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CALTEX REFINERIES (NSW) PTY LTD

Kurnell Wharf Infrastructure Upgrade Dredge and Spoil Disposal Management Plan

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CALTEX REFINERIES (NSW) PTY LTD KURNELL WHARF INFRASTRUCTURE UPGRADE DREDGE AND SPOIL DISPOSAL MANAGEMENT PLAN

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PROJECT 301015-03067 - KURNELL WHARF INFRASTRUCTURE UPGRADE

REV	DESCRIPTION	ORIG	REVIEW	WORLEY-PARSONS APPROVAL	DATE	CLIENT APPROVAL	DATE
A	Issued for internal review	N Cowlshaw	S Mason-Jones		27-Mar-13	N/A	
B	Issued for client review	N Cowlshaw	S Mason-Jones	D Aubourg	28-Mar-13		
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GLOSSARY

Acronym / Term	Definition
BHD	Backhoe dredge
CEMP	Construction Environmental Management Plan
Cetacean	All whales and dolphins
Conditions of approval	The Minister's conditions of consent for the Project (Application No. SSD_5353)
Construction	<p>Includes all work in respect of the Project other than:</p> <ul style="list-style-type: none"> • survey, acquisitions, building/ road dilapidation surveys; • investigative drilling, excavation, or salvage; • establishing ancillary facilities/ construction work sites (in the locations nominated in the EIS, unless otherwise agreed to by the Director General); • installation of environmental impact mitigation measures and fencing; • other activities determined by the Environmental Representative to have minimal environmental impact (e.g. minor access roads, minor adjustments to services/ utilities, minor clearing or translocation of native vegetation etc). <p>Note: work where heritage, threatened species, populations or endangered ecological communities would be affected is classified as construction, unless otherwise approved by the Director General. (DP&I 2013)</p> <ul style="list-style-type: none"> • baseline sediment and water quality monitoring, where it is considered to have a minimal environmental impact
CD	Chart Datum
DAFF	Department of Agriculture, Fisheries and Forestry
Director General, the	Director General of the Department of Planning and Infrastructure
DSDMP	Dredge and Spoil Disposal Management Plan
Dugong	Large marine mammal with paddle-like forelimbs, a fluked tail and no dorsal fin or hind limbs
Dust	Any solid material that may become suspended in air or deposited
EIS	Environmental Impact Statement
Emergency	An incident that requires a significant and coordinated response to protect people, property and the environment from harm
EMR	Environmental Management Representative



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Acronym / Term	Definition
EMS	Environmental Management System
Environment	Components of the earth, including: (a) land, air and water, and (b) any layer of the atmosphere, and (c) any organic or inorganic matter and any living organism, and (d) human-made or modified structures and areas, and includes interacting natural ecosystems that include components referred to in (a)–(c).
Environment Management System (EMS)	A component of the Caltex management system that is used to develop and implement the Environment Policy and manage the Environmental Aspects of its operations
Environment Policy	The document in which senior management formally expresses the overall intentions and direction of Caltex related to its environmental performance
EPA	Environment Protection Authority
EPL	Environment protection licence under the <i>Protection of the Environment Operations Act 1997</i> .
ERT	Emergency Response Team
Feasible and Reasonable	Consideration of best practice taking into account the benefit of proposed measures and their technological and associated operational application in the NSW and Australian context. Feasible relates to engineering considerations and what is practical to build. Reasonable relates to the application of judgement in arriving at a decision, taking into account mitigation benefits and cost of mitigation versus benefits provided, community views and nature and extent of potential improvements. Where requested by the Director General, the Applicant shall provide evidence as to how feasible and reasonable measures were considered and taken into account. (DP&I 2013)
GPS	Global positioning system
Heritage	Encompasses both Aboriginal and historic heritage including sites that predate European settlement, and a shared history since European settlement such as a shared associations in pastoral landscapes as well as associations linked with the mission period. (DP&I 2013)
Heritage Item	An item as defined under the <i>Heritage Act 1977</i> , and assessed as being of local, State and/ or National heritage significance, and/or an Aboriginal Object or Aboriginal Place as defined under the <i>National Parks and Wildlife Act 1974</i> . (DP&I 2013)



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Acronym / Term	Definition
HSE	Health, safety and environment
ICNG	Interim Construction Guidelines
IIF	Incident and Injury Free
IMO	International Maritime Organisation
Incident	A localised event, either actual or impending, which causes, or threatens to cause, injury or death, or damage to property
JSEA	Job Safety and Environmental Analysis
KROSRT	Kurnell Refinery Oil Spill Response Team
Major hydrocarbon spill	A hydrocarbon spill of 8,000 L or more to land or a hydrocarbon spill of any volume to water.
MARPOL Convention	The International Convention for the Prevention of Pollution from Ships (the MARPOL Convention) is the main international convention covering prevention of pollution of the marine environment by ships from operational or accidental causes. The International Maritime Organisation (IMO) adopted the MARPOL Convention on 2 November 1973.
Material Harm	<p>a) Harm to the environment is material if:</p> <ul style="list-style-type: none">i. It involves actual or potential harm to the health or safety of human beings or to ecosystems that is not trivial, orii. It results in actual or potential loss or property damage of an amount, or amounts in aggregate, exceeding \$10,000 (or such other amount as is prescribed by the regulations), and <p>b) loss includes the reasonable costs and expenses that would be incurred in taking all reasonable and practicable measures to prevent, mitigate or make good harm to the environment</p> <p>For the purposes of this definition, it does not matter that harm to the environment is caused only in the premises where the pollution incident occurs.</p>
Minor Amendment	<p>The Environmental Representative has the authority to approve or reject “minor amendments” to the DSDMP as follows:</p> <ul style="list-style-type: none">• formatting and editorial changes;• errors, misdescriptions or miscalculations;• “like for like changes” to methodology or procedures that will not result in any increase to environmental impacts;



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Acronym / Term	Definition
	<ul style="list-style-type: none">minor changes to improve the efficacy and / or efficiency of procedures, provided the changes are consistent with relevant conditions of approval, licence conditions, permit condition and commitments made in the EIS (URS 2013) and Submissions Report (URS 2013a). <p>The following do not comprise “minor amendments”</p> <ul style="list-style-type: none">amendments to, or resulting in changes to, the duration and / or magnitude of activities and / or impacts;amendments that change or remove the intent of relevant conditions of approval, licence conditions, permit condition;amendments that change or remove the intent of commitments made in the EIS (URS 2013) and / or the Submissions Report (URS 2013a);new project activities not previously assessed under the EIS (URS 2013) and / or the Submissions Report (URS 2013a);changes to equipment that are not “like for like”, such as substitution of one type of equipment for another. <p>The Environmental Representative will consult with the Director General where uncertain as to whether an amendment to the DSDMP constitutes a “minor amendment”.</p>
MSDS	Material Safety Data Sheet
MWMP	Marine Works Management Plan
NTU	Nephelometric Turbidity Units
OEH	Office of Environment and Heritage
Operation	Means the operation of the Project, but does not include commissioning trials of equipment or temporary use of parts of the Project during construction.
Pinniped	Fin-footed marine mammals, including seals and sea lions
PIRMP	Pollution Incident Response Management Plan
POEO Act	<i>Protection of the Environment Operations Act, 1997</i>
Pollution	(a) water pollution, or (b) air pollution, or (c) land pollution.



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Acronym / Term	Definition
Pollution Incident	<p>Incident or set of circumstances during or as a consequence of which there is or is likely to be a leak, spill or other escape or deposit of a substance, as a result of which pollution has occurred, is occurring or is likely to occur.</p> <p>It includes an incident or set of circumstances in which a substance has been placed or disposed of on premises, but it does not include an incident or set of circumstances involving only the emission of any noise.</p>
POP	Port Operating Procedure
Project	Kurnell Refinery Wharf Upgrade
RMS	Roads and Maritime Services
SCP	Spill Control Plan
SOPEP	Ship-Oil Pollution Emergency Plan
SPC	Sydney Ports Corporation
SSD	State Significant Development
SWL	Sound power level
SWQMP	Sediment and Water Quality Management Plan



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1 INTRODUCTION, LOCATION AND SCOPE OF WORKS

Caltex Refineries (NSW) Pty Ltd (Caltex) proposes to undertake port and berthing facility works off Silver Beach in Botany Bay, NSW (the Project). There are two main elements to the (Project):

- Dredging
- Upgrading existing elements of the berthing infrastructure

This Dredge and Sediment Disposal Management Plan (DSDMP) has been prepared in accordance with the *Guideline for the Preparation of Environmental Management Plans* (Department of Infrastructure, Planning and Natural Resources, 2004). The DSDMP is based on the relevant information, requirements and potential impacts of dredging, as identified in the Environmental Impact Statement (EIS) (URS 2013) and Submissions Report (URS 2013a) for the Project. The DSDMP incorporates relevant conditions from the following:

- Draft Development Consent issued by the NSW Department of Planning and Infrastructure under Section 89E of the *Environmental Planning and Assessment Act 1979* (SSD_5353)
- Draft Environment Protection Licence (EPL) issued for miscellaneous licensed discharge to waters (at any time) by the NSW Environment Protection Authority (EPA) under the NSW *Protection of the Environment Operations Act 1997*

Relevant conditions incorporated into the DSDMP are referenced in the document as Draft Conditions of Approval (DCoA) or Draft Environment Protection Licence Conditions (EPL Conditions), as relevant.

Any relevant changes between the draft and final conditions of development consent and the EPL must be incorporated into the DSDMP. Relevant conditions of the Sea Dumping Permit, issued under the Commonwealth *Environmental Protection (Sea Dumping) Act 1981*, must also be incorporated into the DSDMP.

Caltex has consulted with relevant Government agencies, including the EPA and the NSW Department of Primary Industries (DPI) (Fisheries), in regard to preparation of the DSDMP [DCoA C3; DCoA C36].

The DSDMP provides the basis for environmental management, including management of sediment and water quality, related to the dredging works only [DCoA C36].

Environmental management requirements for upgrading existing elements of the berthing infrastructure are set out in the following documents:

- Wharf Upgrade Construction Environmental Management Plan (Wharf Upgrade CEMP)
- Installation of a Sheet Pile Wall and Rock Revetment Construction Environmental Management Plan (Sheet Pile Wall and Rock Revetment CEMP)



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1.1 Location

The dredging works are located in the waters of Botany Bay off Silver Beach (Figure 4-1).

To improve shipping access and capacity, dredging of approximately 153,000 m³ is required from spot locations within the berths, approaches and turning circle over a total area of approximately 178,000 m².

The works are located in close proximity to places with important ecological and heritage values. These include:

- Towra Point Nature and Aquatic Reserves, which contain an internationally important Ramsar-listed wetland habitat (3.5 km to the west)
- Areas of seagrass beds, which support a range of threatened species (100 m to the south)
- Both Taren and Dolls Point (5 km to the west), which both contain important and protected shorebird communities

Kamay Botany Bay National Park is located approximately 700 m to the east. The National Park contains important Aboriginal and historic heritage; which includes the landing place of Captain James Cook. The National Park also serves as a valued recreational and educational asset. The nearest residents to the Project Site are the Ranger's House (Alpha House) in Kamay Botany Bay National Park (700 m to the east) and the properties along Prince Charles Parade, Kurnell (800 m to the south).

1.2 Scope of Works

This DSDMP provides the basis for environmental management throughout dredging works associated with the upgrade to existing elements of the berthing infrastructure at Kurnell Wharf.

This DSDMP does not address environmental management measures associated with project design, nor the environmental management of impacts associated with demolition or construction activities, ongoing maintenance dredging activities or those activities associated with port and berthing facility operations.

Compliance with this DSDMP is mandatory for all personnel and Contractors involved in dredging activities.



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2 OBJECTIVES AND STRUCTURE OF THE DSDMP

2.1 Objectives

The objectives of the DSDMP are to address the management of the following matters during dredging:

- Sediment and water quality
- Potential impacts to the environment
- Site heritage

To address these objectives, the DSDMP documents:

- The proposed dredging and spoil disposal program
- The management measures, actions and associated performance indicators, that will be implemented throughout the dredging program to minimise and manage potential impacts on the environment
- The spill control plan requirements
- Key project management roles and responsibilities and reporting requirements

Environmental performance objectives for each environmental element relevant to the dredging works are set out in Section 8.

2.2 Structure

The structure of the DSDMP is:

- **Section 1 INTRODUCTION, LOCATION AND SCOPE OF WORKS**
Describes the Project and location of the dredging works, as well as the extent of works covered by the DSDMP
- **Section 2 OBJECTIVES AND STRUCTURE OF THE DSDMP**
Sets out the objectives of the DSDMP, its contents and required approval and revision
- **Section 3 ENVIRONMENTAL POLICY**
Provides a copy of the Caltex Environmental Policy, which sets out Caltex's overarching principles for minimising adverse environmental impact for all operational activities including the Project and the interactions of the DSDMP with the policy and other management plans



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- **Section 4 PROJECT OVERVIEW**
Describes the Project, dredging works, equipment and program
- **Section 5 ENVIRONMENTAL RISKS**
Sets out the way in which risks must be identified, documented and managed
- **Section 6 LEGAL AND OTHER REQUIREMENTS**
Lists the specific approvals required for dredging
- **Section 7 DSDMP IMPLEMENTATION**
Describes the roles and responsibilities for the dredging works and the training, communication, record keeping and compliance procedures relevant to all environmental aspects of the dredging works
- **Section 8 ENVIRONMENTAL PROCEDURES**
Sets out the performance objectives, management actions, performance indicators, monitoring, reporting and corrective actions required to be implemented during dredging works for each relevant environmental aspect
- **Section 9 EMERGENCY CONTACTS**
Lists contacts for environmental and safety emergencies during dredging works
- **Section 10 REPORTING**
Describes reporting requirements for the dredging works
- **Section 11 REFERENCES**
Lists the documents referenced within the DSDMP



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3 ENVIRONMENTAL POLICY

The Caltex Environmental Policy applies to all Caltex personnel and Contractors undertaking any activity including work on the Project. This policy is provided below.

Copies of this policy are displayed in a prominent position in Caltex offices and on the Caltex internet site. The dredging Contractor also has its own environmental policy.



Caltex Environment Policy

Caltex aims to operate in such a way as to minimise adverse impacts on the environment and communities in which it operates. To achieve this Caltex will:

- **Integrate environmental protection into business strategy and planning**, so that risks to and impact on, the environment are considered in business decisions, and establishing environmental objectives and targets is part of Caltex's business planning process.
- **Reduce our environmental impact** by identifying environmental impacts of Caltex's operations and continually improving processes and products to conserve resources, increase energy efficiency, prevent pollution and minimise waste.
- **Maintain systems** to identify and manage risks to the environment and the communities in which Caltex operates, and prevent environmental incidents.
- **Measure environmental impact performance** to monitor improvement and progress towards Caltex's environmental objectives.
- **Document and report environmental performance** throughout the organisation and publicly.
- **Allocate resources** to effectively manage Caltex's environmental impacts.
- **Comply with relevant environmental legislation** and regulations, and with Caltex's environmental management systems.
- **Audit environmental systems** regularly to verify risk management control effectiveness.
- **Communicate environmental protection priorities** and ensure those who work with Caltex are trained in and have effective tools to achieve minimum environmental impact and incident free operations.

Julian Segal
Managing Director & CEO

December 2010



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3.1 Relationship to other Plans

The EIS (URS 2013), Submissions Report (URS 2013a) and Draft Development Consent (DP&I 2013) list various plans and sub-plans as being required in addition to or included within, the DSDMP. Where practicable, these sub-plans have been incorporated into this DSDMP as set out below.

Plans fully incorporated into the DSDMP:

- Acid sulphate soil sub-plan
 - incorporated into Section 8.2 of the DSDMP
- Flora management sub-plan
 - incorporated into Section 8.3 of the DSDMP
- Fauna management sub-plan
 - incorporated into Section 8.4 of the DSDMP

Plans not fully incorporated into the DSDMP:

- Sediment and Water Quality Management Plan (SWQMP) [DCoA C3]
 - provides management actions to minimise the generation and dispersion of suspended sediment
 - defines a sediment and water quality framework monitoring program
 - incorporates relevant components of Section 8.1 of the DSDMP
- Sediment and Water Quality Monitoring Program [DCoA C36(a)(i)]
 - developed by Caltex and available on the Caltex intranet
 - incorporates relevant components of the SWQMP
- Construction Noise and Vibration Management Plan [DCoA C36(b)]
 - developed by Caltex and available on the Caltex intranet
 - incorporates relevant components of Section 8.4 of the DSDMP
- Air Quality Management Plan [DCoA C36(c)]
 - developed by Caltex and available on the Caltex intranet
 - incorporates relevant components of Section 8.6 of the DSDMP
- Construction Traffic and Access Management Plan [DCoA C36(d)]
 - developed by Caltex and available on the Caltex intranet
 - incorporates relevant components of Section 8.8 of the DSDMP



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- Waste and Resource Management Plan
 - developed by Caltex and available on the Caltex intranet
 - incorporates relevant components of Section 8.9 of the DSDMP
- Spill Control Plan (SCP) [DCoA C36(a)(iii)]
 - to be developed and implemented by the Contractor in accordance with the requirements set out in Section 8.1 of the DSDMP
- Port operating procedure (POP) and marine works management plan (MWMP)
 - to be developed and implemented by the Contractor in accordance with the requirements set out in Section 8.8 of the DSDMP
- Aquatic Health Management Plan [DCoA C8]
 - to be developed by Caltex and made available on the Caltex intranet
- Community Consultation Plan
 - to be developed by Caltex and made available on the Caltex intranet
- Construction Complaints Management System [DCoA D5]
 - to be developed by Caltex and made available on the Caltex intranet

The DSDMP is supported by these plans and sub-plans and a number of procedures as shown in Figure 3-1.



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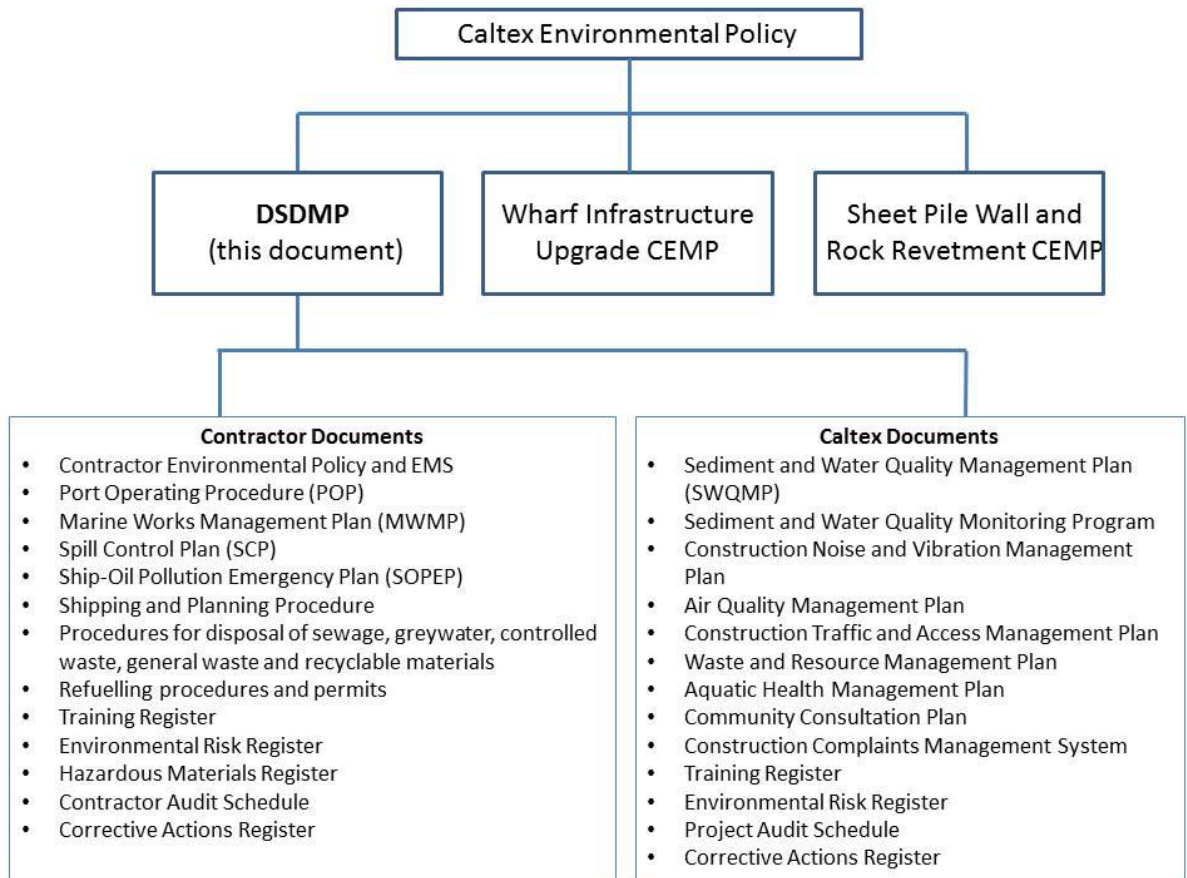


Figure 3-1: Interaction of the DSDMP with other plans, sub-plans and procedures



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4 PROJECT OVERVIEW

The Kurnell Wharf Port and Berthing Facility is the sole entry point for feedstock of crude oil and other finished petroleum product imports to the Kurnell Refinery. At present, it is also used as the distribution point for refined products, which are either shipped interstate or overseas.

The existing facility has operated since 1956. It comprises the Kurnell Wharf (a 1 km jetty structure), at the end of which are two fixed shipping berths (fixed berth #1 and fixed berth #2) located either side of a breasting island. The facility also includes a submarine berth (sub berth), located to the west of the fixed berths, as well as a ship turning circle and associated approaches that interface with the main Botany Bay Shipping Channel.

On the northern side of the wharf, a crude oil submarine pipeline connects the refinery's storage tanks to the sub berth (Figure 4-1). Starting adjacent to the wharf, south of the fixed berths, are a series of additional submarine pipelines that transport fuel under Botany Bay. These pipelines head west then north and connect to terminals at Banksmeadow, Silverwater and Newcastle, whilst also servicing Sydney (Kingsford Smith) Airport.

Kurnell Wharf is located, in part, on Lot 456 DP 1413279, within the Sutherland Shire Local Government Area (LGA) and in part on unincorporated land (i.e. not part of any LGA) that is leased to Caltex by the State Government.

Dredging of approximately 153,000 m³ is required from spot locations within the berths, approaches and turning circle over a total area of approximately 178,000 m², to improve shipping access and capacity. Infrastructure works will also be carried out to upgrade mooring and berthing equipment in the sub berth and fixed berth #1. Other ancillary works will include an upgrade to the fire system on the Wharf and construction of a rock revetment and a sheet-piled wall at the southern end of fixed berth #1.

The Project site and its context are shown in Figure 4-1.



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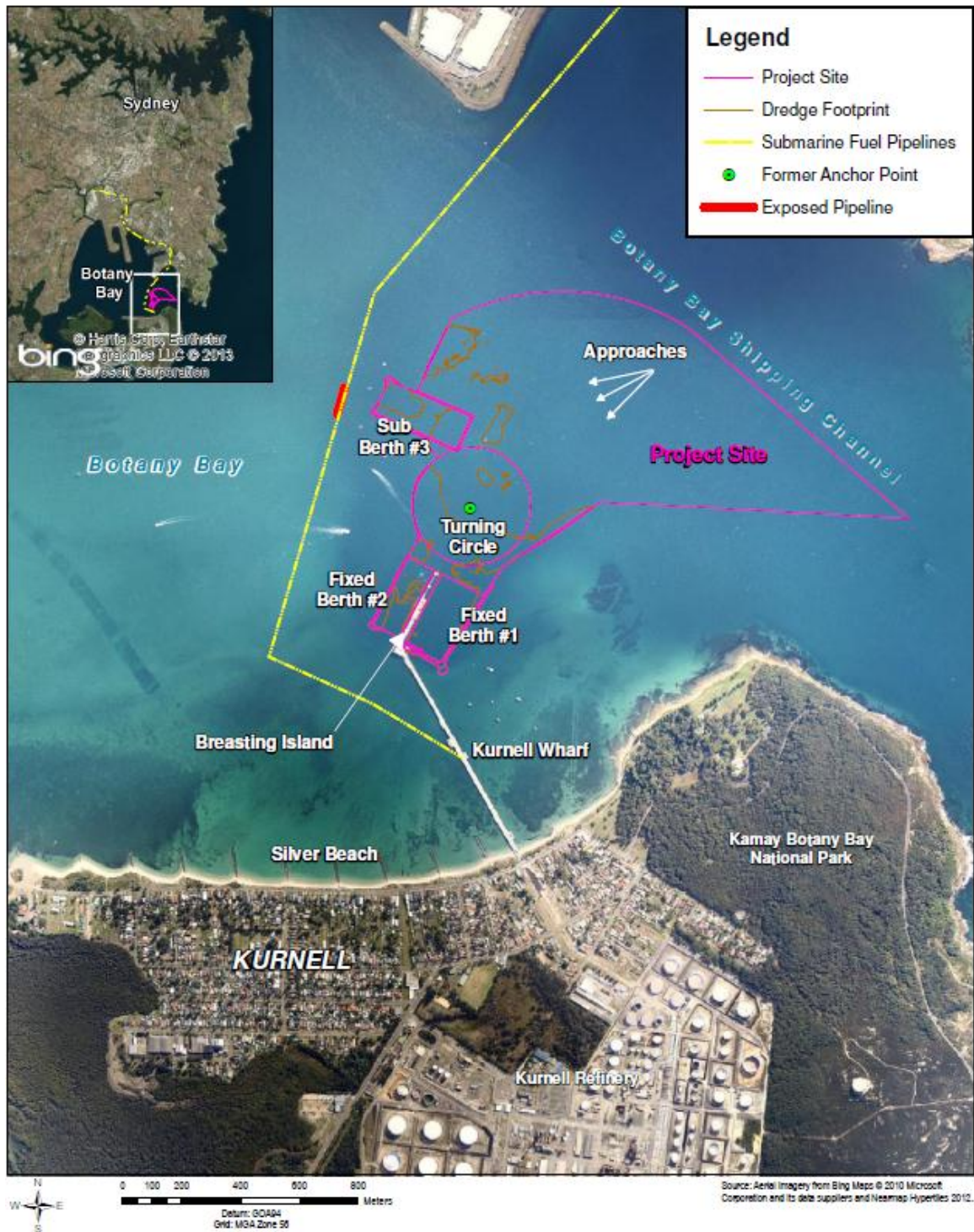


Figure 4-1: Project Site and Context (URS 2013a)



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4.1 Dredging and Disposal Activities

Dredging of approximately 153,000 m³ is required from spot locations within the berths, approaches and turning circle over a total area of approximately 178,000 m². Dredging locations are shown in Figure 4-2.

The dredging is required to achieve a number of access improvements, including:

- Improve overall navigability across the dredge footprint through removal of sediment that has accumulated over the past 40 years
- Extend the depth, length and width of the two fixed berths to allow larger capacity ships to access the berths and load/unload at the Kurnell Wharf
- Provide improved access in and out of the sub berth

The dredging works will leave a broadly flat, uniform area across the base of the dredge footprint to the following depths:

- Turning circle and approaches returned to the design depth of 12.8 m below Chart Datum (CD)
- Sub berth returned to the design depth of 14 m below CD
- Fixed berths increased to overall effective depth of 12.8 m below CD

The perimeter of the dredge footprint will be profiled to create side 'batter' slopes to at least a 1-in-4 profile to the existing seabed. The exception is at the back of fixed berth #1 where a rock revetment and sheet piled wall will be constructed.

A summary of the required dredging works, showing the area, depth and volume of the proposed works is provided in Table 4-1. The table includes the required dredge volumes inclusive of an over dredging allowance to account for a degree of inherent inaccuracy from achieving the final dredge profile (common to any dredging works). This accepted allowance is referred to as over dredging.

Table 4-1: Dredging Area, Depth and Volume

Location	Required Dredge Depth (m below CD*)	Design Area (m ²)	Required Dredge Volume (m ³)	Allowance for Over Dredging (m ³)	Total Dredge Volume (m ³)
Approaches and Turning Circle	-12.8	98,750	30,500	29,750	60,250
Sub Berth	-14	16,750	7,750	5,000	12,750
Fixed Berths	-12.8	62,500	61,250	18,750	80,000
Total	N/A	178,000	99,500	53,500	153,000

*Note: Depth to seabed and not ships keel.



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Up to 6,000 m³ of dredged sediments will be reused locally to cover an exposed section of the Kurnell Refinery subsea fuel pipelines located behind the sub berth and a former anchor point at the entry to the sub berth (refer Figure 4-1 and Figure 4-2.)

The remainder of dredged sediments will be disposed of at the Sydney Offshore Spoil Ground in accordance with a sea dumping permit issued under the Commonwealth *Environmental Protection (Sea Dumping) Act 1981*.

The spoil ground is located approximately 25 km east of the dredge footprint, 10 km east-southeast off Sydney Heads in water depths approximately 100 to 130 m below CD. The offshore spoil ground covers an area of approximately 23 km² and is bounded by the coordinates shown in Table 4-2 and shown in Figure 4-3.

Table 4-2: Boundary Coordinates (WGS84) of the Sydney Offshore Spoil Ground

Sydney Offshore Disposal Ground	
Latitude (South)	Longitude (East)
33°51.51'S	151°24.07'E
33°52.91'S	151°24.07'E
33°51.01'S	151°27.97'E
33°52.91'S	151°27.97'E

Spoil will be disposed within a sub-site in the north western corner of the Sydney offshore spoil ground, which is bounded by the coordinates shown in Table 4-3 and shown in Figure 4-3.

Table 4-3: Boundary Coordinates (WGS84) of the Sediment Disposal Sub-site within the Sydney Offshore Spoil Ground

Sydney Offshore Disposal Ground - Sediment Disposal Sub-site	
Latitude (South)	Longitude (East)
33°51.51'S	151°24.07'E
33°51.27'S	151°26.02'E
33°52.21'S	151°26.02'E
33°52.21'S	151°24.07'E

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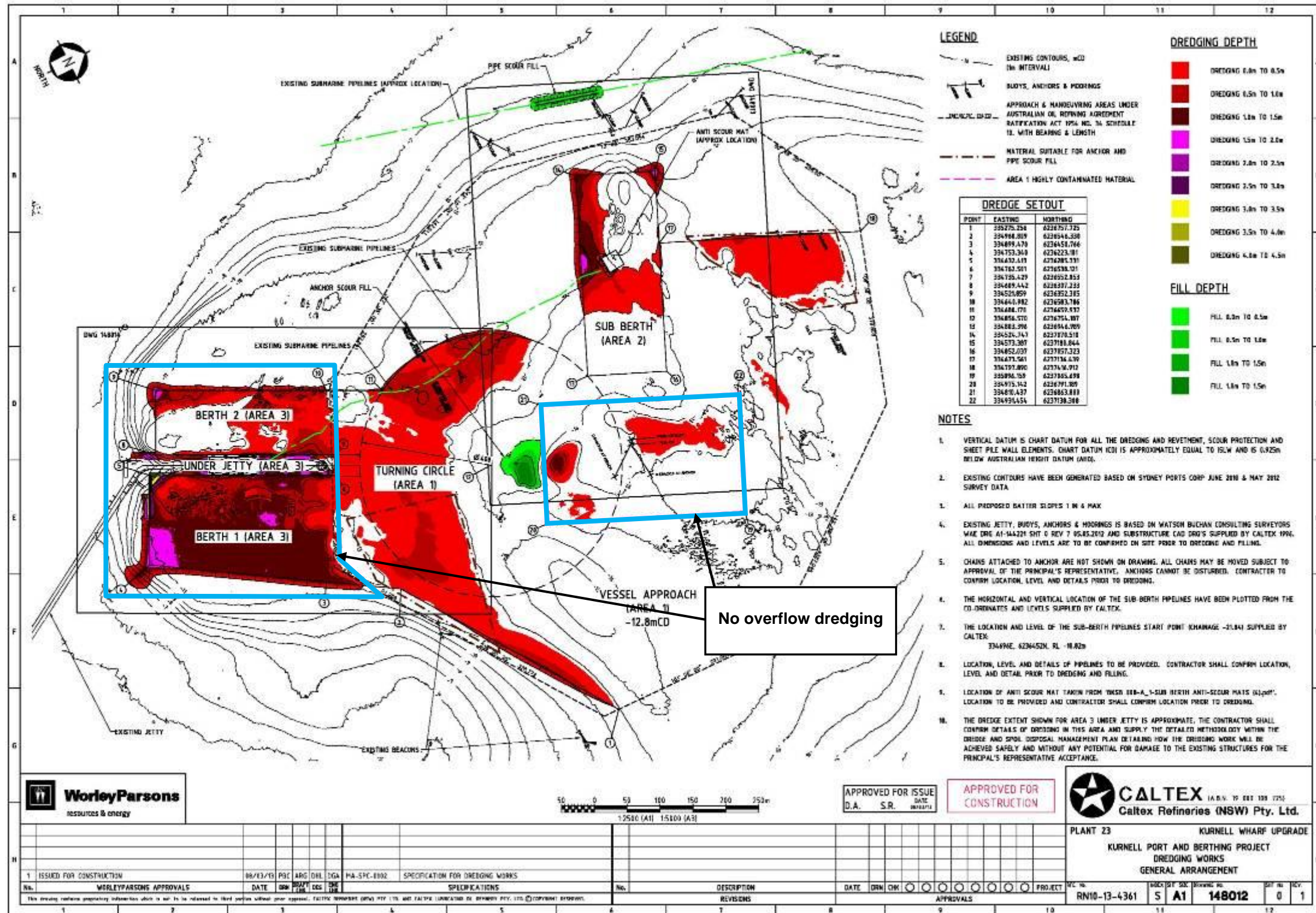


Figure 4-2: Dredge footprint and “no overflow dredging” areas

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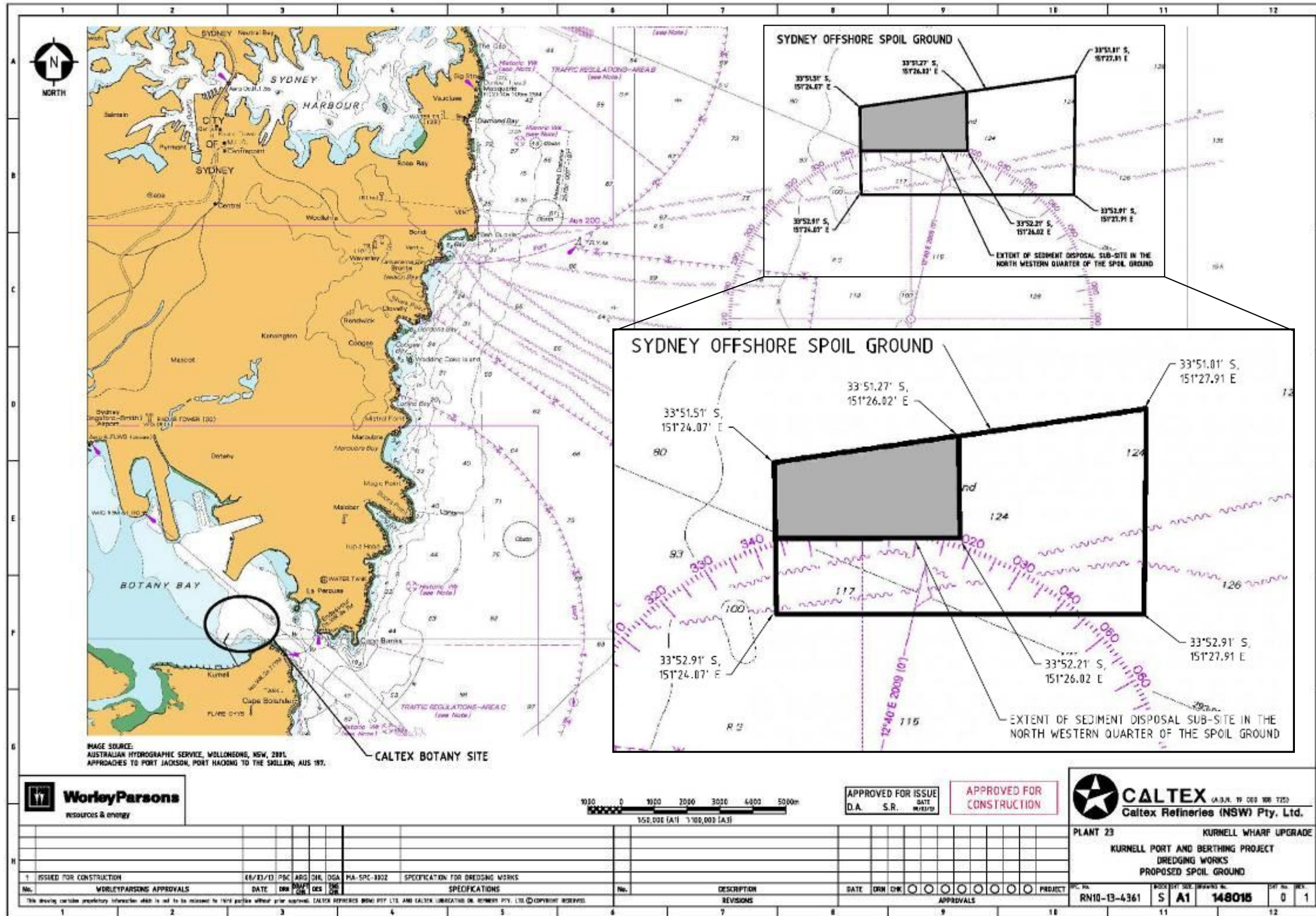


Figure 4-3: Dredge disposal site within Sydney Offshore Spoil Ground



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4.1.1 Equipment

The dredging works will be undertaken using a backhoe dredge (BHD) and unmanned split hopper barges (the hoppers), supported by tug boats.

A backhoe dredger is an hydraulic excavator placed on a pontoon. Dredging is executed by the excavator which sits on a turntable at the front of the pontoon (Figure 4-4). The BHD specifications are as set out in Table 4-4. The main parts of a backhoe dredger are:

- Pontoon
- Hydraulic excavator, consisting of the upper structure (engine, hydraulic pumps, fuel and oil reservoirs, operator's cabin), boom, stick and bucket
- Spud legs and spud carrier. The spud legs provide a stable platform during the dredging cycle. The spud carrier enables the pontoon to move forwards and backwards when the aft spuds are lifted

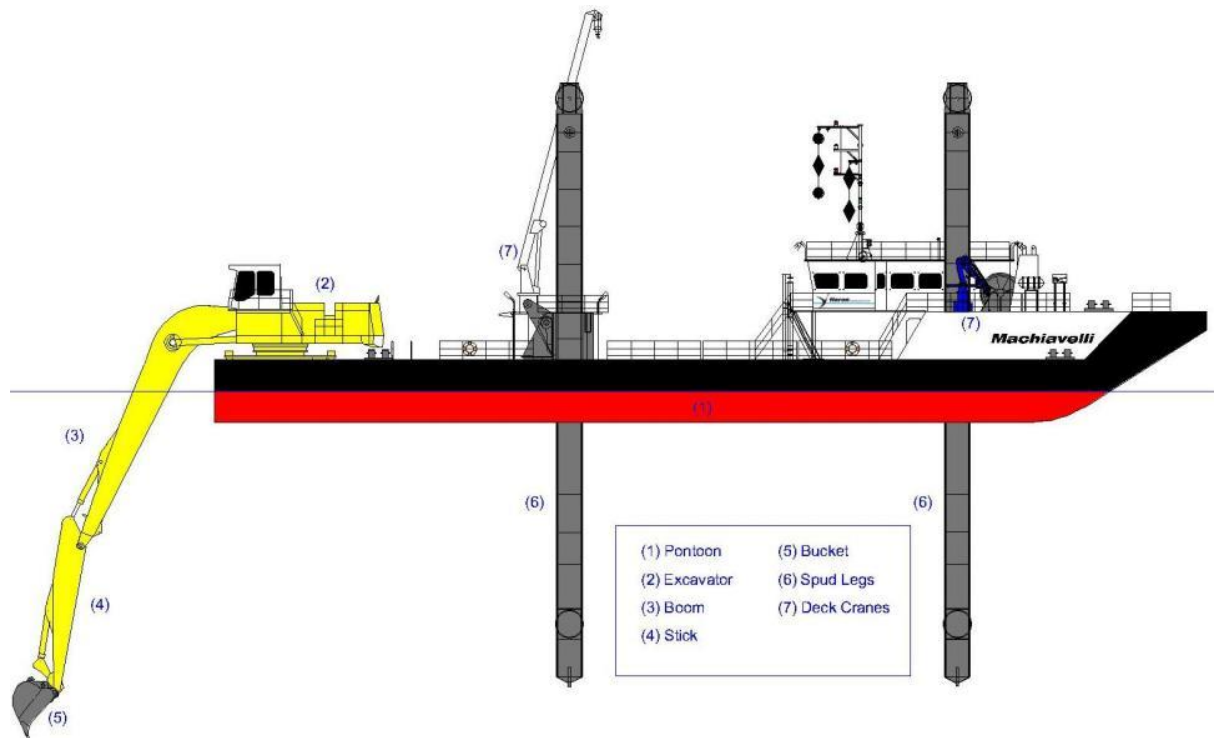


Figure 4-4: General layout of backhoe dredge (BHD) Machiavelli



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Table 4-4: Specifications of backhoe dredge (BHD) Machiavelli

Aspect	Specification	Aspect	Specification
Name:	Machiavelli	Excavator:	Liebherr P994-200
Type:	De Donge 'D' Type Backhoe Dredge	Monobloc (boom) length:	16.0m
Official number:	876411		19.0m
Class:	Bureau Veritas	Stick (dipper) length:	4.0m
Year built/place:	2005, Ismit, Turkey		5.6m
Port of registry:	Auckland, New Zealand		8.0m
Operator/owner:	Heron Construction Co Ltd		9.5m
Gross tonnage:	648	Bucket sizes:	4.0m ³ rock bucket
Displacement:	1200		4.6m ³ ripper bucket
Length overall:	53.0m		5.0m ³ rock bucket
Beam:	15.0m		5.8m ³ soft material bucket
Depth:	3.3m		6.0m ³ rock bucket
Aft spuds:	Two @ 30m long x 60 tonne each		6.8m ³ soft material bucket
Walking spud:	One @ 30m long x 60 tonne in carrier	Dredging Control:	DipMate@2 Seatools system
Spud carrier stroke:	7.5m	Position and height control:	Trimble SPS855 RTK
Jackup capacity:	780 tonnes		GNSS/GPS

It is expected that barges with a capacity to hold 1200 m³ (bulk volume)¹ will be utilised for the dredging works. Barges of this size have sufficient manoeuvrability and draft to access the shallow waters close to the fixed berths.

¹ The number and bulk volume of barges currently proposed differs from that set out in the EIS. This is currently the subject of discussion between Caltex and relevant Government agencies and approval is to be sought for barges with capacity to hold 1200m³ (bulk volume)



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There will be no requirement to stockpile spoil or waste materials (on land) during the works. However, limited construction materials will be set down within the existing storage area along Prince Charles Parade (i.e. within the existing “Right of Way”, which comprises land wholly-owned by Caltex). No waste material will be deposited in this storage area.

The BHD will have a sewage treatment plant which will separate solids from grey water for storage in holding tanks prior to being pumped out via sucker truck as required. Tugs will have a similar setup to the BHD. As the hoppers will be unmanned, no on-board waste treatment or storage is required.

All bilge water on the BHD will pass through an on board oily water separator. Oil will be stored in an oil slops tank, while the water will be held in an oily water tank and emptied as required via sucker truck. Tugs will have bilges pumped out directly via sucker truck as required.

The BHD, tugs and hoppers will not have any ballast water. Accordingly, a Ballast Water and Sediment Management Plan is not required for these vessels.

4.1.2 Methodology

The dredging methodology will involve mechanical digging with the BHD bucket to remove sediments from the seabed and then lifting it through the water column before slewing (transferring) dredged sediments into an adjacent hopper. A silt boom will be installed and maintained around the dredger head to capture sediment that falls into the water across the slewing zone [DCoA C2(b); EPL Condition O3.1]. Following loading, the dredged sediments will be transported to the disposal or reuse area (as relevant) where they will be unloaded by opening the bottom of the split hopper barge and allowing the material to be gradually deposited in the designated area.

To enable continuous dredging and therefore minimise the duration of the works, it is anticipated that two hoppers (and supporting tugboats) will be used on a rotational basis. One hopper will be in the process of being loaded, with the remaining hopper in transit to, or from, the disposal or reuse area. A tugboat will be used to position and manoeuvre each hopper.

The BHD method of dredging enables controlled and accurate dredging to take place around structures. It is therefore appropriate for dredging next to the Kurnell Wharf, as well as across the remainder of the dredge footprint. This method also minimises disturbance to the seabed, in comparison to other dredging options, therefore limiting sediment dispersion and associated impacts.

It is estimated that the works will require the equivalent of between 300 and 500 hopper loads to remove the total volume of dredged sediments, assuming loads taken from the fixed berths contain 30% excess water. This includes the hopper loads that will transfer clean materials to the reuse areas with the remaining loads transferred to the Sydney Offshore Spoil Ground.

On average, approximately 2,000 m³ of material will be dredged from the approaches, turning circle and sub berth per day, while between 850 m³ and 1,000 m³ of material will be dredged from the fixed berths per day. At these rates, it will take approximately 23 weeks to complete the proposed dredging works. A further two weeks will be required for mobilisation and demobilisation (refer Section 4.2).



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There will be short breaks in the dredging program, including to allow for crew change over (assuming two rotational crews, each working 12-hour shifts). As set out in the Submission Report (URS 2013a), this will equate to a minimum two hour break in dredging each day plus one day each week.

Additional short breaks in the dredging program will be required for refuelling, maintenance, servicing, taking on supplies and to accommodate the continued operation of the Kurnell Wharf port and berthing facility. To enable this continued operation of the facility, works may be required to stop or to relocate to other areas within the dredge footprint, when instructed by Caltex.

The majority of dredging will be carried out within the existing Marine Security (exclusion) Zone around the Kurnell Wharf (Figure 4-5). Where dredging and reuse works take place outside the existing Marine Security (exclusion) Zone, a Marine Works Security Zone, with a 50 m radius around the BHD, tugs and hoppers, will be established by Caltex in consultation with Sydney Ports Corporation (SPC) and Roads and Maritime Services (RMS). The Marine Works Security Zone will move as the BHD moves, with the BHD remaining at its centre.

Caltex will communicate the timing and location of the Marine Works Security Zones to the public via the methods set out in Section 7.5 and through a Notice to Mariners (via SPC and RMS).

4.1.3 Off Shore Disposal

In order to dispose the dredged material evenly across the designated Spoil Ground, the Contractor would subdivide the designated Spoil Ground into grids and dispose the material in a sequential manner across the grids.

The Contractor would record the time, location and environmental conditions for each load of dredged material placed into the spoil ground areas together with the position and time for the commencement and completion of each load and any marine fauna sightings. The Contractor would record the track of each load of dredged material placed into the spoil ground areas and would prepare on a weekly basis a drawing summarising all track plots to and from the spoil grounds and during discharge for each dredge load. The GPS position for the start and end point of each discharge would be plotted on the Disposal Plans.



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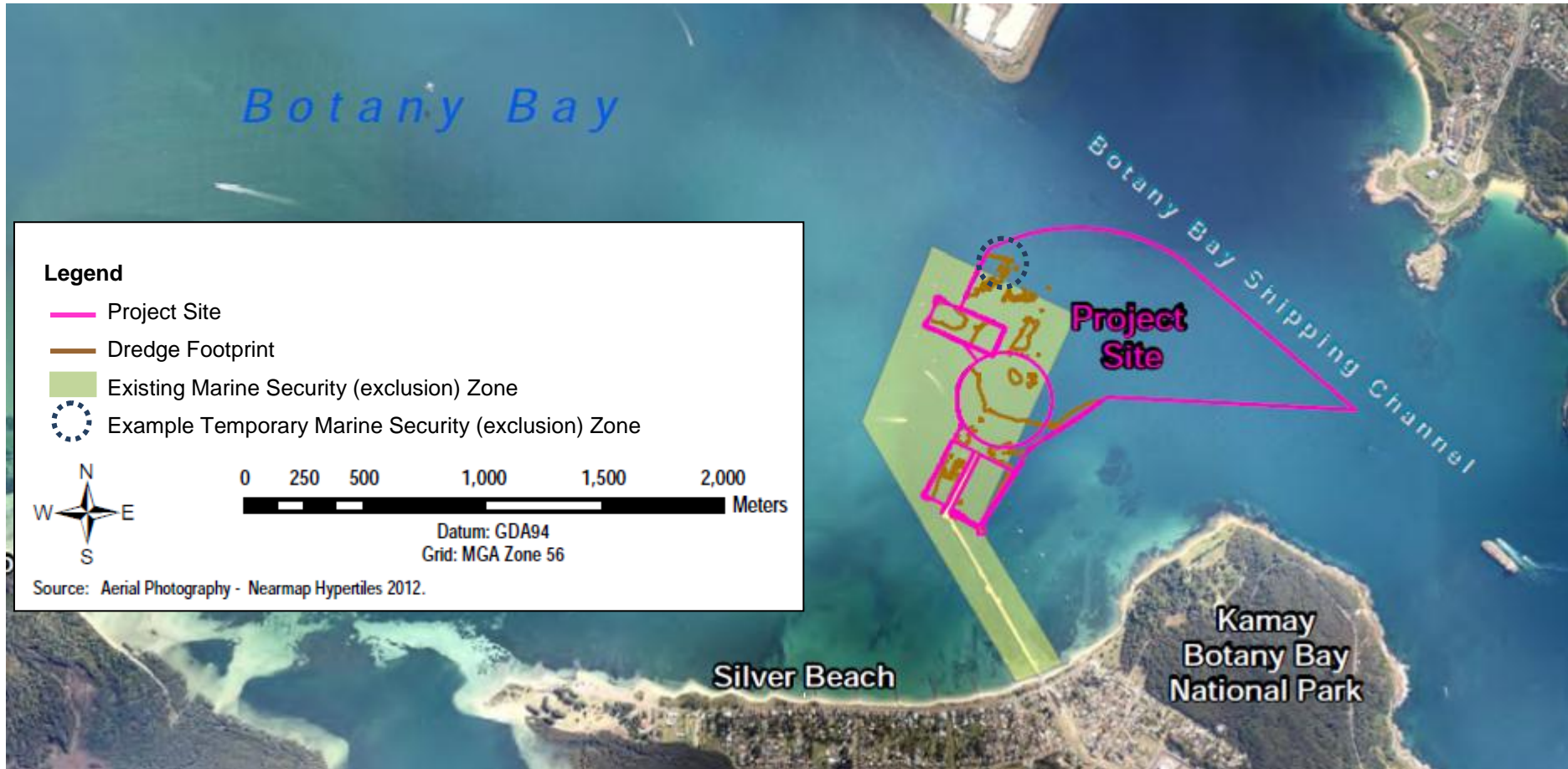


Figure 4-5: Existing and Temporary Marine Security (exclusion) Zones at the Project Site (adapted from URS 2013)



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Overflow Dredging

The proposed dredging, using a BHD, results in sediment and water being loaded into the split hopper barge. To ensure efficient dredging operations overflow dredging will be undertaken. Overflow dredging involves the displacement of water from the split hopper barges as sediments are loaded to the maximum barge capacity. Overflow dredging reduces the number of barge movements and reduces the duration of the works. Overflow dredging will be carried out in the approaches, sub berth and the turning circle. Overflow dredging allows the majority of excess water to overflow from the side of the hopper prior to the materials being transported to the disposal site.

Overflow dredging will not be undertaken within the fixed berths and in the front (immediately east) of the submarine berths due to the presence of sediments with elevated concentrations of tributyltin (TBT) and potential turbidity generating peat [DCoA C2]. The areas in which overflow dredging is not permitted are shown on Figure 4-2. The coordinates of the areas in which overflow dredging is not permitted are provided in Table 4-5.

Table 4-5: Coordinates (WGS84) of the areas in which Overflow Dredging is Not Permitted

No Overflow Dredging - Fixed Berth #1 and Fixed Berth #2	
Latitude (South)	Longitude (East)
33°59.94'S	151°12.78'E
34°00.14'S	151°12.65'E
34°0.05'S	151°12.45'E
33°59.88'S	151°12.55'E
33°59.96'S	151°12.72'E
No Overflow Dredging - In Front (Immediately East) of the Sub Berth	
Latitude (South)	Longitude (East)
33° 59.64'S	151° 12.87'E
33° 59.79'S	151° 12.79'E
33° 59.75'S	151° 12.69'E
33° 59.60'S	151° 12.77'E

4.2 Project Program

Dredging is one of the major components of work for the overall Project. Dredging activities are anticipated to be completed within approximately 23 weeks commencing in the third quarter (Q3) of 2013. Draft Condition of Approval B5 permits dredging for a period of no more than six (6) months, unless otherwise agreed to in writing by the Director General. Accordingly, dredging must not be



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carried out by the Contractor for more than 23 weeks without the prior written approval of Caltex who must first obtain the written approval of the Director General.

Dredging works, including operation of the BHD and tug boats, will utilise approximately 30 personnel, working 12-hour shifts over the approximately 23 week dredging program.

The approximate Project program is shown in Table 4-6.

Table 4-6: Approximate Project program

Works	Duration	2013			2014			2015		
		Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2
Dredging Works (excluding one week mobilisation / one week demobilisation)	23 weeks		■	■	■					
Reuse Works	1 week		■							
Sheet Piling Works	8 weeks		■	■						
Rock Revetment and Scour Protection Works	6 weeks			■	■					
Kurnell Wharf Infrastructure Upgrade Works										
Loading Arms Installation and Manifold Installation	12 weeks			■	■					
Mechanical Loading Arm Removal and New Tie-ins	12 weeks							■	■	
Quick Release Hooks	16 weeks			■						
Fire System	8 weeks						■	■		
Installation of Dolphins, Moorings and Piling	20 weeks (approx.)						■	■	■	■
Sub Berth Upgrade Works	20 weeks (approx.)				■	■				



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5 ENVIRONMENTAL RISKS

The Environmental Risk Register within the EIS will be reviewed as required in response to incidents, changes in legal requirements, changes in Project scope, findings of inspections and audits and management reviews.

At a task level, a Job Safety and Environmental Analysis (JSEA) or equivalent will be used by all personnel to identify potential risks and appropriate control measures prior to the commencement of any task.



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6 LEGAL AND OTHER REQUIREMENTS

The dredging works will comply with all relevant Commonwealth and State legislative and regulatory requirements. Copies of relevant licences, approvals and permits will be held on site and in relevant project offices and also on the Caltex intranet site.

All dredging works will be carried out in accordance with the relevant requirements of:

- State Significant Development approval under the NSW *Environmental Planning and Assessment Act 1979*
- Permission to lodge (landowners consent) under the NSW Environmental Planning and Assessment Regulation 2000
- Harbor Master Approval under the NSW Management of Waters and Waterside Lands Regulations 1972
- Environment Protection Licence (EPL) issued for miscellaneous licensed discharge to waters (at any time) under the NSW *Protection of the Environment Operations Act 1997*
- Remediation action plan (RAP) under *State Environmental Planning Policy No 55 - Remediation of Land*
- A dredging licence under the NSW *Marine Services Act 1998*
- A permit to sea dump under the Commonwealth *Environmental Protection (Sea Dumping) Act 1981*

This DSDMP and related Project procedures will be updated if necessary to incorporate future approvals and related conditions imposed on the Project.



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7 DSDMP IMPLEMENTATION

7.1 Responsibilities and Authorities

Overall responsibility for the implementation of this DSDMP rests with Caltex. All employees and the Contractor will meet the requirements of this DSDMP and associated procedures. Management actions set out in this DSDMP may be delegated in writing by Caltex to the specific Contractor.

Key Project personnel including the Caltex Project Manager, Caltex Dredging Supervisors, Caltex Environmental Management Representative (EMR), Environmental Representative, Contractor Project Manager and each Contractor's Environment / HSE Representative, will ensure that all management actions are undertaken to a satisfactory standard and that all personnel are aware of their responsibilities with respect to environmental matters. There will be dedicated staff to manage environmental issues (or integrated HSE matters) during dredging. A general outline of responsibilities in relation to environmental management is provided below:

Caltex Project Manager

- Overall accountability for the environmental management of the Project.
- Implementation of the Caltex Environmental Policy with respect to the Project.
- Overall responsibility for development, implementation, maintenance and compliance with this DSDMP.
- Ensure a suitably qualified and experienced Environmental Representative is approved by the Director General prior to the commencement of construction and employed for the duration of construction (including dredging) [DCoA C34].
- Ensure the approved Environmental Representative is given the authority and independence required to carry out the responsibilities set out below [DCoA C34].
- Ensure contracts contain relevant environmental provisions.
- Review and sign off on this DSDMP and subsequent revisions.

Caltex Dredging Supervisors

- Accountable for dredging related environmental matters within the scope of their work packages.
- Ensure the requirements of this DSDMP are implemented in relation to their work packages.

Caltex Environmental Management Representative (EMR)

- Accountable for dredging related environmental matters on the Project.
- Provide support to Caltex personnel and the Contractor as required to ensure this DSDMP is implemented and complied with.



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- Provide advice to the Caltex Project Manager and Caltex Dredging Supervisors to ensure compliance with legal requirements, achievement of environmental objectives and continual improvement in environmental performance.
- Review effectiveness and implementation of this DSDMP.
- Review Contractor environmental management plans and registers, as required by this DSDMP, to ensure environmental risks and opportunities are identified and managed.
- Monitor the implementation of all required environmental management actions and compliance with legislation.
- Undertake environmental auditing as required.
- Implement *Protection of the Environment Operations Act 1997* (POEO Act) notification requirements in the event of a pollution incident (these requirements can be delegated to appropriate personnel by the EMR).
- Regularly liaise with the Environmental Representative (where the roles of the Caltex Environmental Management Representative and the Environmental Representative are filled by different people).

Environmental Representative [DCoA C34]

- Principal point of advice in relation to the environmental performance of the Project.
- Monitor the implementation of environmental management plans and monitoring programs required under the Development Consent (SSD_5353) and advise the Caltex project Manager upon the achievement of these plans and programs.
- Advise Caltex on matters specified in the Development Consent (SSD_5353) and other licences and consents related to the environmental performance and impacts of the Project.
- Review and confirm whether works associated with the Project are classified as Construction (or not) under the Development Consent (SSD_5353) and if classified as Construction, advise on the relevant pre-Construction and Construction requirements that the works would be subject to under the consent.
- Approve or reject “minor amendments”² to the DSDMP. The Environmental Representative will consult with the Director General where uncertain as to whether an amendment to the DSDMP constitutes a “minor amendment”.
- Require reasonable steps be taken to avoid or minimise unintended or adverse environmental impacts and failing the effectiveness of such steps, direct that relevant actions be ceased immediately should an adverse impact on the environment be likely to occur.

² Refer to definition of “minor amendments” in the Glossary.



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- Be consulted in responding to the community concerning the environmental performance of the Project where the resolution of points of conflict between Caltex and the community is required.
- Regularly liaise with the Caltex Environmental Management Representative (where the roles of the Caltex Environmental Management Representative and the Environmental Representative are filled by different people).

Caltex Emergency Response Team

- Implementation of the Emergency Response Plan in the event of an incident, including a pollution incident.
- Provide assistance to emergency services in notifying the community and businesses in the event of an incident.

Caltex Emergency Controller

- Responsible for the overall control of the emergency.
- Authorise the allocation of resources and direction of actions.

Contractor Project Manager

- Overall responsibility for the development and implementation of the Contractor's own Project specific DSDMP (if not adopting this DSDMP).
- Ensure compliance with the requirements of this DSDMP throughout its works.
- Appoint an Environment or HSE Representative.

Contractor Environment / HSE Representative

- Implement this DSDMP or the Contractor's own DSDMP and related procedures.
- Comply with the requirements of this DSDMP.
- Report fortnightly to the Caltex EMR on environmental performance, as required by this DSDMP.

All Dredging Personnel (Caltex and the Contractor)

- Comply with the requirements of this DSDMP.
- Report all environmental incidents as they occur.
- Attend environmental inductions or any other training as required.



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7.2 Induction

Caltex has a site induction program that all contractors and employees are required to complete prior to undertaking any work. In addition to the standard site induction Caltex will develop and deliver a Project specific induction for all contractors and staff associated with the dredging work. The Project specific induction will include the requirement for mandatory compliance with this DSDMP by all personnel involved in dredging activities and include emergency procedures for the Project site.

All Caltex employees and the Contractor are required to undertake the Caltex Project Induction before they can commence work on the Project.

7.3 Training

All Project personnel will have the experience and necessary training to carry out their required tasks, including in the use of equipment and the implementation of the DSDMP.

Relevant Caltex and Contractor personnel will undergo training, to be provided by Caltex, in the implementation of this DSDMP. This will include awareness of current Caltex environmental measures, including the appropriate use and maintenance of equipment.

Specific environmental training will be provided as relevant by Caltex, or delegated to relevant the Contractor, including:

- Relevant existing Caltex environmental management measures
- Spill kit use and management (refer Section 8.1)
- Marine fauna sighting, including the identification of marine turtles, cetaceans, pinnipeds and dugongs (refer Section 8.4)

The Contractor will implement appropriate training to ensure its personnel are aware of their environmental responsibilities, including requirements set out in this DSDMP.

Caltex and the Contractor will each maintain a Training Register that records all environmental training completed by its personnel, including records of attendance at awareness training and toolbox talks, as well as competency assessments.

7.4 Internal Communication

Internal communications will include discussions, electronic communications and printed material as required. Caltex has communication systems in place that will be used as appropriate during the Project.

All environmental issues including incidents and near misses, as well as all health and safety incidents and near misses, will be raised as a regular component of toolbox talks, site meetings and transmitted electronically as necessary.



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7.5 External Communication

Caltex is responsible for external communication in relation to matters concerning the environment. This includes but is not limited to communications with the media and government agencies and particularly in relation to external reporting of incidents that may have occurred. This excludes emergency calls, which may be made by anyone.

Caltex has prepared a Community Consultation Plan that will be implemented during the Project. Caltex's consultation activities will continue regularly throughout dredging. This will involve meetings and letter box drops to the closest residents and user groups to describe the nature of the works, and to offer opportunity to feedback (refer Section 7.6). Information will be provided on Project updates, the program of works, scheduling of noise-generating activities and any atypical disruption or changes not anticipated in the EIS. Specific consultation will be undertaken to inform residents and users of Silver Beach of the dredging works, including night time and weekend works.

External communication in response to emergencies and incidents is detailed in Section 7.6.

7.6 Incident Management

Caltex will continue to implement its existing incident management procedures, including for response to, investigation and reporting of incidents.

A comprehensive Emergency Management System is currently implemented at the Kurnell Refinery, with associated response and safety equipment held on site. Key personnel are trained to support the implementation of the system. Regular training exercises are carried out by Caltex. The composition of the Caltex Emergency Management System is shown in Figure 7-1.



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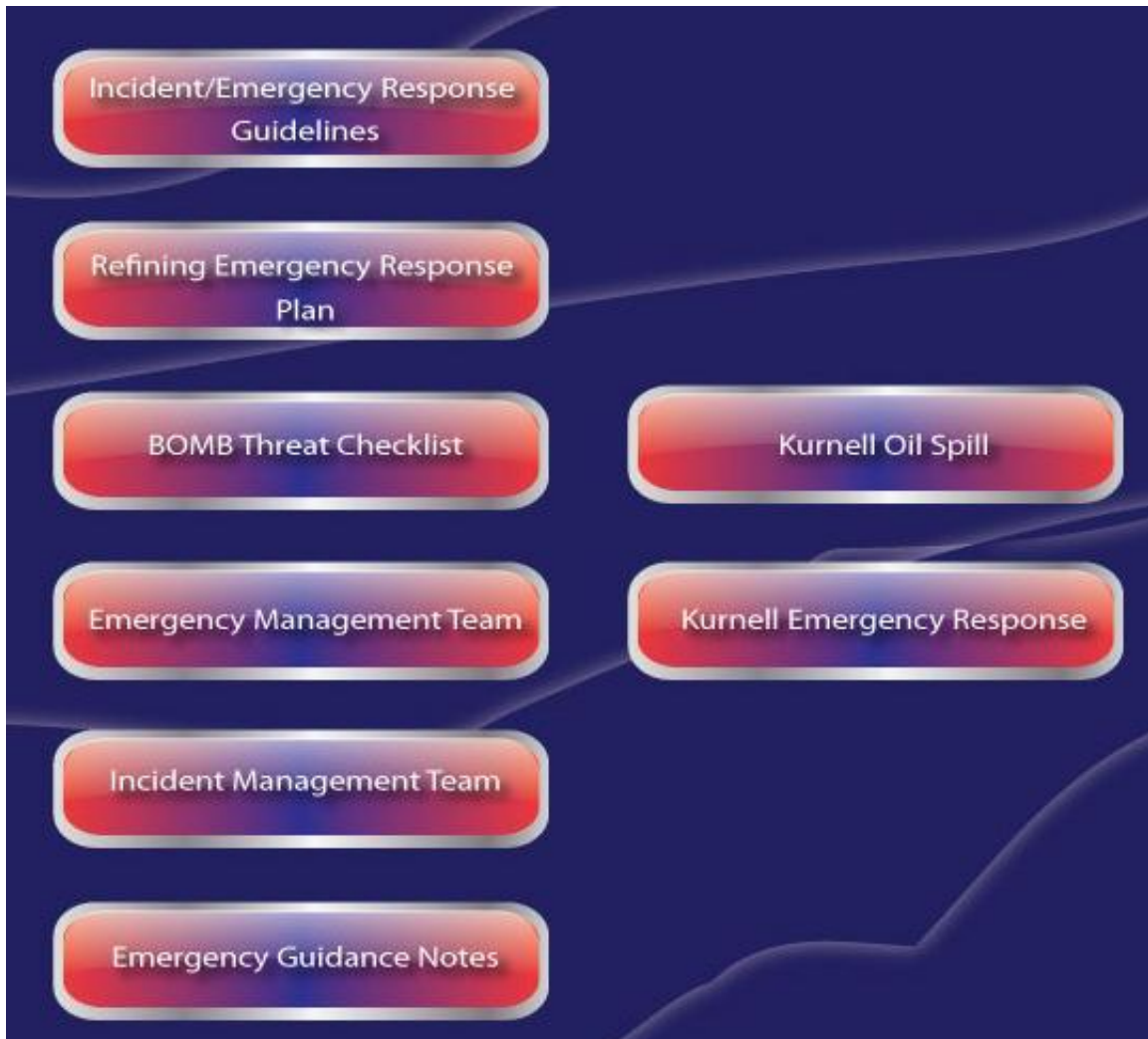


Figure 7-1: Caltex Emergency Management System Framework (source: Caltex Refinery PIRMP)

The POEO Act also requires that the holder of an Environment Protection Licence (EPL) prepare a Pollution Incident Response Management Plan (PIRMP). Accordingly, Caltex has developed and implements a PIRMP for the Kurnell Refinery.

The objectives of the Kurnell Refinery PIRMP are to:

- Ensure timely reporting of pollution incidents to: staff on the premises, the NSW Environment Protection Authority (EPA), Fire and Rescue NSW, NSW Ministry of Health, WorkCover NSW, local councils and people outside of the facility that may be affected by a pollution incident
- Minimise and control the risk of a pollution incident at the facility by requiring identification of risks and the development of planned actions to minimise and manage those risks



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- Ensure that the plan is properly implemented by trained staff, identifying persons responsible for implementing it, and ensuring that the plan is regularly tested for accuracy, currency and suitability

The relevant requirements of the Kurnell Refinery PIRMP have been incorporated into this DSDMP. However, the responsibility for implementation of the POEO Act notification requirements in the event of a pollution incident has been placed on the Caltex EMR.

In the event of an incident or emergency situation, the relevant parts of the Caltex Emergency Management System Framework will be implemented. Dredging works in the immediate area will cease immediately. The Caltex EMR will be contacted immediately and if required, emergency services will also be contacted.

In the event of an emergency, the Caltex EMR will notify the Refineries Emergency Response Team (ERT), who will implement the relevant parts of the Refinery Emergency Response Plan (STD 4.02.01.01). If required, the Caltex EMR will also notify the Kurnell Refinery Oil Spill Response Team (KROSRT), who will implement the relevant procedures within the Caltex Oil Spill Response Manual.

In the event of a spill the Contractor will undertake all relevant actions to contain the spill. Where the release of any pollutant occurs, the responsible Contractor will conduct a clean-up and remediation of the affected area to the satisfaction of Caltex.

Caltex will notify the Director General of any incident with actual or potential significant off-site impacts on people or the biophysical environment within 24 hours of becoming aware of the incident. Caltex will provide full written details of the incident to the Director General within seven days of the date on which the incident occurred [DCoA D8].

Caltex will meet the requirements of the Director General to address the cause or impact of any incident, as it relates to the Development Consent (SSD_5353), reported in accordance with Draft Condition of Approval D8, within such period as the Director General may require [DCoA D9].

The POEO Act notification requirements will be implemented by Caltex in response to any pollution incident that is causing or threatening material harm to the environment³, as set out below and in Section 8.1.

³ Section 147 of the POEO Act defines the meaning of material harm to the environment as follows:

(1) For the purposes of this Part:

(a) harm to the environment is material if:

(i) it involves actual or potential harm to the health or safety of human beings or to ecosystems that is not trivial,
or

(ii) it results in actual or potential loss or property damage of an amount, or amounts in aggregate, exceeding \$10,000 (or such other amount as is prescribed by the regulations), and

(b) loss includes the reasonable costs and expenses that would be incurred in taking all reasonable and practicable measures to prevent, mitigate or make good harm to the environment.

(2) For the purposes of this Part, it does not matter that harm to the environment is caused only in the premises where the pollution incident occurs.



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Caltex will implement the POEO Act notification requirements, in the following order:

1. Call 000 if the incident presents an immediate threat to human health or property
2. Notify the EPA (131 555)
3. Notify the Ministry of Health via the local Public Health Unit (9382 8333)
4. Notify WorkCover (131 050)
5. Notify Sutherland Shire Council (9710 0333)
6. Notify Fire and Rescue NSW (1300 729 579)

The relevant information to be given, as required under the POEO Act when notifying the pollution incident to the regulatory authorities is as follows:

- a) Time, date, nature, duration and location of the incident
- b) Location of the place where pollution is occurring or is likely to occur
- c) The nature, the estimated quantity or volume and the concentration of any pollutants involved, if known
- d) The circumstances in which the incident occurred (including the cause of the incident if known)
- e) Action taken or proposed to be taken to deal with the incident any resulting pollution or threatened pollution, if known
- f) When the information relating to items c), d) or e) is not known at the time of verbal notification, this information must be provided once it becomes available

Complying with these notification requirements does not remove the need to comply with any other obligations for incident notification, for example, those that apply under other environment protection legislation or legislation administered by WorkCover.

It should be noted that the definition of “pollution incidents” under the POEO Act excludes noise. Odour is not required to be reported as a pollution incident under Part 5.7 of the POEO Act. Additionally, a person is not required to notify an incident if the incident is an ordinary result of action required to be taken to comply with an EPL, an Environment Protection Notice or other requirement of or made under the POEO Act.

All personnel on site at the refinery (employees and contractors) will also be informed of a site emergency that can include a pollution incident immediately via the Emergency Alarm, the public broadcast system and/or via electronic communication.

Members of the Kurnell Emergency Response Team and other personnel involved with the implementation of the emergency response plan related to the pollution incident will be notified by Pager and/or SMS as soon as the emergency has been identified.



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As the refinery is located in close proximity to the community and businesses, the Caltex Emergency Response Team will provide assistance to emergency services in notifying the community and businesses in the event of an incident.

If necessary, prior to the arrival of emergency services this notification role will be delegated by the Caltex Emergency Controller. Communications tools such as phone calls, door knocking and letter box drops will be considered, as appropriate for the incident and its impact.

7.7 Complaint Management

Caltex has a complaint management procedure for the investigation, response and reporting of complaints.

Caltex manages all community complaints in accordance with the requirements of the EPL issued for miscellaneous licensed discharge to waters (at any time) and EPL No. 837, including:

- Reporting complaints in the Annual Return for the relevant EPL
- Keeping a legible record of all complaints made to Caltex and its Contractors, including:
 - 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
 - The action taken by Caltex in relation to the complaint, including any follow-up contact with the complainant
 - If no action was taken by Caltex, the reasons why no action was taken
- The complaints record must be produced to any authorised officer of the EPA who asks to see it
- The complaints record must be kept for at least four years after the complaint was made
- Caltex must operate, during its operating hours, a telephone complaints line for the purpose of receiving any complaints from members of the public in relation to activities conducted at the premises or by the vehicle or mobile plant, unless otherwise specified in the licence
- Caltex must notify the public of the complaints line telephone number and the fact that it is a complaints line so that the impacted community knows how to make a complaint

Caltex will operate its 24-hour hotline telephone number, a postal address and an email address (as below) to receive feedback and complaints associated with the Project.



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Complaints, enquires and feedback regarding the Project can be made through the following channels [DCoA D3; DCoA D6(g); EPL Condition M5.1]:

- 24-hour telephone number: 1800 802 385 toll free
- Email address: kurnell@caltex.com.au
- Postal address: Caltex Refineries (NSW) Pty Ltd
Locked Bag 2000
Taren Point NSW 2229

All feedback and complaints will be relayed to the Caltex EMR and relayed to the Refinery Manager, Community Relations Manager and the Environmental Protection Superintendent, as relevant depending on their nature.

Any feedback and complaint records will be logged in the Complaints Register, tracked and where relevant, responded to. Responses to complaints will be made, where reasonably possible, within 48 hours of receiving the complaint.

7.8 Audit and Compliance Management

Regular audits, including independent audits, will be carried out to confirm compliance with environmental policies and standards.

Project site audits will be conducted according to the Project Audit Schedule. The Project Audit Schedule will detail proposed dates for the audits and inspections at all work sites across the Project and the personnel involved in the audits and inspections. The Project Audit Schedule will be a live document and will be modified from time to time to suit the changing dredging activities and risks. The Project Audit Schedule will be risk based and higher risk activities will be the subject of increased audits and inspections.

Audits may be conducted as integrated HSE audits or specific environmental audits. The Contractor will conduct environmental or integrated HSE audits at least monthly. The Contractor will submit copies of completed audit forms to the Caltex EMR on a monthly basis.

In addition to Contractor audits, independent audits will be undertaken by WorleyParsons to ensure compliance of dredging activity with the Management Plans. Initial audits will be conducted on a weekly basis for the first two weeks, subsequent audits will be integrated into the Project Audit Schedule (at least monthly).

Implementation of this DSDMP will be audited by Caltex within four weeks of the commencement dredging works.

Audit findings will be recorded in a Corrective Actions Register for action and close out. The Corrective Actions Register will detail the source of the action (i.e. audit, inspection or other), the action required, target close out date, actual close out date and the person responsible for the action item.



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7.8.1 External Audits

External audits and inspections of the Project may be conducted by government agencies to ensure compliance with permits and licences as well as commitments made in the Project EIS and Submissions Report. For such audits and inspections, the Caltex EMR will accompany the auditors at all times.

The findings and recommendations arising from external audits will be recorded in the Corrective Actions Register and managed to close out in agreed timeframes.

Personnel will be notified of known upcoming external audits and inspections through notification on the central notice board and through the relevant Manager.

7.8.2 DSDMP Review

This DSDMP is based on the relevant information and requirements set out in the Project EIS (URS 2013), Submissions Report (URS 2013a), Draft Development Consent (DP&I 2013) and Draft EPL issued for miscellaneous licensed discharge to waters (at any time).

Any relevant changes between the draft and final conditions of development consent and the EPL must be incorporated into the DSDMP. Relevant conditions of the Sea Dumping Permit must also be incorporated into the DSDMP.

This DSDMP will be reviewed in response to audits, incidents and changes to the scope of works, as relevant. Any changes will be formally communicated by Caltex to all dredging personnel.



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8 ENVIRONMENTAL PROCEDURES

Specific control measures required to undertake the dredging works are set out in Sections 8.1 to 8.10. These measures will be complied with by all Caltex personnel and the Contractor as relevant. The Performance Objectives, Management Actions, Performance Indicators, Monitoring, Reporting and Corrective Actions set out in the following sections that are required by the EIS (URS 2013) are marked with an asterisk (*). Additional requirements set out in the Submissions Report (URS 2013a) are marked with a cross (†).

All activities must be carried out in a competent manner. Suitable equipment, facilities, training, work practices and other necessary precautions will be taken to minimise impacts to the environment and the risk of pollution. All plant and equipment installed used for the Project must be maintained in a proper and efficient condition and operated in a proper and efficient manner at all times.

Caltex will monitor the Department of Planning and Infrastructure Major Project Assessments, Sutherland Shire Council, Randwick City Council, Rockdale City Council and Botany Bay Council websites to identify other development activities that are approved to take place within Botany Bay and coincide with dredging. Caltex will assess, and where identified, advise the Contractor of any additional measures required to manage interactions or cumulative impacts from concurrent development activities [DCoA C35(e)(xi)].

All Caltex and Contractors personnel will implement reasonable and practicable measures to avoid or minimise impacts to the environment that may arise from the Project. All Caltex and Contractors personnel will ensure that work is performed in a way that minimises impacts on the natural environment and complies with this DSDMP and related procedures, relevant legislation, regulations and rules, Project licences, approvals and Project commitments made by Caltex.



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8.1 Sediment and Water Quality

Element	Sediment and Water Quality
Performance Objectives	<p><i>To prevent the pollution of water and the generation of excessive turbidity.</i></p> <p><i>To minimise the environmental impact of any spills and excessive turbidity that occur.</i></p>
Management Actions	<ul style="list-style-type: none">▪ The contractor will implement all feasible and reasonable mitigation and management measures for the duration of dredging to minimise the dispersion of dissolved and sediment-bound TBT and suspended sediment concentrations outside the Project site during dredging [DCoA C2].▪ Dredging activities will be restricted to locations and depths shown on the dredging plan at Figure 4-2.*▪ Caltex will provide the data shown in Figure 4-2 to the Contractor for input into its positioning system.▪ An accurate positioning system (e.g. GPS) will be used on the BHD and tugs to ensure direct impacts are restricted to the approved dredging, reuse and disposal areas and to minimise over-dredging.*▪ A silt boom will be installed and maintained around the dredger head to capture sediment that falls into the water across the slewing zone [DCoA C2(b); EPL Condition O3.1].▪ Care must be taken with the installation and maintenance of the silt boom to ensure that there are no gaps at the ends, or in the fabric, or in the floating boom [EPL Condition O3.1].▪ Adequate freeboard will be maintained to ensure the decks of the BHD are not washed by wave action.*▪ Overflow dredging is not permitted within the fixed berths or in front (immediately east) of the sub berth due to the presence of sediments with elevated concentrations of tributyltin (TBT) and potential turbidity generating peat [DCoA C2(a); EPL Condition 3.2].*▪ Sediments will be lifted and loaded so as to prevent excessive disturbance and agitation, whilst also preventing excessive spillage.*



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Element	Sediment and Water Quality
	<ul style="list-style-type: none">▪ Where overflow dredging is carried out, the BHD will be operated in a manner that minimises the volume of water lifted onto the hopper and thus the volume of water that overflows.▪ Where overflow dredging is carried out, dredged sediments will be placed into the hopper in a manner that minimises splash and allows even overflow from the hopper.▪ Any excess dredged sediment not cleanly loaded into the hopper will be actively washed into the hopper.*▪ Excess materials will be cleared from the decks before the BHD is moved.*▪ Spoil will be disposed of within the sub-site in the north western corner of the Sydney offshore spoil ground, which is bounded by the coordinates shown in Table 4-3 and shown in Figure 4-3.▪ Dredged material should be disposed evenly over the sub-site.▪ All dredging activities will be conducted using equipment in good working order that is registered and regularly maintained and serviced.*▪ Hopper doors will be kept in good condition to minimise loss of sediment during transport.*▪ Regular servicing and maintenance of dredging equipment will be scheduled and carried out by the relevant Contractor.*▪ Ships used during dredging works will be subject to the controls to limit pollution and spill risks currently in place for ships berthing at the Kurnell Wharf.*▪ The Contractor will ensure its activities conform to the requirements of the MARPOL Convention, with regard to the statutory controls placed on ships to prevent marine pollution.*▪ Except as expressly provided in the EPL issued for miscellaneous licensed discharge to waters (at any time), the Contractor will ensure their activities conform to the pollution prevention requirements set out under Section 120 of the POEO Act [DCoA C1; EPL Condition L1.1].*▪ Caltex will make all the Contractor aware of Caltex's Emergency Response Plan (STD 4.02.01.01) and Oil-spill Callout and Response Work Procedure (PROC 120.05.001).



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Element	Sediment and Water Quality
	<ul style="list-style-type: none">▪ The Contractor will be familiar with and adhere to the Caltex Emergency Response Plan (STD 4.02.01.01) and Oil-spill Callout and Response Work Procedure (PROC 120.05.001).*▪ Personnel trained in oil spill response will be available at all times throughout the dredging works.*▪ Appropriate spill kits will be available on-board the BHD and tug boats actively involved in the dredging works.*▪ Spill kits will be tailored to the type and volume of potential spills and will include, as a minimum:<ul style="list-style-type: none">• Absorbent pads• Spill containment booms• Personal protective equipment• Contaminated waste bags and ties• Instruction sheets▪ In the event of a spill, the Contractor will undertake all relevant actions to stop the spill at its source, minimise and contain the spill as soon as possible.▪ Spilt material will be recovered, where possible, and contaminated spill recovery materials will be collected and disposed of at an appropriate licensed facility.▪ In the event of an unplanned overflow, spill, incident or emergency, dredging activities in the immediate area will cease immediately.*▪ In the event of an unplanned overflow, spill, incident or emergency, the Caltex EMR and if required, emergency services (000), will be contacted immediately.▪ In the event of a spill, incident or emergency, the Caltex EMR will notify the Refineries Emergency Response Team (ERT) and/or the Kurnell Refinery Oil Spill Response Team (KROSRT), as relevant.▪ The Refineries ERT will implement the relevant parts of the Refinery Emergency Response Plan (STD 4.02.01.01).



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Element	Sediment and Water Quality
	<ul style="list-style-type: none">▪ The KROSRT will implement the relevant procedures within the Caltex Oil Spill Response Manual.▪ Where the release of any pollutant occurs, the responsible Contractor will conduct a clean-up and remediation of the affected area to the satisfaction of Caltex.▪ Where a pollution incident occurs that is causing or threatening material harm to the environment⁴, Caltex will implement the POEO Act notification requirements, in the following order:<ol style="list-style-type: none">1. Call 000 if the incident presents an immediate threat to human health or property2. Notify the EPA (131 555)3. Notify the Ministry of Health via the local Public Health Unit (9382 8333)4. Notify WorkCover (131 050)5. Notify Sutherland Shire Council (9710 0333)6. Notify Fire and Rescue NSW (1300 729 579)*▪ In the event of a spill that requires use of spill kits or deployment of booms, the Caltex EMR will notify Sydney Ports Corporation (SPC) as soon as practicable.▪ Following an unplanned overflow, spill, accident or emergency situation, the Contractor will undertake any relevant required repairs and modify their working methods as appropriate.*

⁴ Section 147 of the POEO Act defines the meaning of material harm to the environment as follows:

(1) For the purposes of this Part:

(a) harm to the environment is material if:

(i) it involves actual or potential harm to the health or safety of human beings or to ecosystems that is not trivial,
or

(ii) it results in actual or potential loss or property damage of an amount, or amounts in aggregate, exceeding \$10,000 (or such other amount as is prescribed by the regulations), and

(b) loss includes the reasonable costs and expenses that would be incurred in taking all reasonable and practicable measures to prevent, mitigate or make good harm to the environment.

(2) For the purposes of this Part, it does not matter that harm to the environment is caused only in the premises where the pollution incident occurs.



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Element	Sediment and Water Quality
	<ul style="list-style-type: none">▪ The Contractor will develop and implement a works-specific Spill Control Plan (SCP) that incorporates the requirements of this DSDMP and the following:<ul style="list-style-type: none">• The requirement for staff to understand the limitations, controls, and methods to manage and prevent spills• The protocol for reporting spills and the consequential actions to cease works immediately• The need for regular inspections by the Contractor to ensure the adoption of the relevant spill-management controls• The need to plan for regular equipment maintenance• The requirement for spill containment provisions to be available to support the proposed works*▪ Relevant Contractor personnel will be trained in the implementation of the SCP, including the use and management of spill kits and booms. The training will also include the limitations, controls and methods to prevent and manage spills.*▪ Personnel trained in implementation of the SCP will be required to confirm (by signing the Training Register) that they understand the limitations, controls and methods to prevent and manage spills, as set out in the training provided.▪ Caltex will implement the Sediment and Water Quality Management Plan (SWQMP).▪ The Contractor will maintain the existing storage area along Prince Charles Parade and the decks of the BHD in a clean and tidy state.▪ The existing storage area along Prince Charles Parade should be swept clean, rather than washed down with water.
Performance Indicators	<ul style="list-style-type: none">▪ Spill response procedures implemented in accordance with the relevant works-specific SCP.*▪ Regular maintenance of dredging equipment scheduled and carried out by the Contractor.



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Element	Sediment and Water Quality
Monitoring	<ul style="list-style-type: none">▪ The SWQMP will be implemented prior to, during and following dredging.▪ The Contractor will carry out regular inspections of its works areas to ensure the SCP is being implemented.*
Reporting	<ul style="list-style-type: none">▪ Caltex will report all relevant complaints, spills and incidents under the terms of the current EPL issued for miscellaneous licensed discharge to waters (at any time) and EPL No. 837 (as relevant).*▪ Caltex, with assistance from the Contractor as relevant, will prepare an incident investigation report for all incidents.▪ The Contractor will maintain records of each dump of dredged sediment within the reuse area and at the Sydney offshore spoil ground, including the date, time, coordinates and load number.
Corrective Action	<ul style="list-style-type: none">▪ The corrective actions set out in the SWQMP will be implemented as required.▪ Where spill response procedures are not being implemented in accordance with the relevant works-specific SCP, the Contractor will review and revise their SCP and provide further training as relevant.



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8.2 Acid Sulphate Soils

Element	Acid Sulphate Soils
Performance Objective	<i>To prevent the oxidation of acid sulphate soils and the generation of associated odours⁵.</i>
Management Actions	<ul style="list-style-type: none">▪ Overflow dredging is not permitted within the fixed berths or in front (immediately east) of the sub berth to reduce the amount of disturbance to these sediments and therefore prevent their breakdown and the associated impacts on the environment.*▪ A rotational dredging program will be implemented to prevent dredged sediments remaining within the Project Site for a long duration prior to their transport offshore to the disposal ground.*▪ A veneer of water will be maintained at all times over dredged sediments in the hoppers. This is to prevent oxidation and subsequent production of sulphuric acid.▪ Wherever practicable, delays in the transport of dredged sediments to the disposal area will be avoided.
Performance Indicators	<ul style="list-style-type: none">▪ No odour complaints received.▪ No drying of sediments within hoppers.
Monitoring	<ul style="list-style-type: none">▪ Continual observations will be made for unanticipated odours (particularly “rotten egg gas” or H₂S) during dredging works.*▪ Hoppers will be visually monitored during loading and transit to ensure a veneer of water is maintained over dredged sediments.*
Reporting	<ul style="list-style-type: none">▪ The Contractor will notify the Caltex EMR of any adverse odours identified during dredging.*▪ Log books will be maintained to record instances where adverse odours are apparent, and what corrective action was taken.*

⁵ Also refer odour requirements in Section 8.6 Air and Odour Emissions



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Element	Acid Sulphate Soils
Corrective Action	<ul style="list-style-type: none"><li data-bbox="632 501 1471 869">▪ Where adverse odours are identified, the Contractor, in collaboration with Caltex, will develop and implement appropriate management measures, such as:<ul style="list-style-type: none"><li data-bbox="772 629 1455 734">• Identification of prevailing wind direction and strength and the potential for odours to reach sensitive receptors;<li data-bbox="772 763 1471 869">• In exceptional circumstances, investigation of potential for limits on the rate of dredging to reduce the odour emissions.*<li data-bbox="632 891 1449 996">▪ Where a veneer of water is not present over dredged sediments in the hoppers, additional sea water will be added to the hoppers.*<li data-bbox="632 1019 1455 1205">▪ If dredged sediment dries or partially dries then the pH will be measured. If the pH of the dried sediment is less than 5 pH units then neutralisation in accordance with the Acid Sulphate Soil Management Guidelines (Acid Sulfate Soils Management Advisory Committee, 1998) will be undertaken.



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8.3 Aquatic Flora and Weed Management

Element	Aquatic Flora and Weed Management
Performance Objective	<i>To minimise impacts to native marine flora and prevent the introduction of new non-native marine flora, including <i>Caulerpa taxifolia</i>.</i>
Management Actions	<ul style="list-style-type: none">▪ Mitigation and management measures will be implemented during dredging within the waters of Botany Bay to avoid the introduction or spread of pest flora species, including <i>Caulerpa taxifolia</i> consistent with the <i>NSW Control Plan for the Noxious Marine Alga <i>Caulerpa taxifolia</i></i> (DII 2009) [DCoA C5].▪ The Contractor (in consultation with Caltex) will liaise with DPI (Fisheries) and review the Marine Pests website (http://www.marinepests.gov.au/home) to identify any reported pest specifically affecting Botany Bay immediately prior to and during the proposed works.⁺▪ If required, the Contractor (in consultation with Caltex) will undertake further discussion with DPI (Fisheries) and DAFF to agree on additional management actions to be implemented during dredging.⁺▪ Prior to commencement of dredging in an area, a visual survey of the seafloor for all marine pest species will be undertaken to minimise the risk of spreading such pests beyond current limits.⁺▪ The Contractor will report any marine pest species detected during the visual survey to the Caltex EMR.▪ Caltex will liaise with relevant State and / or Commonwealth agencies regarding any marine pest species detected in regard to any additional management actions required.⁺▪ Any dredge equipment sourced from outside the Sydney region will be subject to inspection for marine pests and if required, hull cleaning, prior to entering Botany Bay.*▪ The Contractor will carry out regular inspections of equipment, the dredging area, reuse area and disposal area to check for the presence of <i>Caulerpa taxifolia</i>.*▪ Caltex will enable regular inspections of the Project Site by the Department of Agriculture, Fisheries and Forestry (DAFF) to check for the introduction of marine pest species.*



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Element	Aquatic Flora and Weed Management
	<ul style="list-style-type: none">▪ No ballast water or sediments from ballast tanks will be discharged in to Botany Bay.*▪ No clearing of, or disturbance to, seagrass beds is permitted.*▪ No anchoring within seagrass beds is permitted.
Performance Indicators	<ul style="list-style-type: none">▪ No introduction or spread of <i>Caulerpa taxifolia</i>.▪ No clearing of, or disturbance to, seagrass beds.
Monitoring	<ul style="list-style-type: none">▪ Regular inspections of dredging areas and equipment will be carried out to check for the presence of <i>Caulerpa taxifolia</i>.*
Reporting	<ul style="list-style-type: none">▪ The dates and outcomes of <i>Caulerpa taxifolia</i> inspections will be reported by the Contractor to the Caltex EMR fortnightly.
Corrective Action	<ul style="list-style-type: none">▪ Where any signs of <i>Caulerpa taxifolia</i> are present, the Contractor will notify the Caltex EMR and implement responsible and careful treatment to prevent its spread or transfer to other areas of Botany Bay. Such measures will be consistent with the <i>NSW control plan for the noxious marine alga Caulerpa Taxifolia</i> (DII 2009).*



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8.4 Marine Fauna

Element	Marine Fauna
Performance Objective	<i>To minimise injury to or death of fauna and minimise loss of fauna habitat.</i>
Management Actions	<ul style="list-style-type: none">▪ Native fauna will be protected at all times and will not be fed, harassed or otherwise interfered with.▪ Mitigation and management measures will be implemented during dredging within the waters of Botany Bay to avoid the introduction or spread of pest fauna species [DCoA C5].▪ The Contractor (in consultation with Caltex) will liaise with DPI (Fisheries) and review the Marine Pests website (http://www.marinepests.gov.au/home) to identify any reported pest specifically affecting Botany Bay immediately prior to and during the proposed works.[†]▪ If required, the Contractor (in consultation with Caltex) will undertake further discussion with DPI (Fisheries) and DAFF to agree on additional management actions to be implemented during dredging.[†]▪ Prior to commencement of dredging in an area, a visual survey of the seafloor for all marine pest species will be undertaken to minimise the risk of spreading such pests beyond current limits.[†]▪ The Contractor will report any marine pest species detected during the visual survey to the Caltex EMR.▪ Caltex will liaise with relevant State and / or Commonwealth agencies regarding any marine pest species detected in regard to any additional management actions required.[†]▪ Caltex will enable regular inspections of the Project Site by DAFF to check for the introduction of marine pest species.*▪ Lighting on dredging ships and equipment will be minimised to that required for safe operations and to meet regulatory navigational safety requirements.*▪ Dredging lighting will be positioned to prevent excess light spill into areas that are not required to be lit.*▪ No ballast water or sediments from ballast tanks will be discharged in to Botany Bay.*



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Element	Marine Fauna
	<ul style="list-style-type: none">▪ Trained marine fauna spotters (monitors) will be used to make observations for marine turtles, cetaceans, pinnipeds and dugongs within 420 m from active dredging, reuse and disposal areas.*▪ If marine turtles, cetaceans, pinnipeds or dugongs are observed within 420 m of active dredging, reuse or disposal areas then there is to be a temporary cessation of dredging and a speed limit of 4 knots for tugboats.▪ Works will not recommence until 30 minutes after the animal has moved more than 420 m away, or 30 minutes after the animal was last sighted.*▪ Slow start up measures will be used for all dredging activities that generate underwater noise to ensure any noise-sensitive marine fauna are able to move away from the noise source.*
Performance Indicators	<ul style="list-style-type: none">▪ No dredging, reuse or disposal works whilst marine turtles, cetaceans, pinnipeds or dugongs are within 420 m of active dredging, reuse or disposal areas.*▪ No fauna deaths directly associated with dredging activities.
Monitoring	<ul style="list-style-type: none">▪ Marine fauna monitors will be used to make observations for marine turtles, cetaceans, pinnipeds and dugongs up to a distance of 420 m from active dredging areas prior to start up and throughout dredging works.*
Reporting	<ul style="list-style-type: none">▪ Marine fauna monitors will utilise a Marine Fauna Sighting Log to record observations of turtles, cetaceans, pinnipeds or dugongs and any required actions taken (i.e. delay in start of work, standby or cessation of works).*▪ The dates and outcomes of marine fauna monitoring will be reported by the Contractor to the Caltex EMR fortnightly.▪ All fauna injuries or deaths will be reported to the Caltex EMR as soon as practicable.▪ Caltex will report injuries or deaths of threatened fauna to OEH and / or the Department of Sustainability, Environment, Water, Population and Communities (SEWPaC), as relevant.



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Element	Marine Fauna
Corrective Action	<ul style="list-style-type: none">▪ If fauna is injured during dredging works, the Contractor will contact the Caltex EMR who will contact WIRES (1300 094 737) or Orrca Marine Mammal Rescue (for whales, dolphins, seals and dugongs) (9415 3333), which both operate 24 hours a day seven days a week.



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8.5 Noise and Vibration

Element	Noise and Vibration
Performance Objective	<i>To minimise disturbance to sensitive receivers and marine fauna from airborne and underwater noise.</i>

- Management Actions**
- Vessels and equipment will be maintained in good working order to minimise noise.
 - Regular maintenance of dredging equipment will be scheduled and carried out by the Contractor.*
 - Marine fauna monitoring will be carried out as detailed in Section 8.4.*
 - Slow start up measures will be used for all dredging activities that generate underwater noise to ensure any noise-sensitive marine fauna are able to move away from the noise source.*
 - Dredging works should comply with the Noise Criteria Management Levels dB(A) ($L_{Aeq(15min)}$) set out in the following table.*

Sensitive Receptors	Standard Hours (Mon-Fri: 0700-1800 and Sat 0800-1300)		Outside Standard Hours
	Noise Affected Management Level $L_{Aeq(15min)}$ [RBL + 10]	Highly Noise affected Level $L_{Aeq(15min)}$	Noise Affected Management Level $L_{Aeq(15min)}$ [RBL + 5]
Residential dwellings at Nos. 2 – 174 Prince Charles Parade	51 dB(A)	75 dB(A)	46 dB(A)
Ranger’s House	51 dB(A)	75 dB(A)	46 dB(A)
Silver Beach (Passive recreational area)	60 dB(A) (when facilities are being used)		
Kamay Botany Bay National Park (Active recreational area)	65 dB(A) ⁺ (when facilities are being used)		
Environmental Botany Bay Education Centre (Educational institutions)	55 dB(A) [*] (when facilities are being used)		
*A 10 dB(A) allowance has been made to account for the internal and external noise levels for building other than residences.			



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Element	Noise and Vibration
	<ul style="list-style-type: none">▪ Dredging will be undertaken with the aim of achieving the following construction vibration goals:<ul style="list-style-type: none">• for structural damage: the vibration limits set out in the German Standard DIN 4150-3: Structural Vibration - effects of vibration on structures;• for human exposure: the acceptable vibration values set out in the Environmental Noise Management Assessing Vibration: A Technical Guideline (Department of Environment and Conservation, 2006) [DCoA C19].▪ Any additional requirements of the Project Construction Noise and Vibration Management Plan (Caltex 2013b; available on the Caltex intranet) relevant to dredging will be implemented [DCoA C36(b)].
Performance Indicators	<ul style="list-style-type: none">▪ No exceedences of the Noise Affected Management Level of $L_{Aeq}(15min) = 46 \text{ dB(A)}$ at sensitive receptors (Figure 8-1) during dredging outside of standard hours.▪ No dredging, reuse or disposal works whilst marine turtles, cetaceans, pinnipeds or dugongs are within 420 m of active dredging, reuse or disposal areas.*
Monitoring	<ul style="list-style-type: none">▪ Where dredging is undertaken outside the standard working hours set out in the Interim Construction Noise Guidelines (ICNG) (i.e. outside the hours 0700 to 1800 Monday to Friday and 0800 to 1300 Saturdays), monthly noise monitoring will be carried out to verify noise levels along Prince Charles Parade and at the Ranger's House are below or equal to $L_{Aeq}(15min) = 46 \text{ dB(A)}$ [DCoA C17].**▪ Marine fauna monitoring will be used to make observations for marine turtles, cetaceans, pinnipeds and dugongs up to a distance of 420 m from active dredging areas prior to start up and throughout dredging works.*
Reporting	<ul style="list-style-type: none">▪ The Contractor will report the sound power level (SWL) of the BHD to the Caltex EMR prior to commencement of dredging.*▪ The dates and outcomes of monthly noise monitoring for dredging works will be reported by the Contractor to the Caltex EMR as soon as results are available.▪ The dates and outcomes of marine fauna monitoring will be reported by the Contractor to the Caltex EMR fortnightly.



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Element	Noise and Vibration
Corrective Action	<ul style="list-style-type: none">▪ Where the SWL of the BHD to be utilised for dredging is higher than that used in the noise modelling set out in the EIS, Caltex will give consideration to additional modelling and the potential for implementation of additional noise mitigation measures.*▪ Where noise monitoring demonstrates potential or actual exceedances of required noise levels, the Contractor will implement additional noise management controls in line with the ICNG and in consultation with Caltex.* Additional controls could include:<ul style="list-style-type: none">• Further consultation with sensitive receivers;• Consideration of favourable wind conditions;• Additional noise shielding, if possible.▪ Where noise complaints received are attributable to dredging, consideration will be given to dredging respite periods, including the appropriate timing and duration of respite periods [DCoA C17].



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Figure 8-1: Noise sensitive receptors in the vicinity of the Project Site (URS, 2013)



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8.6 Air and Odour Emissions

Element	Air and Odour Emissions
Performance Objective	<i>To prevent a decrease in regional air quality and the emission of offensive odour beyond the boundary of the Project site.⁶</i>
Management Actions	<ul style="list-style-type: none">▪ Vessels and equipment will be maintained in good working order to minimise air emissions.▪ Regular maintenance of dredging equipment will be scheduled and carried out by the Contractor.*▪ Vehicles, vessels and equipment, including generators, will be turned off when not in use.▪ Any additional requirements of the Project Air Quality Management Plan (Caltex 2013a; available on the Caltex intranet) relevant to dredging will be implemented [DCoA C36(c)].
Performance Indicators	<ul style="list-style-type: none">▪ No air quality complaints received.▪ No odour complaints received.▪ Odours generated during dredging do not exceed 2 odour units at the nearest residential receptor [DCoA C25], as measured following receipt of an odour complaint.
Monitoring	<ul style="list-style-type: none">▪ The Contractor will carry out regular visual monitoring to identify equipment producing excessive visible emissions.▪ Continual observations will be made for unanticipated odours (particularly “rotten egg gas” or H₂S) during dredging works.*
Reporting	<ul style="list-style-type: none">▪ The Contractor will notify the Caltex EMR of any adverse odours identified during dredging.*▪ Log books will be maintained to record instances where adverse odours are apparent, and what corrective action was taken.*▪ The dates and outcomes of visual emissions monitoring will be reported by the Contractor to the Caltex EMR fortnightly.
Corrective Action	<ul style="list-style-type: none">▪ Equipment observed to be creating emissions will be replaced or serviced within 48 hours.

⁶ Also refer odour requirements in Section 8.2 Acid Sulphate Soils.



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Element	Air and Odour Emissions
	<ul style="list-style-type: none"><li data-bbox="627 501 1490 763">▪ Where adverse odours are identified, the Contractor, in collaboration with Caltex, will:<ul style="list-style-type: none"><li data-bbox="770 595 1490 663">• Identify prevailing wind direction and strength and the potential for odours to reach sensitive receptors;<li data-bbox="770 685 1490 752">• In exceptional circumstances, limit the rate of dredging to reduce the odour emissions.*<li data-bbox="627 779 1490 958">▪ Where odour complaints received are attributable to dredging, odour monitoring will be carried out in accordance with the Approved Methods for the Sampling and Analysis of Air Pollutants in New South Wales (Department of Environment and Conservation 2006).<li data-bbox="627 985 1490 1205">▪ Where odour monitoring determines that odours generated during dredging exceed 2 odour units at the nearest residential receptor, the Contractor, in collaboration with Caltex, will investigate the cause of odours and implement appropriate management actions to reduce odours associated with dredging to 2 odour units or less at the nearest residential receptor.



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8.7 Heritage

Element	Heritage
Performance Objective	<i>To protect and preserve Indigenous and Non-Indigenous heritage sites, objects and values.</i>
Management Actions	<ul style="list-style-type: none">▪ The Contractor will maintain the existing storage area along Prince Charles Parade and the decks of the BHD in a clean and tidy state. Emission control measures (as detailed in Section 8.6) will be implemented to minimise the visual impact of dredging activities to areas of heritage significance, including the Kurnell Peninsula Headland.▪ Sediment and water and quality management actions will be implemented (as detailed in Section 8.1) to minimise the potential for impacts to areas adjacent to heritage sites.
Performance Indicators	<ul style="list-style-type: none">▪ Suspected heritage items are to be dealt with in accordance with the required sequence of corrective actions.*
Monitoring	<ul style="list-style-type: none">▪ Works to the sea bed will be visually monitored for the presence of potential heritage items.
Reporting	<ul style="list-style-type: none">▪ Details of the discovery of any suspected heritage items will be reported to the Caltex EMR as soon as practicable.
Corrective Action	<ul style="list-style-type: none">▪ In the event that a suspected heritage item (Indigenous or Non-Indigenous) is encountered, dredging activities in the immediate area will cease and any further disturbance to the area of the item prevented.*▪ The discoverer of the item will notify machinery operators in the immediate vicinity of the item so that work can be halted.▪ The Contractor will immediately contact the Caltex EMR, who will notify:<ul style="list-style-type: none">• OEH (Heritage Council of NSW) in accordance with the requirements of Section 146 of the <i>Heritage Act 1977</i> in the case of a suspected Non-Indigenous heritage item [DCoA C23].*• OEH in accordance with the requirements of section 89A of the <i>National Parks and Wildlife Act 1974</i> in the case of a suspected Indigenous heritage item [DCoA C24].



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Element	Heritage
	<ul style="list-style-type: none"><li data-bbox="635 501 1469 568">▪ The police will be contacted immediately if human remains are uncovered.<li data-bbox="635 595 1469 734">▪ In consultation with OEH, the Caltex EMR will arrange for assessment (including the approximate extent, nature, associated archaeological potential and likely significance) of the suspected heritage item by a suitably qualified archaeologist.*<li data-bbox="635 761 1469 864">▪ An appropriate management strategy for recording and preservation of the item (if warranted) will be developed, along with a strategy to return to work as far as possible.*<li data-bbox="635 891 1469 954">▪ Works in the immediate area will not resume until approved in writing by the Caltex EMR.



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8.8 Marine and Construction Traffic

Element	Marine and Construction Traffic
Performance Objective	<i>To minimise traffic interactions and appropriately manage traffic interfaces.</i>
Management Actions	<ul style="list-style-type: none">▪ Vessels used for the transport of dredge spoil from the dredge site to the disposal area must not leak or release dredge spoil into waters en-route [EPL Condition O3.3].▪ Barge doors must be fully closed before the barge leaves the emplacement area [EPL Condition O3.3].▪ Any off-ship incidents will be managed as per current established operating procedures in place for the existing port and berthing facility.*▪ Caltex will revise its Shipping and Planning Procedure to accommodate the dredging works.*▪ The movement of ships related to dredging works will be managed by Caltex in accordance with its standard management shipping schedules and operations.*▪ All shipping required for the dredging works will comply with the safety and management policies of Sydney Ports Corporation (SPC) and NSW Roads and Maritime Services (RMS), including implementation of general navigational safety controls to ensure no risks to any other users of the area. This would be most significant where the ships travel to and from the Project Site in the main shipping channel.*▪ Caltex will make all the Contractor aware of the management and interfacing requirements with shipping and the port operations resulting from its discussions with NSW Roads and Maritime Services (RMS) and SPC.*▪ Caltex will make all the Contractor aware of current practices and standard controls for shipping activities, including SPC Harbour Control being notified of all shipping movements.*▪ The Contractor will be familiar with and adhere to Caltex's current practices and standard controls for shipping activities.*



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Element	Marine and Construction Traffic
	<ul style="list-style-type: none">▪ Caltex will liaise with the Harbour Master throughout the dredging works to communicate its intended shipping schedules, movements, timings and pilotage requirements .*▪ The Contractor will make its shipping schedules available to Caltex for use in liaison with the Harbour Master.▪ All ships used for the dredging works will hold current certifications in accordance with their class and function.*▪ All ship crew will be fully qualified and trained for their respective roles.*▪ All ships will be operated in full accordance with international, Commonwealth and State navigational safety and environmental protection standards and regulations.*▪ A Port Operating Procedure (POP) will be developed by the Contractor in accordance with the relevant regulations and in conjunction with SPC and RMS.*▪ The POP will incorporate information on the prevailing weather conditions and situations when works will not permitted to take place within Botany Bay.▪ A Marine Works Management Plan (MWMP) will be developed by the Contractor to support the POP.*▪ The MWMP will include appropriate safety controls that accord with the requirements of the Harbour Master and the SPC Port Procedures Guide to ensure the safety of waterway traffic during dredging works.*▪ All ships will have an on-board Ship-Oil Pollution Emergency Plan (SOPEP) or equivalent applicable to their class.*▪ Marine vessels not in use will be moored to the east of the Kurnell Wharf on the edge of the Marine Security Zone.*▪ Ships will be lit at night in accordance with safety navigation requirements.*▪ The existing Marine Security (exclusion) Zone around the Kurnell Wharf will remain in place throughout dredging works.



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Element	Marine and Construction Traffic
	<ul style="list-style-type: none">▪ Where works take place outside the existing Marine Security (exclusion) Zone, Marine Works Security Zones of a 50 m radius around the BHD, tugs and hoppers during dredging and reuse activities will be established by Caltex in consultation with SPC and RMS.*▪ Recreational and commercial vessels will be required to remain outside the Temporary Marine Security Zones.▪ Temporary Marine Security Zones will be managed by Caltex, in consultation with RMS, SPC and the NSW Water Police.*▪ Caltex will communicate the timing and location of the Temporary Marine Security Zones to the public via the methods set out in Section 7.5 and through a Notice to Mariners (via SPC and RMS).*▪ Where practicable, dredging works will be timed by Caltex to avoid activities and events identified by sailing, diving and recreational user groups that are likely to occur within or close to the Project Site during the dredging works, or activities and events relocated.*▪ Any additional requirements of the Project Construction Traffic and Access Management Plan (Caltex 2013c; available on the Caltex intranet) relevant to dredging will be implemented [DCoA 36(d)].
Performance Indicators	<ul style="list-style-type: none">▪ No collisions caused by Project dredging vessels.▪ Harbour Master provided with advance copies of all dredging related shipping schedules.*▪ POP and MWMP developed and implemented by relevant the Contractor.*
Monitoring	<ul style="list-style-type: none">▪ Caltex will monitor compliance with the management and interfacing requirements with shipping and the port operations.
Reporting	<ul style="list-style-type: none">▪ Collisions or near misses will be reported in accordance with incident reporting procedures set out in Section 7.6.
Corrective Action	<ul style="list-style-type: none">▪ Collisions will be managed in accordance with incident management procedures set out in Section 7.6.



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8.9 Waste and Resources

Element	Waste and Resources
Performance Objectives	<p><i>To minimise the wastes generated and resources used throughout the life of the dredging works, and maximise opportunities for reduction, reuse and recycling.</i></p> <p><i>To store, handle, transport, and employ resources/dispose of waste in a manner that does not lead to environmental harm, pollution or contamination.</i></p>
Management Actions	<ul style="list-style-type: none">▪ Any waste generated outside the site will not be caused, permitted or allowed to be received at the site for storage, treatment, processing, reprocessing, or disposal on the site, except as expressly permitted by a licence under the Protection of the Environment Operations Act 1997, if such a licence is required in relation to that waste [DCoA C31].▪ All liquid and/or non-liquid waste generated on the site will be assessed and classified in accordance with Waste Classification Guidelines (DECC, 2008), or any future guideline that may supersede that document and where removed from the site is only directed to a waste management facility lawfully permitted to accept the materials [DCoA C33].▪ All waste management and disposal will be carried out in accordance with legislative requirements and relevant guidelines.▪ Resource use and waste generation will be minimised and all waste will be reused, recycled or disposed of in accordance with best practice and relevant legislation [DCoA C32].▪ The following waste hierarchy will be implemented:<ul style="list-style-type: none">• Avoid waste by identifying appropriate materials and effective procurement• Reduction of waste by optimising dredging and operation methods• Reuse waste by identifying sources that can utilise the waste• Recycle waste by identifying available facilities• Recover energy from waste• Dispose of waste at an appropriate licensed facility



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Element	Waste and Resources
	<ul style="list-style-type: none">▪ The discharge of any solid waste overboard is prohibited.*▪ The burning of waste is prohibited.*▪ The Contractor will ensure appropriate waste containers are available on its vessels for the segregation and storage of wastes, including for ship-generated waste, in accordance with the Waste Classification Guidelines 2009.*▪ All waste containers will have secure lids in place to prevent water ingress and access to animals.▪ Licensed contractors will be utilised to remove waste from vessels and transport for onshore disposal at an appropriate licenced facility.*▪ Records of Controlled Waste Receipts and Tracking Numbers will be maintained on site.▪ Dredging activities will be integrated into existing resource efficiency and waste management and handling plans for the port and berthing facility, including the Caltex Standard for Terminal Berthing (ref: STD 122.10.01.001).*▪ Caltex will make all Contractors aware of Caltex's existing procedures for the disposal of general waste and recyclable materials.*▪ The Contractor will implement Caltex's existing procedures for the disposal of general waste and recyclable materials.*▪ No bilge water, ballast water or sediments from ballast tanks will be discharged to the environment.*▪ Waste oil, solvents and toxic material will be collected in appropriate, labelled containers for reuse, recycling, treatment or disposal at approved licensed locations.▪ Environmental issues and impacts, including resource use and waste management, will be considered when procuring subcontractors and suppliers.▪ Environmental requirements will be included in procurement and subcontract documentation through the contract and scope of works.*



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Element	Waste and Resources
	<ul style="list-style-type: none">▪ Selection of subcontractors and suppliers will include consideration of their ability to meet stated requirements including corporate and Project environmental and sustainability initiatives.*▪ Any additional requirements of the Project Waste Management Plan (Caltex 2013d; available on the Caltex intranet) relevant to dredging will be implemented.
Performance Indicators	<ul style="list-style-type: none">▪ No litter present on deck areas or in the water.▪ Appropriate segregation of recyclable material from general waste.*▪ Environmental requirements included in procurement and subcontract documentation.▪ No discharge of bilge water, ballast water or sediments from ballast tanks.*
Monitoring	<ul style="list-style-type: none">▪ The Contractor will record the types, volumes and management measures (i.e. reuse / recycling / disposal etc) for wastes generated from its activities.*▪ The Contractor will carry out weekly inspections of its works areas to ensure wastes, chemicals and hazardous materials are appropriately stored and required procedures are being implemented.*
Reporting	<ul style="list-style-type: none">▪ The Contractor will report fortnightly to the Caltex EMR on the types, volumes and management measures (i.e. reuse / recycling / disposal etc) for wastes generated from its dredging activities.▪ Waste generated by the Contractor during dredging will be incorporated into Caltex's annual reporting of waste.*
Corrective Action	<ul style="list-style-type: none">▪ Any spills will be managed in accordance with the requirements set out in Section 8.1.▪ Waste reduction education will be undertaken if excessive volumes of waste are found to be regularly removed from site.



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8.10 Hazardous Substances

Element	Hazardous Substances
Performance Objectives	<i>To prevent the release of hazardous substances to the environment</i>
Management Actions	<ul style="list-style-type: none">▪ The relevant components of any RAP prepared for dredging works in accordance with State Environmental Planning Policy No 55 - Remediation of Land will be implemented.*▪ All fuel, hydraulic oils and other hazardous materials and wastes will be stored in secure, bunded areas.*▪ Where possible, hydraulic oils will be biodegradable and non-toxic.▪ All storage and handling equipment for fuels, lubricants and chemicals will be maintained in good working condition.▪ Bunded areas will be capable of containing 110% of the stored or handled volume.▪ Precautions will be taken during any refuelling or oil transfer operations to avoid fuel or oil entering the marine environment.*▪ All ships and hydraulic equipment will be maintained in good condition with regular servicing and maintenance scheduled as part of the works.*▪ Any refuelling taking place at the Wharf will be undertaken in accordance with existing procedures and permits.*▪ Material Safety Data Sheets (MSDSs) will be maintained on site for all hazardous and potentially hazardous substances, including fuels and chemicals, in a readily accessible location.▪ The Contractor will develop and maintain a Hazardous Materials Register to record the type and volume of hazardous materials stored on its vessels.▪ In the event of an emergency, hazardous materials will be contained and removed to bunded areas as far as practicable.
Performance Indicators	<ul style="list-style-type: none">▪ No release of hazardous substances to waterways and land.▪ Appropriate storage of hazardous substances.



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Element	Hazardous Substances
Monitoring	<ul style="list-style-type: none">▪ A Hazardous Materials Register will be maintained to monitor volumes and types of hazardous substances on site.▪ Visual inspections will be undertaken at least weekly for evidence of spills where hydrocarbons are stored or used.
Reporting	<ul style="list-style-type: none">▪ Inappropriate storage or handling of fuels, lubricants and chemicals will be reported to the Caltex EMR.▪ All hazardous substances stored on site will be recorded on a Hazardous Materials Register, including their type and volume.
Corrective Action	<ul style="list-style-type: none">▪ Any spills will be managed in accordance with the requirements set out in Section 8.1.



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9 EMERGENCY CONTACTS

Emergency Contacts	
Site Address	<p>Kurnell Wharf, Botany Bay, NSW</p> <p>Access from Prince Charles Parade, Botany Bay, between Silver Beach Road and Captain Cook Drive</p> <p>GPS Location (degrees, minutes, seconds):</p> <p>34°00'00" south</p> <p>151°12'35" east</p> <p>Contact Name: Khaled Elomar</p> <p>Contact Number: (02) 9668 1990 or 0425 217 017</p> <p>Caltex Australia Ltd Head Office: (02) 9250 5000</p>
EMERGENCY	<p>333 (Caltex Emergency Number – call first)</p> <p>or</p> <p>000</p>
ENVIRONMENTAL ISSUES AND POEO NOTIFICATION	<p>Contact Name: Simon Caples</p> <p>Contact Number: (02) 9668 1985 or 0415 225 474</p>
Caltex EMR	
EPA Environment Line	131 555
WorkCover	131 050
Fire and Rescue NSW	1300 729 579
Public Health Unit (Randwick Office at Prince of Wales Hospital - ask for Public Health Nurse on call)	<p>(02) 9382 8333</p> <p>After hours: (02) 9382 2222</p>
SYDNEY PORTS CORPORATION	<p>(02) 9296 4000 or</p> <p>(02) 9296 4001</p>



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Emergency Contacts	
HOSPITAL Sutherland Hospital Kareena Rd, Caringbah	(02) 9540 7111
Saint George Hospital Gray Street, Kogarah	(02) 9113 1111
Prince of Wales Hospital Barker St, Randwick	(02) 9382 2222
LOCAL POLICE Miranda Local Area Command 34 Kingsway Cronulla	(02) 9527 8199
POISONS INFORMATION CENTRE Advice on first aid including dangerous plants, animals, insects and household products.	131 126
WILDLIFE RESCUE WIRES 24 hours, 7 days a week	1300 094 737
Orrca Marine Mammal Rescue (whales, dolphins, seals and dugongs) 24 hours, 7 days a week	(02) 9415 3333
NATIONAL PARKS Botany Bay National Park Duty Officer	(02) 9668 2000 or 0419 428 054
CALTEX COMMUNITY CONCERNS HOTLINE 24 hours, 7 days a week	1800 802 385 (Toll Free)



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10 REPORTING

The Contractor will provide a brief report to the Caltex EMR on a fortnightly basis, including all information required by this DSDMP (as set out in Reporting under Sections 8.1 to 8.10).

Caltex and the Contractor (as relevant) will report to the EPA in accordance with the requirements of environment protection licenses relevant to the Project.

Records will be developed and maintained in relation to this DSDMP including:

- Training records
- Incident report forms
- Audit/inspection forms
- Corrective Actions Register
- Complaints Register
- Monitoring results
- Controlled Waste Receipts and Tracking Numbers
- Volume of waste to landfill and waste recycled

The Contractor is required to forward all records generated as a result of this DSDMP to the Caltex EMR on a monthly basis. Records will be maintained on site by the Caltex EMR.



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11 REFERENCES

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Caltex (2013b) Project Construction Noise and Vibration Management Plan. Available on the Caltex intranet.

Caltex (2013c) Project Construction Traffic and Access Management Plan. Available on the Caltex intranet.

Caltex (2013d) Project Waste and Resource Management Plan. Available on the Caltex intranet.

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Department of Industry and Investment (DII) (2009) NSW control plan for the noxious marine alga *Caulerpa Taxifolia*. Available online at:

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