any accidental spillage. 10) Any area affected by an accidental spillage of any contaminants, which could cause environmental harm will be immediately removed and lawfully disposed of. 11) Record of all waste must be maintained. Recycling waste should be reviewed on an annual basis against the site's recycling targets (set below).
Performance Criteria	<p>Waste management at the site will be conducted in accordance with the Protection of the Environmental Operations Act 1997 and the Protection of the Environmental Legislation Amendment Act 2011. All waste and potentially hazardous substances are to be stored in appropriately designed receptacles or enclosures and will be removed from the site at regular intervals or at such time as they are no longer required at the site.</p> <p>The following classifications of refuse types may be used for separation of refuse types occurring on the storage terminals, wharfs, which classifications are derived from and described in the Environmental Guidelines: Assessment, Classification, and Management of Liquid and Non-Liquid Wastes (NSW EPA)</p> <p>Commercial waste Garden waste Industrial waste Construction or demolition waste Domestic waste Domestic clean-up waste Puraceptor waste Septic waste Recyclable biodegradable waste Recyclable waste.</p> <p>Recycling Targets are set as below. <i>It is important to note these targets need to be reviewed and adjusted depending on the site's activity, i.e. project works, next phase (stage 3) etc</i></p> <p>Recycling, Co-Mingled waste - 26 cbm per annum Recycling, Printer Cartridge – 83 lts per annum</p>
Frequency / Deadline	<p>Waste receptacles and signage is posted.</p> <p>Monitoring of the receptacles is on a weekly basis. Accidental spillage of contaminants should be immediately dealt with in accordance with the emergency procedures at the site.</p> <p>Recycling targets will be reviewed on annually. This review will be captured in the site's Environmental Management Log.</p>
Responsible Person	The Ncl Operations Manager is responsible for reporting any non-compliance and is required to employ a suitably qualified and experienced contractor to remove or treat any spillage of product or contaminants on the site. The name and contact details of the waste contractor employed by the operators will be known to all personnel on the site and retained in the Environmental Management Log.
Reporting and Review	<p>Details of waste management strategies and corrective actions taken in respect thereof will be recorded in the site's operational logs.</p> <p>Where regulated waste is removed from the site, the following details will be recorded and maintained at the</p>

	<p>site.</p> <p>The date, quantity and type of waste removed.</p> <p>Name of the waste transporter and / or disposal operator that removed the waste.</p> <p>The intended treatment / disposal destination of the waste.</p> <p>To ensure compliance with the Protection of the Environment Legislation Amendment Act 2011, Environmental pollution data included as condition of the operating licence will be published within 14 days of obtaining the data and/or receiving a specific request for a copy of the data.</p>
Corrective Actions	<p>Corrective actions to be initiated in the event of non-compliance with the relevant performance criteria for waste management include redesign of waste receptacles, waste enclosures or waste handling procedures; In the event of any spill or leak of a contaminant which could potentially cause environmental harm the following actions will be followed in accordance with the sites Emergency Response Plan and Pollution Incident Response Management Plan.</p> <ul style="list-style-type: none"> • Cease activities at the concerned area while the specific source or cause of spill/leak has been determined. • Immediate notification must be made by telephoning the Environmental Line Service on 131 555. • Reporting in accordance with part 5.7 of the Protection of the Environment Operations Act 1997. • As noted in the Reporting and Review section above and in accordance with Stolthaven's Incident and Accident Reporting Procedure. • Immediate implementation of mitigation measures such as: • Containment of the spill/leak; • Removal of contaminant and any affected soil by a suitably qualified and experienced contractor; or • <i>In-situ</i> treatment of contaminant and any affected land or water by a suitably qualified and experienced contractor; and • Validation of the clean-up to confirm that the mitigation means employed were adequate for the protection of local amenity, public health and the environment.

12 STORAGE AND HANDLING OF COMBUSTIBLE GOODS

All chemicals stored at the site will be done so in accordance with the relevant Australian Standards. Chemicals stored at the site are detailed in the table below.

Chemical	Volume
Diesel	126, 000 kL
Bio Diesel	4750 kl
Additive	50m3

The only other chemicals that would be stored at the site would be small volumes of general cleaning fluids and degreasers. These chemicals will be stored in either the office or the site's DG container.

Stolthaven have prepared an Emergency Response Plan, Pollution Incident Response Management Plan and Procedures document. This document outlines management processes for all emergencies that may occur at the site and also includes a Spillage Control Plan. This document is presented under a separate cover.

13 REFERENCES

- Australian Government Bureau of Meteorology (2007) <http://www.bom.gov.au>, Monthly climate statistics.
- ANNZECC (2000) Australian and New Zealand Water Quality Guidelines for Fresh and Marine Waters.
- Contaminated Land Management Act 1997 NSW EPA (2003)
- Environmentally Hazardous Chemicals Act 1985
- National Environment Protection Council (New South Wales) Act 1995
- Protection of the Environment Operations Act 1997

Figure 1 Site Locality Map

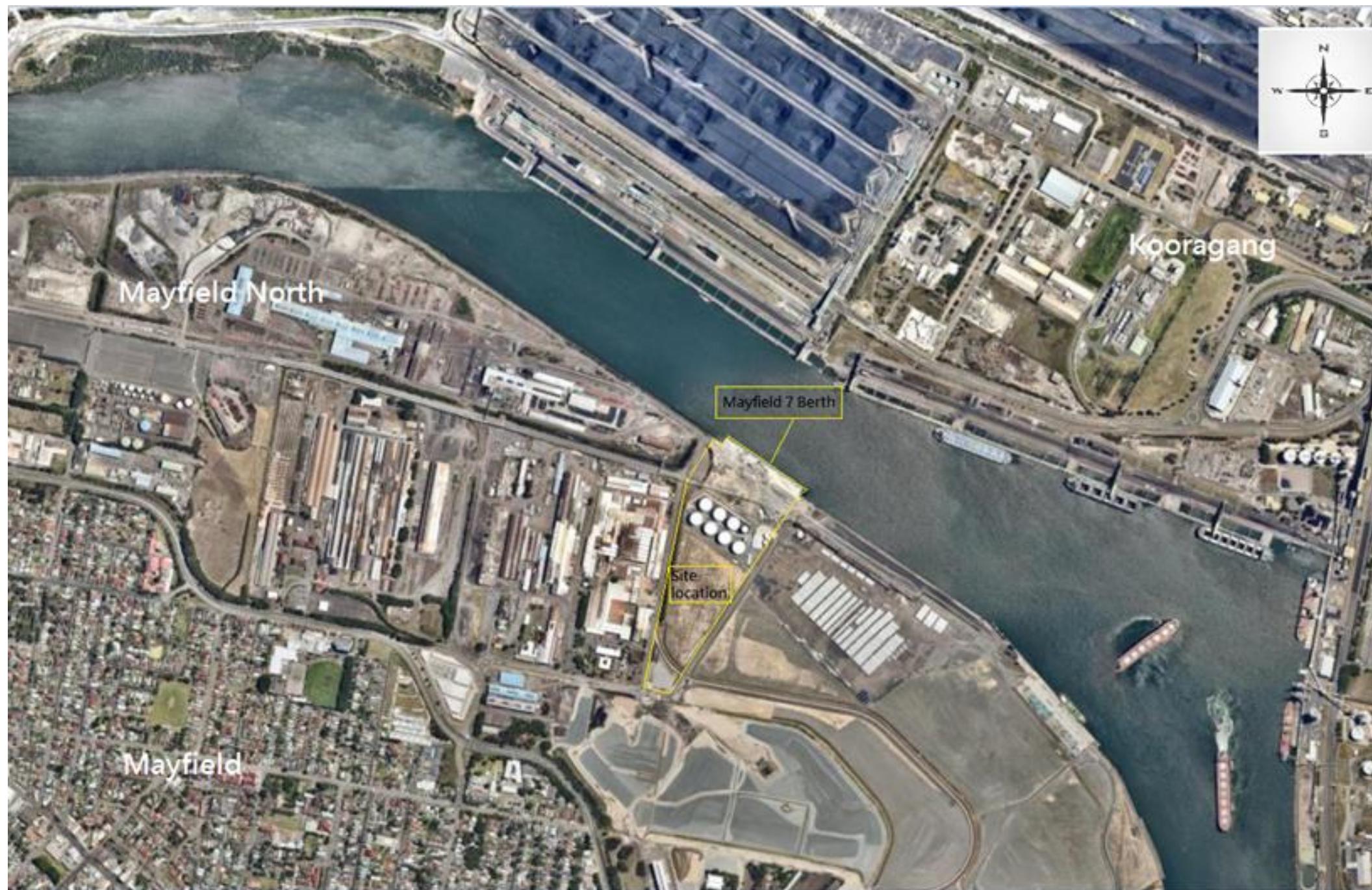


Figure 2 Site Layout

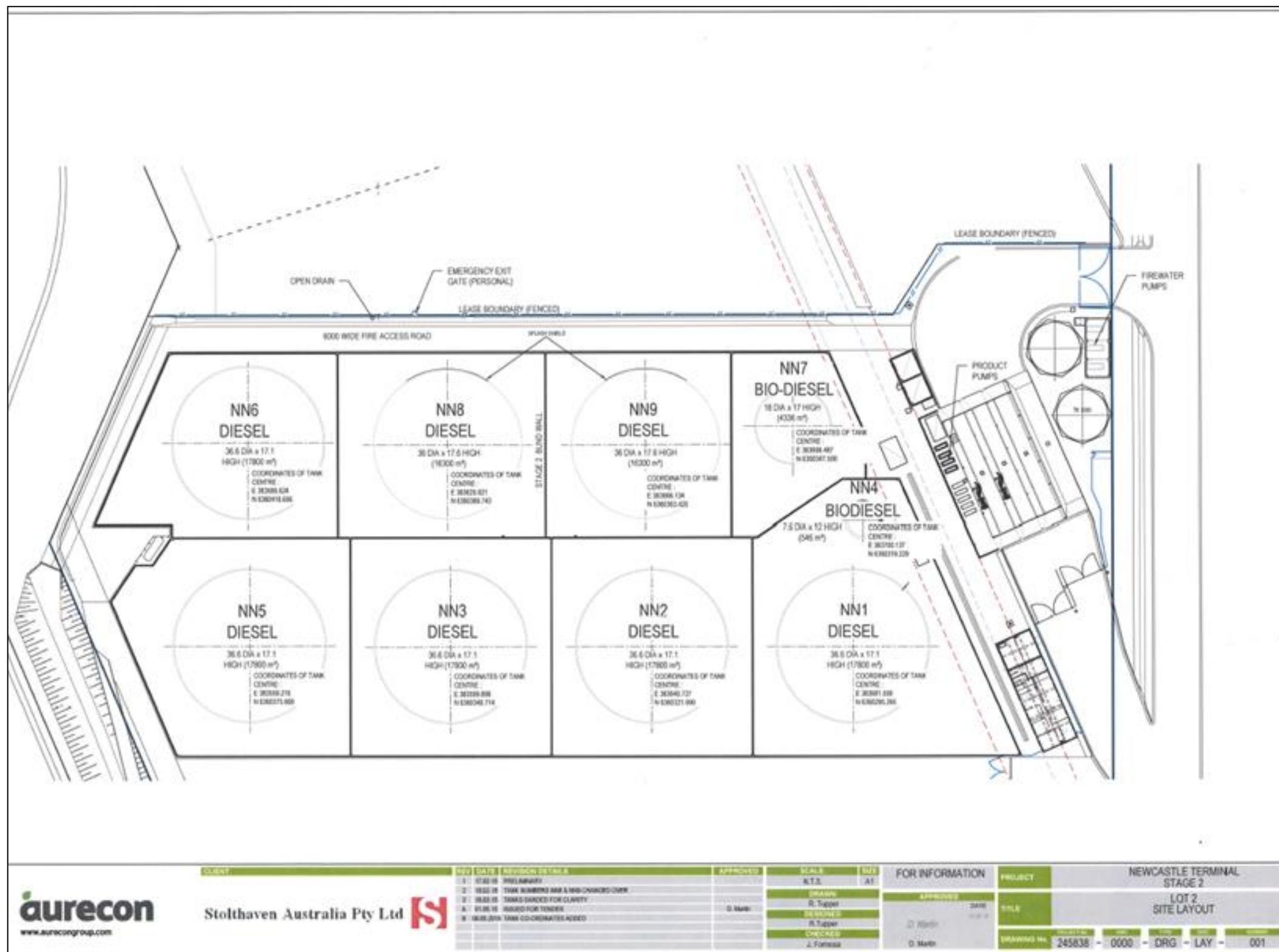


Figure 3



Figure 4

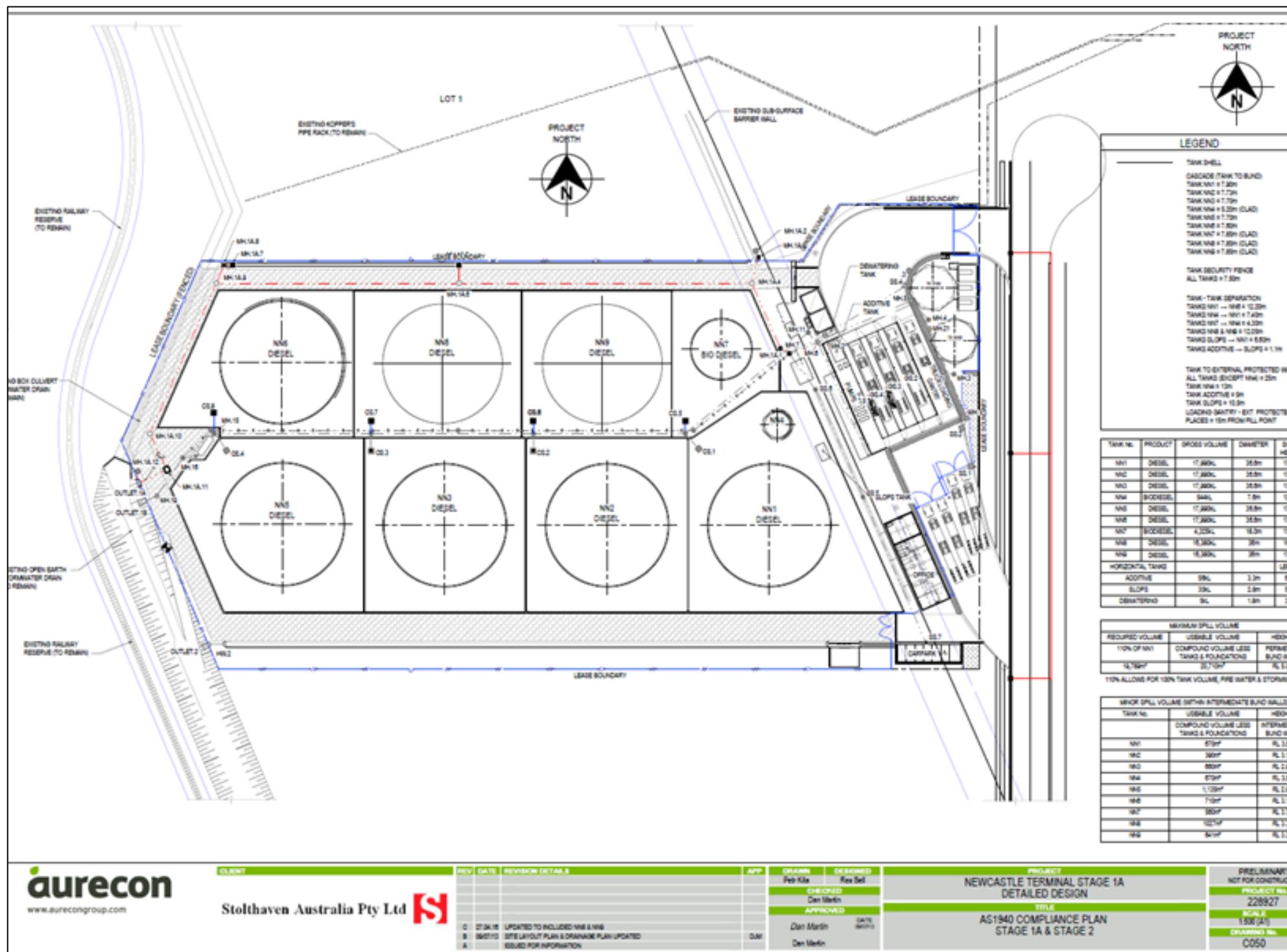


Figure 5

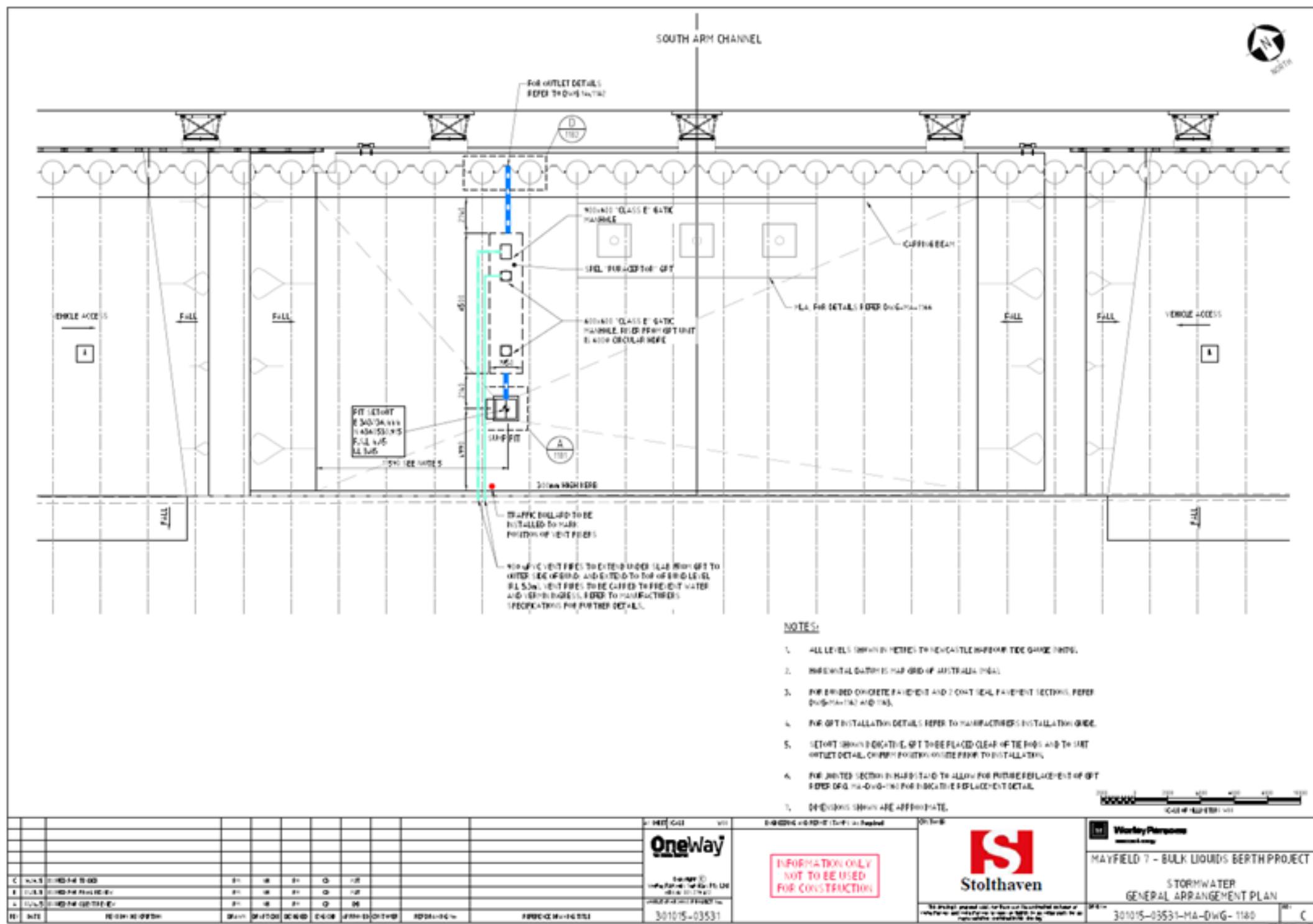


Figure 6

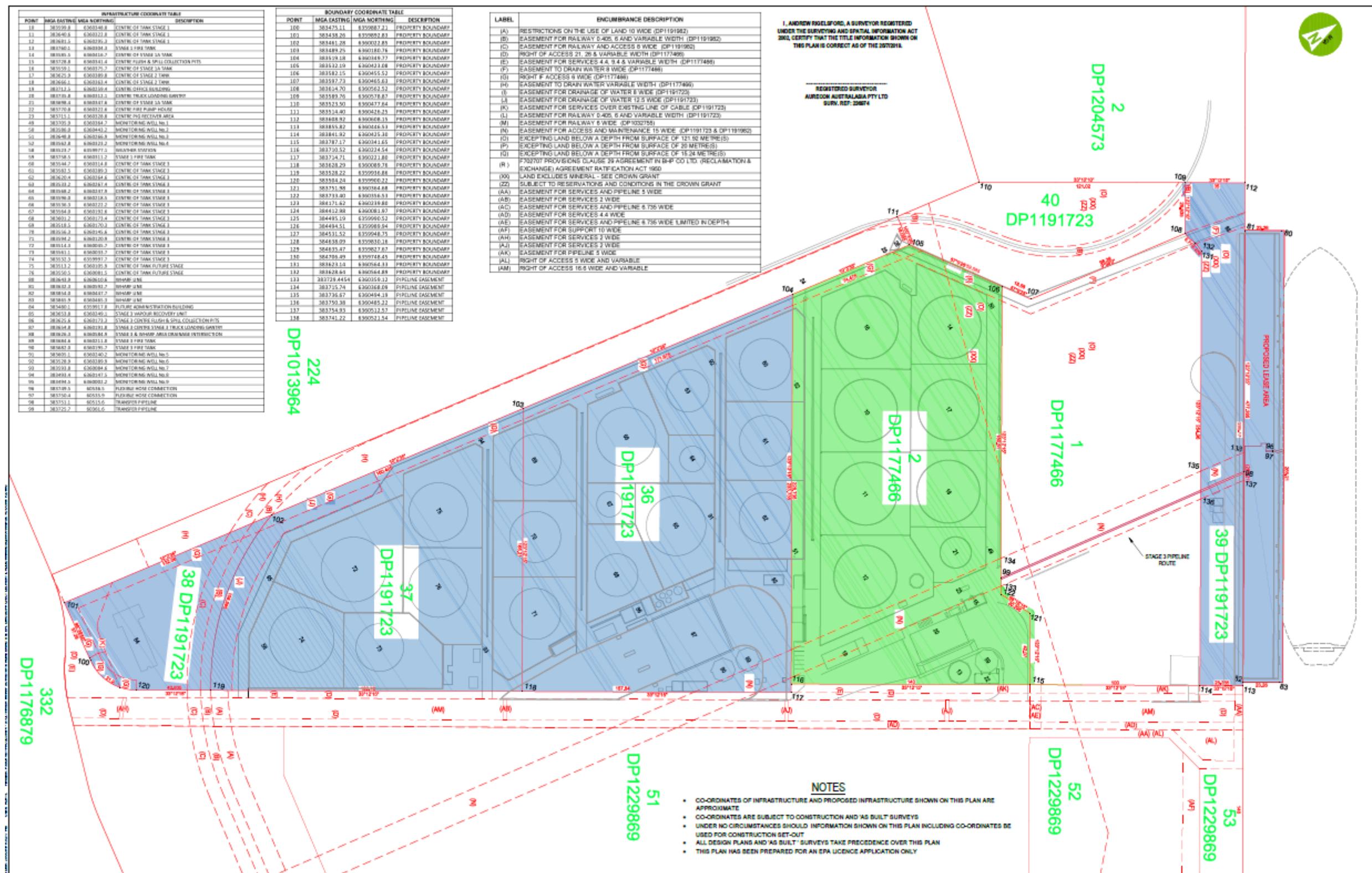
10

BOUNDARY COORDINATE TABLE			
POINT	MGAS EASTING	MGAS NORTHEING	DESCRIPTION
100	383475.11	8320983.21	PROPRTY BOL
101	383483.20	8320982.83	PROPRTY BOL
102	383481.61	8309032.85	PROPRTY BOL
103	383489.25	8309186.76	PROPRTY BOL
104	383493.19	8309048.37	PROPRTY BOL
105	383512.20	8309431.08	PROPRTY BOL
106	383512.05	8309455.52	PROPRTY BOL
107	383587.73	8309465.63	PROPRTY BOL
108	383624.70	8309562.52	PROPRTY BOL
109	383589.76	8309578.87	PROPRTY BOL
110	383521.50	8309477.64	PROPRTY BOL
111	383524.40	8309482.25	PROPRTY BOL
112	383488.82	8309068.15	PROPRTY BOL
113	383485.82	8309446.53	PROPRTY BOL
114	383481.32	8309452.68	PROPRTY BOL
115	383481.37	8309452.68	PROPRTY BOL
116	383750.52	8309054.54	PROPRTY BOL
117	383747.11	8309031.88	PROPRTY BOL
118	383628.29	8309065.78	PROPRTY BOL
119	383523.22	8309916.88	PROPRTY BOL
120	383583.24	8309966.72	PROPRTY BOL
121	383151.85	8309184.88	PROPRTY BOL
122	383731.89	8309161.51	PROPRTY BOL
123	383741.62	8309124.86	PROPRTY BOL
124	384422.98	8309001.87	PROPRTY BOL
125	384485.19	8309966.52	PROPRTY BOL
126	384494.51	8309985.84	PROPRTY BOL
127	384511.52	8309948.75	PROPRTY BOL
128	384539.09	8309830.18	PROPRTY BOL
129	383587.47	8309527.87	PROPRTY BOL
130	384784.49	8309748.45	PROPRTY BOL
131	383623.14	8309064.33	PROPRTY BOL
132	383284.64	8309046.88	PROPRTY BOL
133	382738.4454	8309351.12	PROLINE EASEL
134	382735.24	8309368.09	PROLINE EASEL
135	382736.76	8309404.18	PROLINE EASEL
136	382750.30	8309485.32	PROLINE EASEL
137	383754.93	8309512.57	PROLINE EASEL

LABEL	ENCUMBRANCE DESCRIPTION
(A)	RESTRICTIONS ON THE USE OF LAND 10 WIDE (DP1191982)
(B)	EASEMENT FOR RAILWAY 6.405, 6 AND VARIABLE WIDTH (DP1191982)
(C)	EASEMENT FOR RAILWAY AND ACCESS 6 WIDE (DP1191982)
(D)	RIGHT OF ACCESS 21, 26 & VARIABLE WIDTH (DP1174695)
(E)	EASEMENT FOR SERVICES 4.4, 9.4 & VARIABLE WIDTH (DP117486)
(F)	EASEMENT TO DRAIN WATER 6 WIDE (DP117486)
(G)	RIGHT OF ACCESS 6 WIDE (DP117486)
(H)	EASEMENT TO DRAIN WATER VARIABLE WIDTH (DP117486)
(I)	EASEMENT FOR DRAINAGE OF WATER 6 WIDE (DP1191725)
(J)	EASEMENT FOR DRAINAGE OF WATER 12.5 WIDE (DP1191725)
(K)	EASEMENT FOR SERVICES OVER EXISTING LINE OF CABLE (DP1191725)
(L)	EASEMENT FOR RAILWAY 0.405, 6 AND VARIABLE WIDTH (DP1191725)
(M)	EASEMENT FOR RAILWAY 6 WIDE (DP1032755)
(N)	EASEMENT FOR ACCESS AND MAINTENANCE 15 WIDE (DP1191725 & DP1191726)
(O)	EXCEPTING LAND BELOW A DEPTH FROM SURFACE OF 12.15 METRE(S)
(P)	EXCEPTING LAND BELOW A DEPTH FROM SURFACE OF 25 METRE(S)
(Q)	EXCEPTING LAND BELOW A DEPTH FROM SURFACE OF 15.24 METRE(S)
(R)	70/2010 PROVISIONAL CLAUSE 29 AGREEMENT IN BHP CO LTD. (RECLAMATION EXCHANGE) AGREEMENT DATE 10/07/2010
(S)	LAND EXCLUDES MINERAL - SEE CROWN GRANT
(T)	SUBJECT TO RESERVATIONS AND CONDITIONS IN THE CROWN GRANT
(AA)	EASEMENT FOR SERVICES AND PIPELINE 5 WIDE
(AB)	EASEMENT FOR SERVICES 5 WIDE
(AC)	EASEMENT FOR SERVICES AND PIPELINE 6.735 WIDE
(AD)	EASEMENT FOR SERVICES 4.4 WIDE
(AE)	EASEMENT FOR SERVICES AND PIPELINE 6.735 WIDE (LIMITED IN DEPTH)
(AF)	EASEMENT FOR SUPPORT 10 WIDE
(AH)	EASEMENT FOR SERVICES 3 WIDE
(PJ)	EASEMENT FOR SERVICES 2 WIDE
(AK)	EASEMENT FOR PIPELINE 5 WIDE
(AL)	RIGHT OF ACCESS 2 WIDE AND VARIABLE
(AM)	RIGHT OF ACCESS 16.5 WIDE AND VARIABLE

I, ANDREW RIGGSDORF, A SURVEYOR REGISTERED UNDER THE SURVEYING AND SPATIAL INFORMATION ACT 2002, CERTIFY THAT THE TITLE INFORMATION SHOWN ON THIS PLAN IS CORRECT AS OF THE 20/07/2018.

REGISTERED SURVEY
AUROCON AUSTRALASIA LTD
SURV. REF. 236874



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www.aurecongroup.com

CLIENT

