

Management Plans



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CALTEX REFINERIES (NSW) PTY LTD

Kurnell Wharf Infrastructure Upgrade - Installation of a Sheet Pile Wall and Rock Revetment Construction Environmental Management Plan

301015-03067 – 301015-03067-EN-REP-007

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KURNELL WHARF INFRASTRUCTURE UPGRADE - INSTALLATION OF A SHEET PILE WALL AND ROCK REVETMENT

CONSTRUCTION ENVIRONMENTAL MANAGEMENT PLAN

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PROJECT 301015-03067 - KURNELL WHARF INFRASTRUCTURE UPGRADE - INSTALLATION OF A SHEET PILE WALL AND ROCK REVETMENT

REV	DESCRIPTION	ORIG	REVIEW	WORLEY-PARSONS APPROVAL	DATE	CLIENT APPROVAL	DATE
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GLOSSARY

Acronym / Term	Definition
BHD	Backhoe dredge
CEMP	Construction Environmental Management Plan
Cetacean	Carnivorous marine mammals, including whales, dolphins, and porpoises
CD	Chart Datum
DAFF	Department of Agriculture, Fisheries and Forestry
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
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
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
ERT	Emergency Response Team
GPS	Global positioning system



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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	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 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.
MSDS	Material Safety Data Sheet
MWMP	Marine Works Management Plan
OEH	Office of Environment and Heritage
Pinniped	Fin-footed marine mammals, including seals and sea lions
PIRMP	Pollution Incident Response Management Plan

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Acronym / Term	Definition
POEO Act	<i>Protection of the Environment Operations Act, 1997</i>
Pollution	(a) water pollution, or (b) air pollution, or (c) land pollution.
Pollution Incident	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. 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.
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
SPL	Sound pressure level
SSD	State Significant Development
SWL	Sound power level
WRMP	Waste and Resource Management Plan
TMP	Traffic Management Plan
WWTP	Waste water treatment plant

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1 INTRODUCTION, LOCATION AND SCOPE OF WORK

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.

The upgrade to existing elements of the berthing infrastructure includes an upgrade to the Kurnell wharf infrastructure and installation of a sheet pile wall and rock revetment.

This Construction Environmental Management Plan (CEMP) provides the basis for environmental management throughout construction works associated with the installation of a sheet pile wall and a rock revetment only.

Environmental management requirements for construction of wharf infrastructure are set out in the *Installation of a Sheet Pile Wall and Rock Revetment Construction Environmental Management Plan (Sheet Pile Wall and Rock Revetment CEMP)*.

Environmental management requirements for dredging are set out in the *Dredge and Spoil Disposal Management Plan (DSDMP)*.

1.1 Location

The Kurnell Wharf is located in Botany Bay, off Silver Beach (Figure 1-1).

The Project is 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 800 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 Rangers 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).



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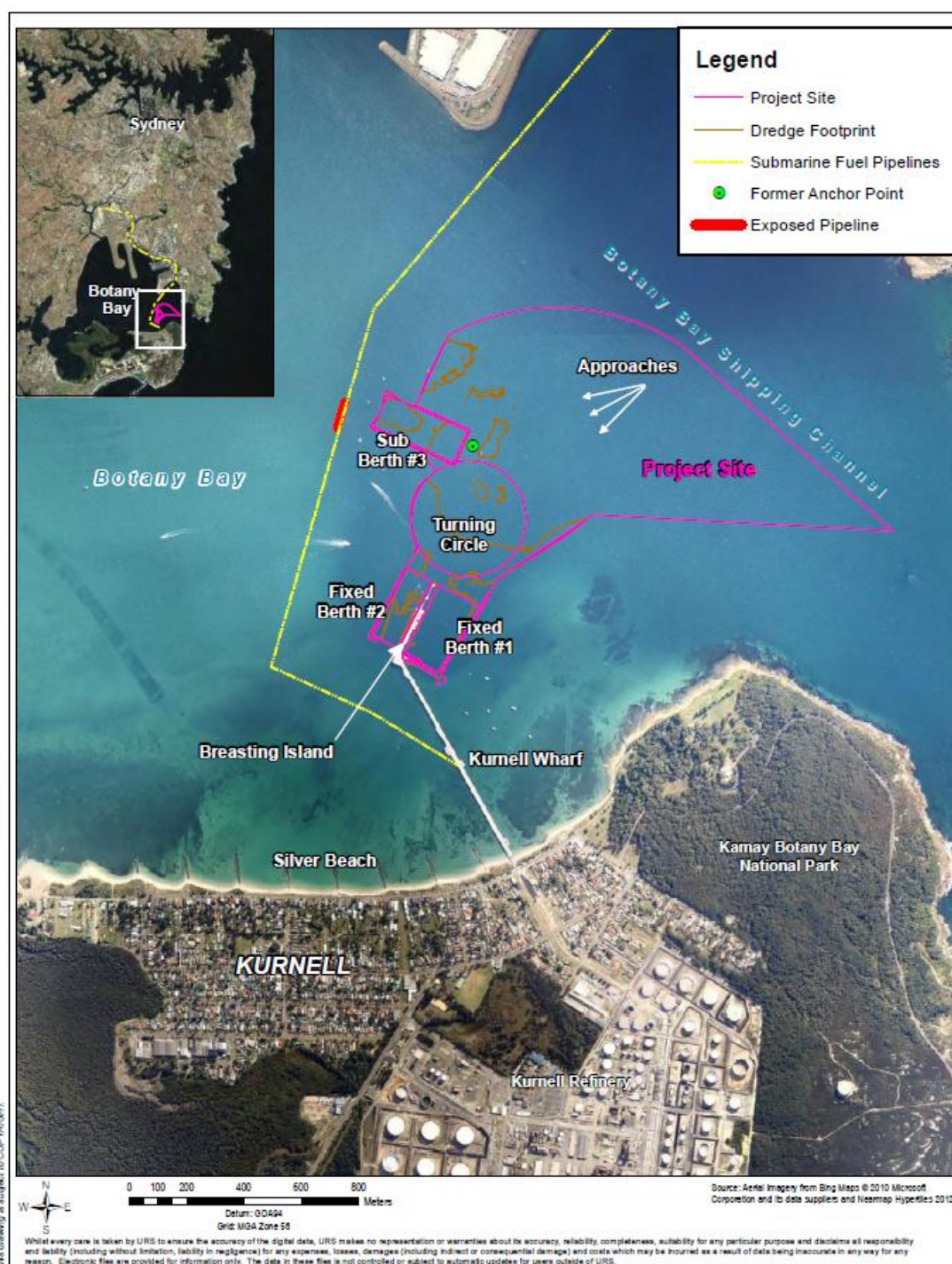


Figure 1-1: Project Site and Context (source: URS 2013)

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1.2 Scope of Works

This CEMP provides the basis for environmental management throughout construction works associated with the installation of a sheet pile wall and a rock revetment only.

A separate CEMP has been prepared for construction of the wharf infrastructure upgrade as part of the Project.

This CEMP does not address environmental management measures associated with project design, nor the environmental management of impacts associated with dredging, or those from port and berthing facility operations.

This CEMP is based on the relevant information and requirements set out in the Environmental Impact Statement (EIS) (URS 2013) for the Project. All relevant changes to the EIS and relevant conditions of consent must be incorporated into this CEMP.

Each Contractor will adopt this CEMP or develop their own Project specific CEMP or integrated Health, Safety and Environment (HSE) Management Plan to manage the environmental risks specifically related to their scope of work on the Project. These Contractor documents will, as a minimum, align with the requirements of this CEMP and are required to be reviewed and approved by the Caltex Environmental Management Representative (EMR) prior to mobilisation to site.

Compliance with this CEMP is mandatory for all personnel and Contractors carrying out construction activities for the installation of the sheet pile wall and rock revetment.

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2 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, 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 and the two fixed berths. Adjacent to the wharf, south of the fixed berths, are a series of additional submarine pipelines that transport fuel under Botany Bay. These pipelines 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.

Caltex is undertaking port and berthing facility upgrade works to increase the capacity of fixed berth #1 to receive larger ships. Further, the upgrade works will adopt the latest design standards to enable efficient loading/unloading and improve handling and ergonomic performance. Improvements will also be made to the fuel loading and unloading equipment located on the wharf, used for fixed berth #1. Other ancillary work will include an upgrade to the fire system on the wharf and the provision of additional stability to the existing wharf piles through construction of a sheet-piled wall and rock revetment at the southern end of fixed berth #1.

The work will be carried out within the existing Marine Security (exclusion) Zone around the Kurnell Wharf (Figure 2-1).

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



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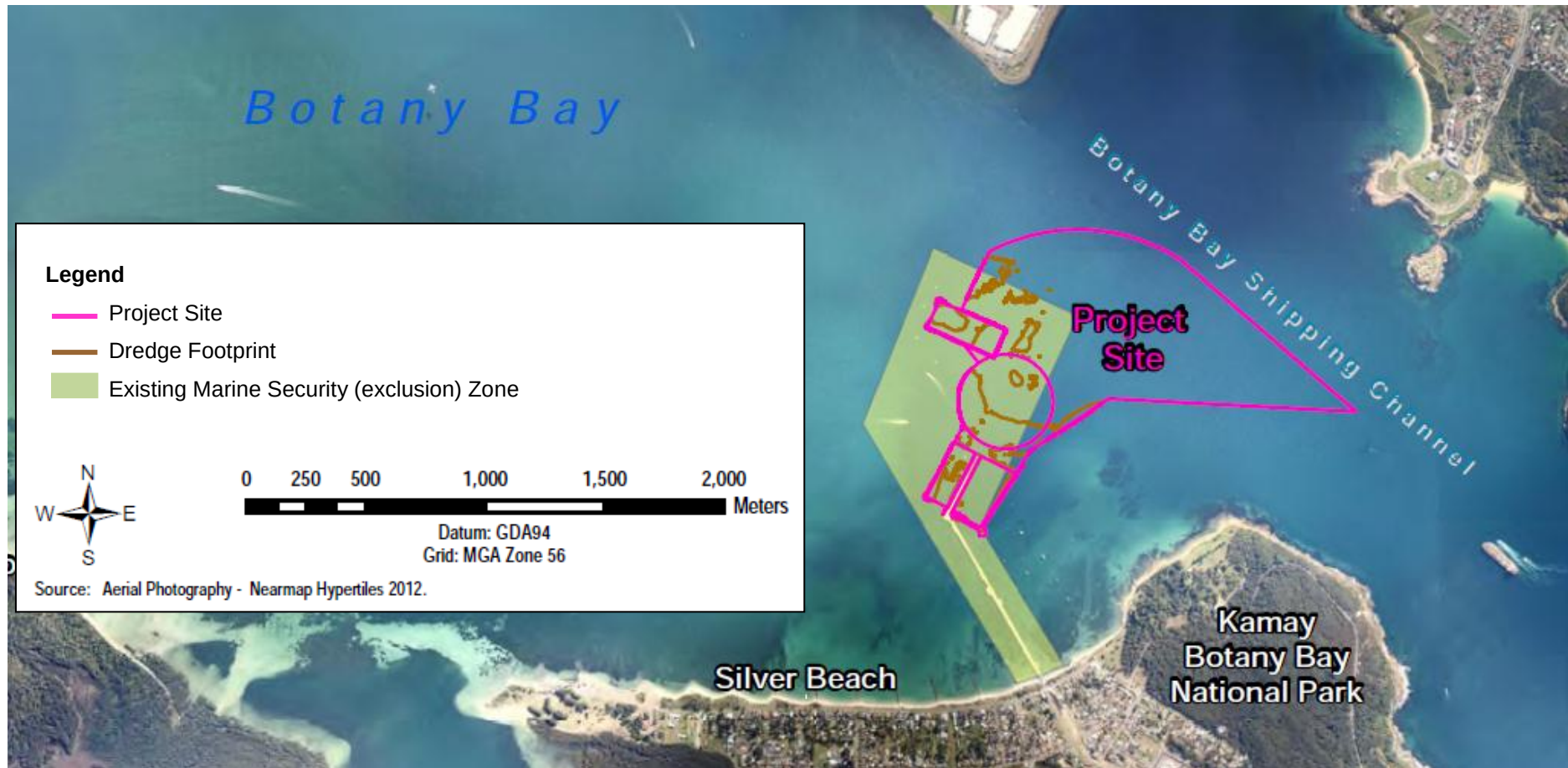


Figure 2-1: Existing Marine Security (exclusion) Zone at the Project Site (adapted from URS 2013)

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2.1 Construction Works and Equipment

As part of the project a sheet pile wall and associated scour protection will be installed, along with a rock revetment.

The sheet pile wall will extend approximately 70 to 80 m along the southern end of fixed berth #1 and form a height of approximately 6 m from the seabed (approximately 6.8 m below Chart Datum (CD)). Scour protection will be installed at the top and toe of the sheet pile wall.

The preferred method of piling is driven steel piles, whereby each pile is vibrated until refusal or until the pile reaches depths of 1 to 2 m above the final embedment depth. The piling will then be completed by driving the piles with a drop hammer. The piles will be handled, pitched and secured to the seabed by a crane/rig mounted and installed from either on a jack-up barge or floating barge restrained by mooring lines.

A pile rig (with rig power pack and water jet pump) will be utilised to install the sheet pile wall.

The sheet pile wall works are shown in the general arrangements plans provided at Attachment 1.

The rock revetment wall will be approximately 10 to 15 m wide. It will comprise a geotextile membrane over laid with graded, interlocked, quarried armour stone, followed by a less coarse under-layer with a finer gravel (filter) layer sitting next to the seabed. The angle of the revetment will be 1-in-2 (vertical to horizontal).

The rock revetment will be created following dredging of fixed berth #1 and installation of the sheet pile wall. The gravel filter layer will be placed first, followed by the under layer and then the rock-armour layer. Staged construction along the length of the revetment is anticipated to prevent erosion of the gravel filter layer (once placed).

A barge similar to a typical BHD, along with supporting tugs, will be used to construct the rock revetment. It will upload graded stone onto the southern batter slope close to the seabed, allowing the revetment pile to build up gradually against the face.

It is anticipated that the rock will be sourced from Newcastle and transported directly to the project site on an 'as-needs' basis by ship.

The rock revetment works are shown in the general arrangements plans provided at Attachment 1.

2.1.1 Transport and Temporary Storage

Set down and temporary storage of marine based equipment for construction of the port and berthing facility works will be within the existing safeguarded easement (right of way) located behind the berth.

A small amount of road traffic will be generated as a result of undertaking the proposed works. Road transport will include equipment deliveries and personnel movements to and from the wharf, refinery, laydown areas and one or more of the dedicated storage locations.

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Road access to and from Kurnell Wharf will be from Prince Charles Parade. Access to and from Kurnell Refinery will be via Solander Street.

The works will also require the use of one or more of the following dedicated existing storage sites (in order of preference):

- Fishburn Road, Molineux Point.
- Lewis Anchorage, Taren Point.
- Sydney Ports Facility.
- Glebe Island.
- White Bay.
- Sydney Harbour.
- Port Kembla.

The final storage location(s) will depend on the requirements of the works' contractor and availability and capacity at the time. Temporary site offices will be located within the main refinery site adjacent to the main workshop in the northwest corner.

2.2 Construction Program

The Project is expected to be undertaken in two stages over a two year period, commencing in the third quarter (Q3) of 2013. Works to the sheet pile wall are expected to take approximately three weeks, while works to the rock revetment will take approximately four weeks.

The Project is expected to utilise approximately 25 personnel during the upgrade of fixed berth #1, including installation of the rock revetment, sheet pile wall and scour protection.

The approximate construction program for the Project is shown in Table 2-1.



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Table 2-1: Approximate construction program

Works	Duration	2013			2014				2015	
		Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2
Dredging and Reuse Works	25 weeks									
Sheet Piling Works	3 weeks									
Rock Revetment and Scour Protection Works	4 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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3 ENVIRONMENTAL POLICY

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

Copies of this policy will be displayed in a prominent position in the Project site office and on HSE notice boards as a minimum. Contractors are encouraged to also have their 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

This CEMP provides the basis for environmental management throughout the installation of the sheet pile wall and rock revetment works for the Project. The CEMP is based on the relevant information and requirements set out in the (EIS) (URS 2013) for the Project. The EIS lists various sub-plans as being included within the CEMP. Where practicable, these sub-plans have been incorporated into the CEMP, however some sub-plans are required to be developed by Caltex or the Contractor, as set out below:

- Spill control plan (SCP) - to be developed and implemented by the Contractor in accordance with the requirements set out in Section 8.1 of the CEMP.
- Fauna management sub-plan - incorporated into Section 8.3 of the CEMP.
- Underwater noise management sub-plan - incorporated into Section 8.3 of the CEMP.
- 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 8.7 of the CEMP.
- Waste and resource management sub-plan - incorporated into Section 8.8 of the CEMP.

The CEMP is supported by these sub-plans and a number of procedures prepared and implemented by Caltex and the Contractor, as shown in Figure 3-1.



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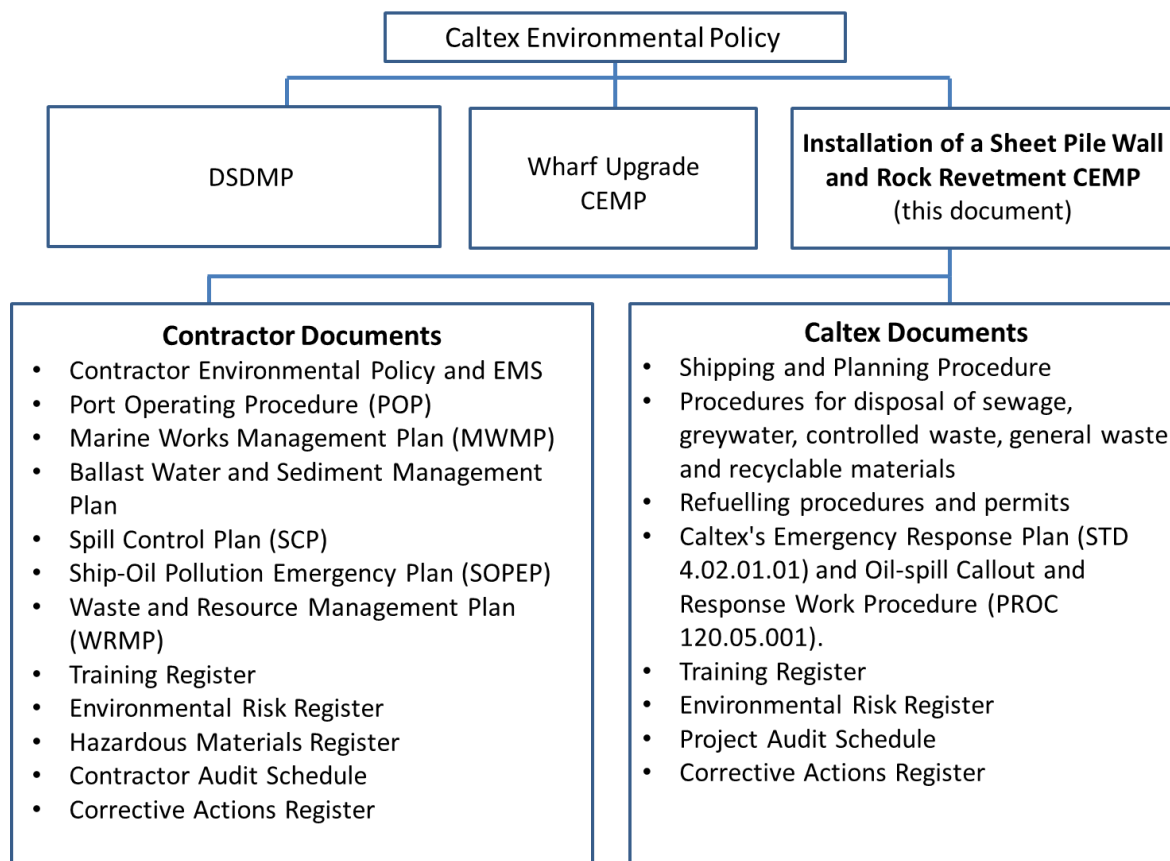


Figure 3-1: Interaction of the CEMP with Sub-plans and Procedures

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4 ENVIRONMENTAL RISKS

A works-specific Construction Environmental Risk Register will be developed by each Contractor to identify the environmental risks applicable to their works during the construction phase of the project and assess the significance of their impacts. The Construction Environmental Risk Register will be provided to Caltex for review and updated as required by Caltex, prior to mobilisation to site.

The Construction Environmental Risk Register will be reviewed at least each six months and 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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5 LEGAL AND OTHER REQUIREMENTS

The Project 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.

All works associated with the construction of the upgrade to the wharf infrastructure 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.
- Harbour Master Approval under the NSW Management of Waters and Waterside Lands Regulations 1972.
- A water pollution licence under the NSW *Protection of the Environment Operations Act 1997*.
- The requirement to prepare a remediation action plan 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 CEMP and related Project procedures will be updated if necessary to meet future approvals and related conditions imposed on the Project.



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6 ENVIRONMENTAL OBJECTIVES

The intent of this CEMP is to achieve the following overarching objectives:

- Ensure that all Caltex personnel and Contractors clearly understand their environmental obligations and receive appropriate training to perform their duties in a competent manner.
- Comply with all relevant Commonwealth and State environmental requirements.
- Comply with relevant Australian and other recognised standards.
- Aim for zero significant environmental incidents during construction as part of Caltex's Incident and Injury Free (IIF) operations.

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

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7 IMPLEMENTATION

7.1 Responsibilities and Authorities

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

Key Project personnel including the Caltex Project Manager, Caltex Construction Supervisors, Caltex EMR, 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 construction. 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 CEMP.
- Ensure an EMR is appointed for the Project.
- Ensure contracts contain relevant environmental provisions.
- Review and sign off on this CEMP and subsequent revisions.

Caltex Construction Supervisors

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

Caltex Environmental Management Representative (EMR)

- Accountable for construction related environmental matters on the Project.
- Provide support to Caltex personnel and Contractors as required to ensure this CEMP is implemented and complied with.
- Provide advice to the Caltex Project Manager and Caltex Construction Supervisors to ensure compliance with legal requirements, achievement of environmental objectives and continual improvement in environmental performance.
- Review effectiveness and implementation of this CEMP.



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- Review Contractor environmental management plans and registers, as required by this CEMP, 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).

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

- Delegate community notification role, if necessary, prior to the arrival of emergency services, with consideration of communications tools such as phone calls, door knocking and letter box drops, as appropriate for the incident and its impact.
- Responsible for the overall control of the emergency.

Contractor Project Manager

- Overall responsibility for the development and implementation of the Contractor's own project specific CEMP or integrated HSE Management Plan.
- Ensure compliance with the requirements of this CEMP throughout its works.
- Appoint an Environment or HSE Representative.

Contractor Environment / HSE Representative

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

All Construction Personnel (Caltex and Contractors)

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

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7.2 Induction

Caltex will develop and deliver a Project Induction prior to commencement of construction. The Caltex Project Induction will include the requirement for mandatory compliance with this CEMP by all personnel and Contractors. The Caltex Project Induction will include emergency procedures for the Project Site.

The induction will be reviewed at least annually or more frequently if there are significant changes in environmental conditions or requirements.

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

7.3 Training

Relevant Caltex and Contractor personnel will undergo training, to be provided by Caltex, in the implementation of this CEMP. 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 Contractors, 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 8.3).

The Contractor will implement appropriate training to ensure its personnel are aware of their environmental responsibilities, including requirements set out in their works-specific CEMP.

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

All personnel and Contractors are required to discuss environmental issues as a regular component of their toolbox talks and site meeting agendas.

Environmental notice boards will be established by Caltex to inform personnel of relevant environmental information such as minutes of meetings, results of monitoring, performance standards, environmental incident alerts and company environmental notices. The notice board will be refreshed periodically with up-to-date information.

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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 to 333, the Caltex Emergency number, which should be called first, or 000. Emergency calls to these numbers, if required, may be made by anyone.

All queries or complaints received by personnel will be directed to the Caltex EMR. Under no circumstances will Contractors communicate with the media on any matters concerning the Project.

Caltex's consultation activities will continue throughout construction. This will involve meetings and letter box drops to the closest residents and user groups (including sailing, diving and recreational users), to describe the nature of the works, and to offer opportunity to feedback via a 24-hour hotline number (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 this EIS.

Consultation activities will be carried out with the following, as a minimum:

- The users of Silver Beach.
- The residents of the Ranger's House.
- The residents along Prince Charles Parade (No.s 2 to 174).
- The users of Kamay Botany Bay National Park.
- The users of the Botany Bay Educational Centre (located in the National Park).

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 and changes to the plan are made as required to incorporate learning from the exercises.

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 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.

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- 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.
- 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 CEMP. 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. Construction 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.

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 environment¹, as set out below and in Section 8.1.

¹ 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 be also 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 will continue to implement its existing complaint management procedures, including for response to, investigation and reporting of complaints.

Caltex manages pollution complaints in accordance with the requirements of EPL 837, including:

- Reporting complaints in the Annual Return for EPL 837.
- 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 continue to operate its 24-hour hotline number (1800 802 385 toll free) to receive feedback and complaints associated with the Project. All feedback and complaints will be relayed to the Refinery Manager, Community Relations Manager and the head of the Environmental Group, as relevant depending on their nature.

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

7.8 Corrective Actions

Corrective actions may be generated from a number of sources, including but not limited to incidents, audits, inspections and management reviews. Corrective actions will be systematically managed to ensure issues raised are recorded and closed.

A Corrective Actions Register for recording all corrective actions raised and closeout details will be maintained on site. The close out details will include the date closed and the name of the person verifying completion of the required action.

Specific corrective actions for each of the environmental elements relevant to the Project are set out in Section 8.

7.9 Reporting

Contractor will provide a brief report to the Caltex EMR on a fortnightly basis, including all information require by this CEMP.

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

7.10 Control of Records

Records will be developed and maintained in relation to this CEMP 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.

Contractors are required to forward all records generated as a result of this CEMP to the Caltex EMR on a monthly basis. Records will be maintained on site by the Caltex EMR.

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7.11 Audit and Compliance Management

Regular 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 construction activities and risks. The Project Audit Schedule will be risk based and higher risk activities will be the subject of increased audit and inspection.

Audits may be conducted as integrated HSE audits or specific environmental audits. Environmental audits and inspections will include:

- Area and task specific inspections – these will typically be documented using inspection checklists.
- Caltex Environmental Management System (EMS) audits – these will be documented in audit reports.
- Contractor EMS audits (for major Contractors only) – these will be documented in audit reports.
- Ad hoc audits requested by Caltex – these will be documented as best fits to suit the scope and intended outcomes of the audit.

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.

7.11.1 Contractor Audits and Inspections

Contractors will conduct environmental or integrated HSE inspections at regular intervals. This interval will be detailed in the Contractor's CEMP.

Contractors will submit copies of completed audit and inspection forms to the Caltex EMR on a monthly basis.

7.11.2 CEMP Compliance Audits

Implementation of this CEMP will be audited within six weeks of the commencement of site construction works for the upgrade to the wharf infrastructure.

The findings of CEMP compliance audits will be recorded in the Corrective Actions Register as required and reported to the Caltex EMR with the names of responsible persons and agreed timeframes for the implementation of corrective actions.

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7.11.3 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. 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.

7.11.4 CEMP Review

This CEMP is based on the relevant information and requirements set out in the Project EIS (URS 2013) for the works. All relevant changes to the EIS and relevant conditions of approval must be incorporated into this CEMP.

This CEMP will be reviewed at least each six months and in response to audits, incidents and changes to the scope of works, as relevant. Any changes will be formally communicated by Caltex to all construction personnel.

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8 ENVIRONMENTAL PROCEDURES

Specific control measures required to undertake the construction works are set out in Sections 8.1 to 8.8. These measures will be complied with by all Caltex personnel and Contractors 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 are marked with an asterisk (*).

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

8.1 Water and Sediment Quality

Element	Water and Sediment Quality
Performance Objectives	<i>To prevent the pollution of water and the generation of excessive turbidity.</i> <i>To minimise the environmental impact of any spills and excessive turbidity that occur.</i>
Management Actions	▪ Contractors will maintain the site in a clean and tidy state. ▪ The site should be swept clean, rather than washed down with water. ▪ Water used to clean equipment should not be allowed to flow directly into Botany Bay, instead it should be allowed to filter through hessian sacks or similar. ▪ Contractors will ensure that any waste is disposed of appropriately and no items fall into the surrounding water. ▪ Fabrication will be undertaken off-site as far as possible.

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Element	Water and Sediment Quality
	▪ Impermeable ground sheets and / or shrouding (comprising shade cloth or similar) should be utilised immediately below and adjacent to demolition works where practicable to prevent debris entering the water. ▪ Impermeable ground sheets and shrouding should be carefully collected (to contain any captured material), bagged and removed on completion of work in each area. No debris will be allowed to enter the water. ▪ Biodegradable oil will be used within the pile rig.* ▪ Vessels and equipment will be maintained in good working order to minimise the risk of leaks and spills. ▪ Regular servicing and maintenance of construction equipment will be scheduled and carried out by the relevant Contractor.* ▪ Pre start checks will be undertaken prior to commencement of piling to ensure equipment is operating correctly.* ▪ Ships used during construction works will be subject to the controls to limit pollution and spill risks currently in place for ships berthing at the Kurnell Wharf.* ▪ Contractors will ensure their construction activities conform to the requirements of the MARPOL Convention, with regard to the statutory controls placed on ships to prevent marine pollution.* ▪ Contractors will ensure their construction activities conform to the pollution prevention requirements set out under Section 120 of the POEO Act.* ▪ Caltex will make all Contractors aware of Caltex's Emergency Response Plan (STD 4.02.01.01) and Oil-spill Callout and Response Work Procedure (PROC 120.05.001). ▪ Contractors 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).* ▪ Appropriate spill kits and booms will be available on the wharf and aboard barges and workboats actively involved in the construction works.*

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Element	Water and Sediment Quality
	▪ Spill kits will be tailored to the type and volume of potential spills and will include, as a minimum: • Absorbent pads. • Spill containment booms. • Personal protection equipment. • Contaminated waste bags and ties. • Instruction sheets. ▪ All spills will be stopped at the source and contained as soon as possible. ▪ Spilt material will be recovered, where possible, and contaminated spill recovery materials will be collected and disposed at an appropriate licensed facility. ▪ In the event of a spill, incident or emergency, construction activities in the immediate area will cease immediately.* ▪ In the event of a 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). ▪ The KROSRT 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 minimise and 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.



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Element	Water and Sediment Quality
	▪ Where a pollution incident occurs that is causing or threatening material harm to the environment², 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).* ▪ 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 a spill, accident or emergency situation, the Contractor will undertake any relevant required repairs and modify their working methods as appropriate.

² 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	Water and Sediment Quality
	- Contractors will develop and implement a works-specific Spill Control Plan (SCP) that incorporates the requirements of this CEMP and the following: - 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 works' 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 Caltex and 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.
Performance Indicators	- No turbid plumes visually detectable outside the Project Site. - Spill response procedures implemented in accordance with the relevant works-specific SCP.* - Regular maintenance of construction equipment scheduled and carried out by the relevant Contractor.
Monitoring	- Visual inspections for turbid plumes will be carried out daily during works involving disturbance to the sea bed. - The Contractors will carry out regular inspections of its works areas to ensure the SCP is being implemented.*

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Element	Water and Sediment Quality
Reporting	- Caltex will report all relevant complaints, spills and incidents under the terms of the current EPL No. 837.* - Caltex, with assistance from Contractors as relevant, will prepare an incident investigation report for all incidents.
Corrective Action	- Where turbid plumes are visually detected outside the Project Site, the results of the Project Sediment and Water Quality Monitoring Program will be reviewed and where parameters exceed the relevant trigger levels, the potential for use of silt curtains will be investigated by the Contractor, in consultation with Caltex. - Where spill response procedures are not being implemented in accordance with the relevant works-specific SCP, Contractors will review and revise their SCP and provide further training as relevant.

8.2 Flora

Element	Flora
Performance Objective	<i>To minimise impacts to native marine and terrestrial flora and prevent the introduction of new introduced marine flora, including Caulerpa taxifolia.</i>
Management Actions	- Contractors will carry out regular inspections of the construction works areas and equipment 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.* - No 'high risk' (refer DAFF 2011) ballast water or sediments from ballast tanks will be discharged in to Botany Bay.*



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Element	Flora
	- Ballast water will be controlled in accordance with the International Convention for the Control and Management of Ships' Ballast Water and Sediments, the IMO Guidelines for the Control and Management of Ships' Ballast Water (1997) and the Australian Ballast Water Management Requirements (Version 5) (DAFF 2011).* - Each construction ship will implement a Ballast Water and Sediment Management Plan that sets out controls to manage ballast and bilge waters in accordance with the International Convention for the Control and Management of Ships' Ballast Water and Sediments, the IMO Guidelines for the Control and Management of Ships' Ballast Water (1997) and the Australian Ballast Water Management Requirements (Version 5) (DAFF 2011).* - No clearing of, or disturbance to, seagrass beds is permitted.* - No clearing of, or disturbance to, native terrestrial vegetation is permitted.*
Performance Indicators	- No introduction or spread of <i>Caulerpa taxifolia</i>. - No clearing of, or disturbance to, seagrass beds or native terrestrial vegetation.
Monitoring	Regular inspections of construction works areas and equipment carried out to check for the presence of <i>Caulerpa taxifolia</i>.*
Reporting	The dates and outcomes of <i>Caulerpa taxifolia</i> inspections will be reported by the Contractor to the Caltex EMR fortnightly.
Corrective Action	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>.*

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8.3 Fauna

Element	Fauna
Performance Objective	<i>To minimise injury to or death of fauna and minimise loss of fauna habitat.</i>
Management Actions	▪ Native fauna will be protected at all times and will not be fed, harassed or otherwise interfered with. ▪ Feral animals will not be encouraged to enter or remain in the Project Site through feeding, access to artificial waterbodies or inadequate waste disposal practices. ▪ Pipe ends will be capped during pipe-laying works to prevent fauna getting caught in pipes. Uninjured trapped fauna will be released to a nearby area of suitable habitat. ▪ Contractors will maintain the site in a clean and tidy state. ▪ Contractors will ensure that any waste is disposed of appropriately and no items fall into the surrounding water. ▪ Caltex will enable regular inspections of the Project Site by DAFF to check for the introduction of marine pest species.* ▪ All vessels will adhere to the four knot speed limit within the Project Site to prevent collision injuries or fatalities to fauna.* ▪ Lighting on construction ships and equipment will be minimised to that required for safe operations and to meet regulatory navigational safety requirements.* ▪ Construction lighting will be positioned to prevent excess light spill into areas that are not required to be lit.* ▪ No 'high risk' (refer DAFF 2011) ballast water or sediments from ballast tanks will be discharged in to Botany Bay.* ▪ Ballast water will be controlled in accordance with the International Convention for the Control and Management of Ships' Ballast Water and Sediments, the IMO Guidelines for the Control and Management of Ships' Ballast Water (1997) and the Australian Ballast Water Management Requirements (Version 5) (DAFF 2011).*

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Element	Fauna
	- Each construction ship will implement a Ballast Water and Sediment Management Plan that sets out controls to manage ballast and bilge waters in accordance with the International Convention for the Control and Management of Ships' Ballast Water and Sediments, the IMO Guidelines for the Control and Management of Ships' Ballast Water (1997) and the Australian Ballast Water Management Requirements (Version 5) (DAFF 2011).* - Trained marine fauna spotters (monitors) will be used to make observations for marine turtles, cetaceans, pinnipeds, dugongs and instances of shoaling fish up to a distance of 420 m from active piling and rock revetment works areas prior to start up and throughout piling and rock revetment works.* - Piling and rock revetment works will not commence if marine turtles, cetaceans, pinnipeds or dugongs are sighted within 150 m of piling or rock revetment works.* - If marine turtles, cetaceans, pinnipeds or dugongs are observed within 420 m of active piling or rock revetment works areas, the Contractor will be placed on standby to cease piling or rock revetment works (as relevant).* - If marine turtles, cetaceans, pinnipeds or dugongs are observed within 150 m of active piling or rock revetment works areas, the Contractor will cease piling or rock revetment works (as relevant). Works will not recommence until 30 minutes after the animal has moved more than 150 m away, or 30 minutes after the animal was last sighted.* - Slow start up measures will be used for all construction activities that generate underwater noise to ensure any noise-sensitive marine fauna are able to move away from the noise source.*
Performance Indicators	- No piling or rock revetment works whilst marine turtles, cetaceans, pinnipeds or dugongs are within 150 m of active piling or rock revetment works areas.* - No fauna deaths directly associated with construction activities.

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Element	Fauna
Monitoring	Marine fauna monitoring will be used to make observations for marine turtles, cetaceans, pinnipeds, dugongs and instances of shoaling fish up to a distance of 420 m from active piling or rock placement works areas prior to start up and throughout piling or rock placement works.*
Reporting	- 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. - Marine fauna monitors will utilise a Marine Fauna Sighting Log to record observations of marine turtles, cetaceans, pinnipeds or dugongs and any required actions taken (i.e. delay in start of work, standby or temporary cessation of works).* - The dates and outcomes of marine fauna monitoring will be reported by the Contractor to the Caltex EMR fortnightly. - Caltex will notify the whale migratory team within the NSW Office of Environment and Heritage (OEH) of whale sightings between June and October, during the construction period.*
Corrective Action	If fauna is injured during construction, 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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KURNELL WHARF INFRASTRUCTURE UPGRADE - INSTALLATION OF A SHEET PILE WALL AND ROCK REVETMENT

CONSTRUCTION ENVIRONMENTAL MANAGEMENT PLAN

8.4 Noise

Element	Noise
Performance Objective	<i>To minimise disturbance to sensitive receivers and marine fauna from airborne and underwater noise.</i>
Management Actions	▪ Marine fauna monitoring will be carried out as detailed in Section 8.3.* ▪ Noise generation will be managed within regulatory and licence requirements. ▪ All sheet pile wall and rock revetment construction activities will be restricted to the standard working hours set out in the Interim Construction Noise Guidelines (ICNG), being between the hours of 0700 and 1800 Monday to Friday; 0800 to 1300 Saturday; with no work on Sundays or public holidays.* ▪ Fabrication will be undertaken off-site as far as possible. ▪ Vessels and equipment will be maintained in good working order to minimise noise. ▪ Regular maintenance of construction equipment will be scheduled and carried out by the relevant Contractor.* ▪ Slow start up measures will be used for all construction activities that generate underwater noise to ensure any noise-sensitive marine fauna are able to move away from the noise source.* ▪ Piling operations with a sound power levels (SWL) of 113 dB(A) or less should be utilised wherever possible. ▪ Noise levels during piling and rock revetment works will be maintained within the following limits: • Calculated 15-minute SWLs $L_{w,eq,15min}$ less than or equal to 113 dB(A) at source. • Measured 15-minute sound pressure levels (SPLs) $L_{p,eq,15min}$ less than or equal to 85 dB(A) measured at 10 m from the source.* ▪ During installation of the sheet pile wall, noise levels along Prince Charles Parade (Figure 8-1) will be maintained below or equal to $L_{Aeq(15min)} = 55$ dB(A).*



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CONSTRUCTION ENVIRONMENTAL MANAGEMENT PLAN

Element	Noise
	- During rock revetment works, noise levels along Prince Charles Parade (Figure 8-1) will be maintained below or equal to $L_{Aeq}(15min) = 54 \text{ dB(A)}^*$ - Noise measurements will be carried out by a qualified acoustics consultant, (i.e. a member of the Australian Acoustical Society (AAS) or the Association of Australian Acoustical Consultants (AAAC)) and undertaken in accordance with relevant Australian Standards for acoustic measurement of equipment in the field.* - Prior to the commencement of rock revetment works, the Rock Revetment Contractor will consult with Caltex, the EPA and a suitably qualified and experienced acoustic consultant to develop specific noise management measures that would be implemented if rock revetment works exceed the required noise level at source, 10 m from source or along Prince Charles Parade.* - Caltex will specifically consult with the residents of Prince Charles Parade and other local community groups ahead of starting the piling and rock revetment works.*
Performance Indicators	- Works carried out within the required hours.* - No piling whilst marine turtles, cetaceans, pinnipeds or dugongs are within 150 m of active piling or rock revetment works areas.*
Monitoring	- Noise monitoring will be carried out during piling and rock revetment works to ensure compliance with required levels.* - Marine fauna monitoring will be used to make observations for marine turtles, cetaceans, pinnipeds, dugongs and instances of shoaling fish up to a distance of 420 m from active piling or rock revetment works areas prior to start up and throughout piling or rock placement works.*
Reporting	- The Contractor will report the SWL of the piling and rock revetment operations to the Caltex EMR prior to commencement of piling.* - The dates and outcomes of noise monitoring for piling and rock revetment 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
Corrective Action	- Where the SWL of the piling or rock revetment operations, as reported by the Contractor, 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. - If piling is shown to exceed the required noise limits, additional mitigation will be implemented for these activities, such as: - The use of dampening non-metallic dollies (wooden blocks). - Acoustic screening for piling equipment. - Implement periodic breaks in undertaking the piling. Piling for 12 minutes and stopping for 3 minutes will give an overall reduction of 1 dB(A) when measured as $L_{Aeq,15min}$. Piling for 10 minutes and stopping for 5 minutes will reduce the noise levels by approximately 2 dB(A).* - If rock revetment works are shown to exceed the required noise limits, the additional mitigation measures, developed by the Rock Revetment Contractor in consultation with Caltex and the EPA, will be implemented.*



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SEDIMENT AND WATER QUALITY MONITORING PROGRAM

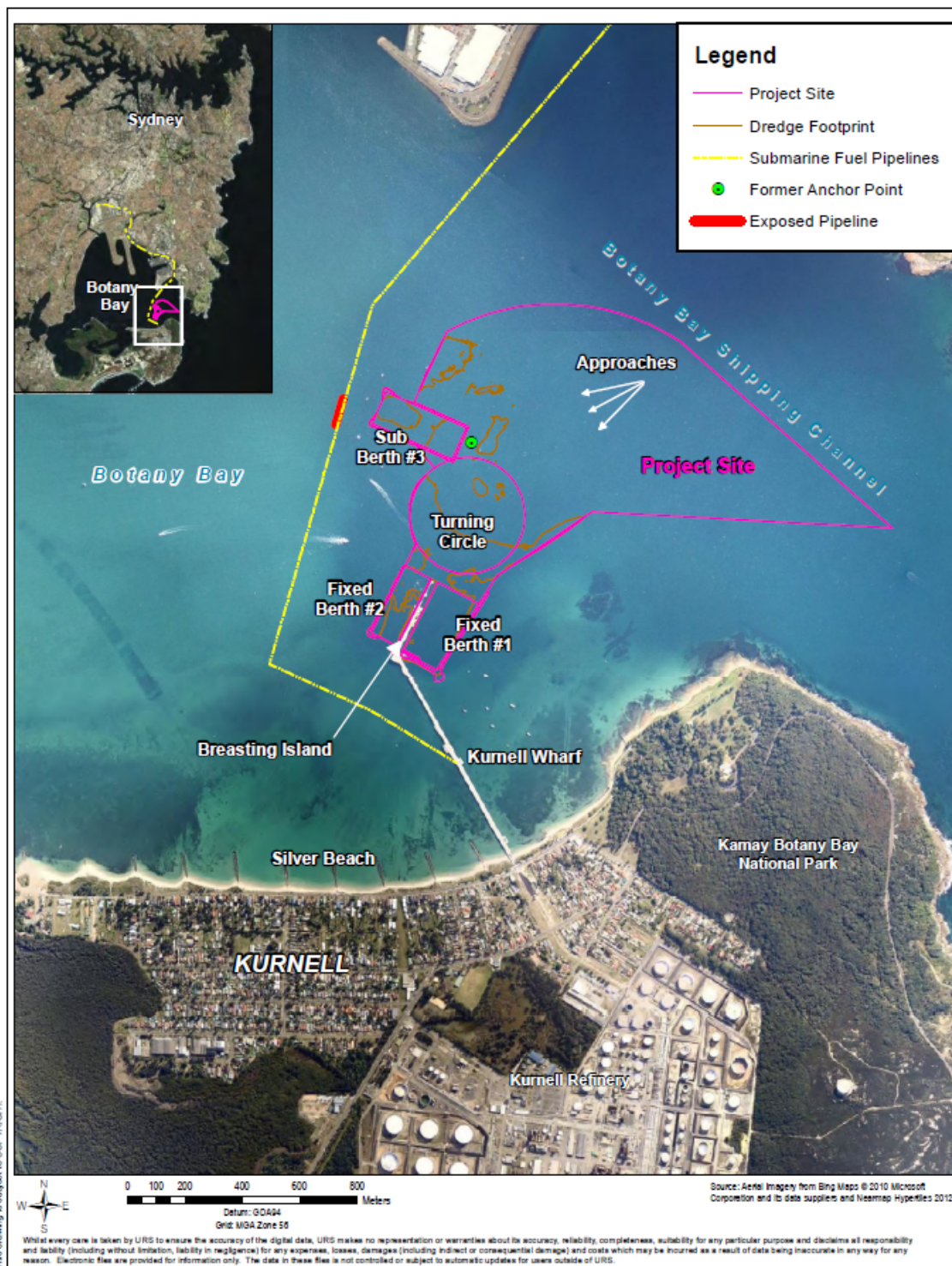


Figure 1-1: Project Site and dredge footprint (source: URS 2013)



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SEDIMENT AND WATER QUALITY MONITORING PROGRAM

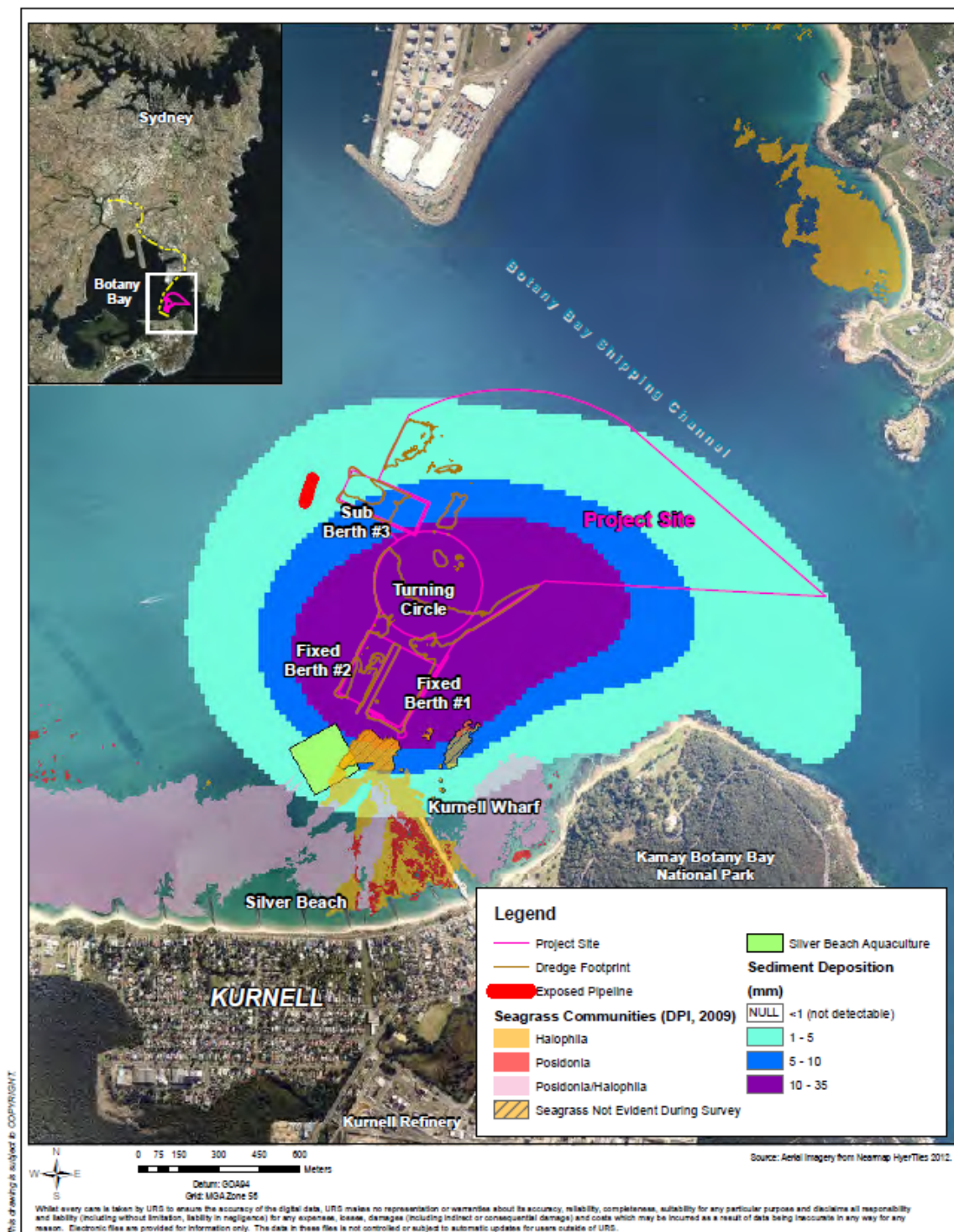


Figure 1-2: Modelled sediment deposition relative to places of important ecological value (URS 2013)



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SEDIMENT AND WATER QUALITY MONITORING PROGRAM

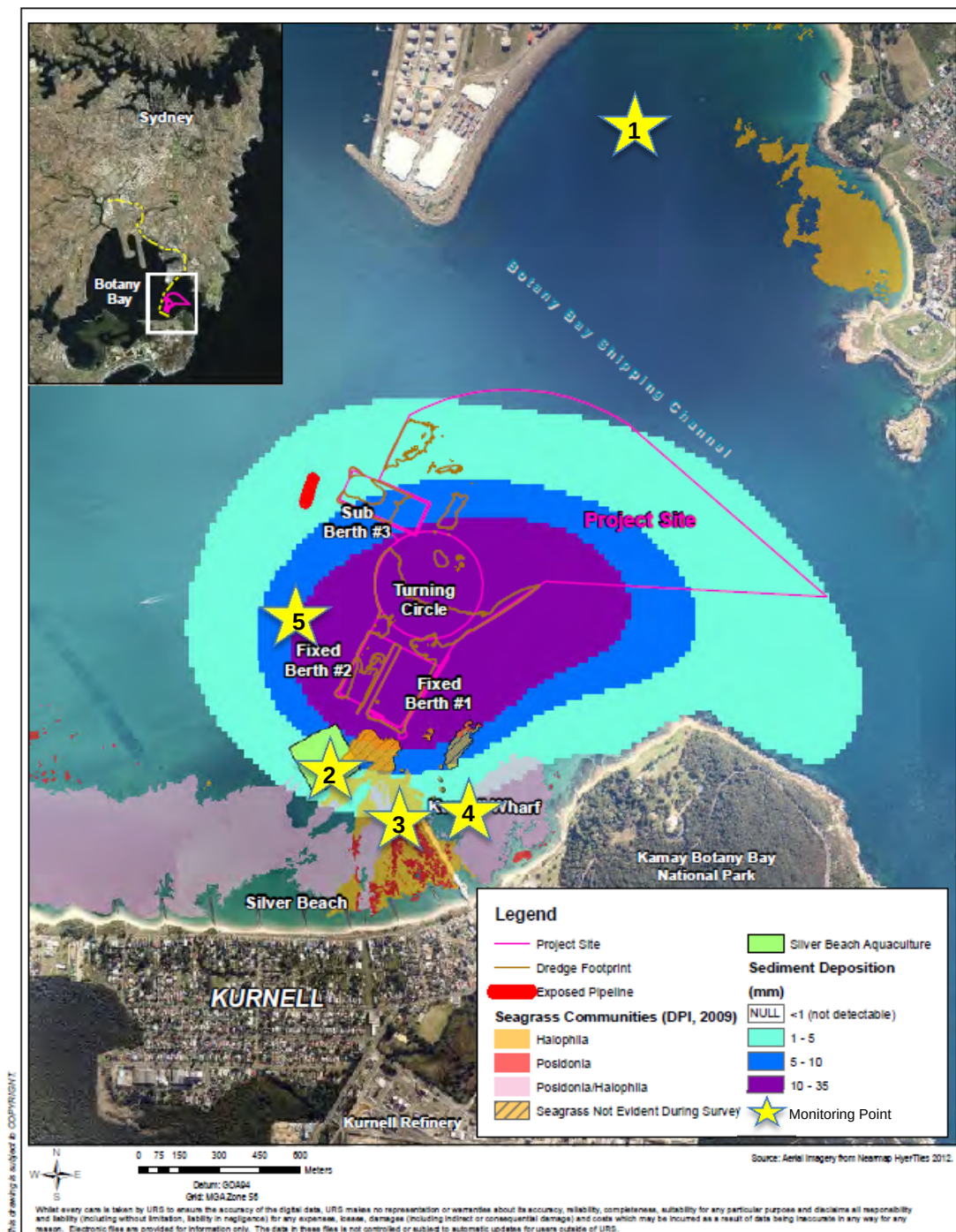


Figure 8-1: Location of sediment and water quality monitoring points



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SEDIMENT AND WATER QUALITY MONITORING PROGRAM

9 MONITORING METHODOLOGY

Live monitoring will be carried out prior to and during the dredging activities for turbidity, pH and DO. This will be achieved through the deployment of a continuous water quality monitoring buoy at each of the monitoring points shown on Figure 8-1.

The monitoring locations shown on Figure 8-1 should be adjusted to ensure anchoring of monitoring buoys does not result in the disturbance of seagrasses, including by placement or movement of the anchor or the anchor chain.

Water quality monitoring buoys will monitor, record and transmit turbidity levels at approximately 15 minute intervals. The framework set out in Section 9.1 will be implemented prior to and during dredging. The transmitted data will be monitored against the trigger levels set out in Section 9.2.

Monitoring of background water quality should be carried out for a period of at least four weeks to enable confirmation that the modelling inputs used in the EIS were representative of normal dry-weather conditions experienced at the Project within Botany Bay. This monitoring should be undertaken at least four weeks prior to commencement of dredging to ensure any required remodelling of water quality impacts and subsequent review and revision of management practices does not delay the commencement of dredging.

Water quality monitoring will be carried out continuously during dredging at the Project Site and during reuse of dredged sediments within Botany Bay. Water quality monitoring will continue for one week following completion of dredging activities.



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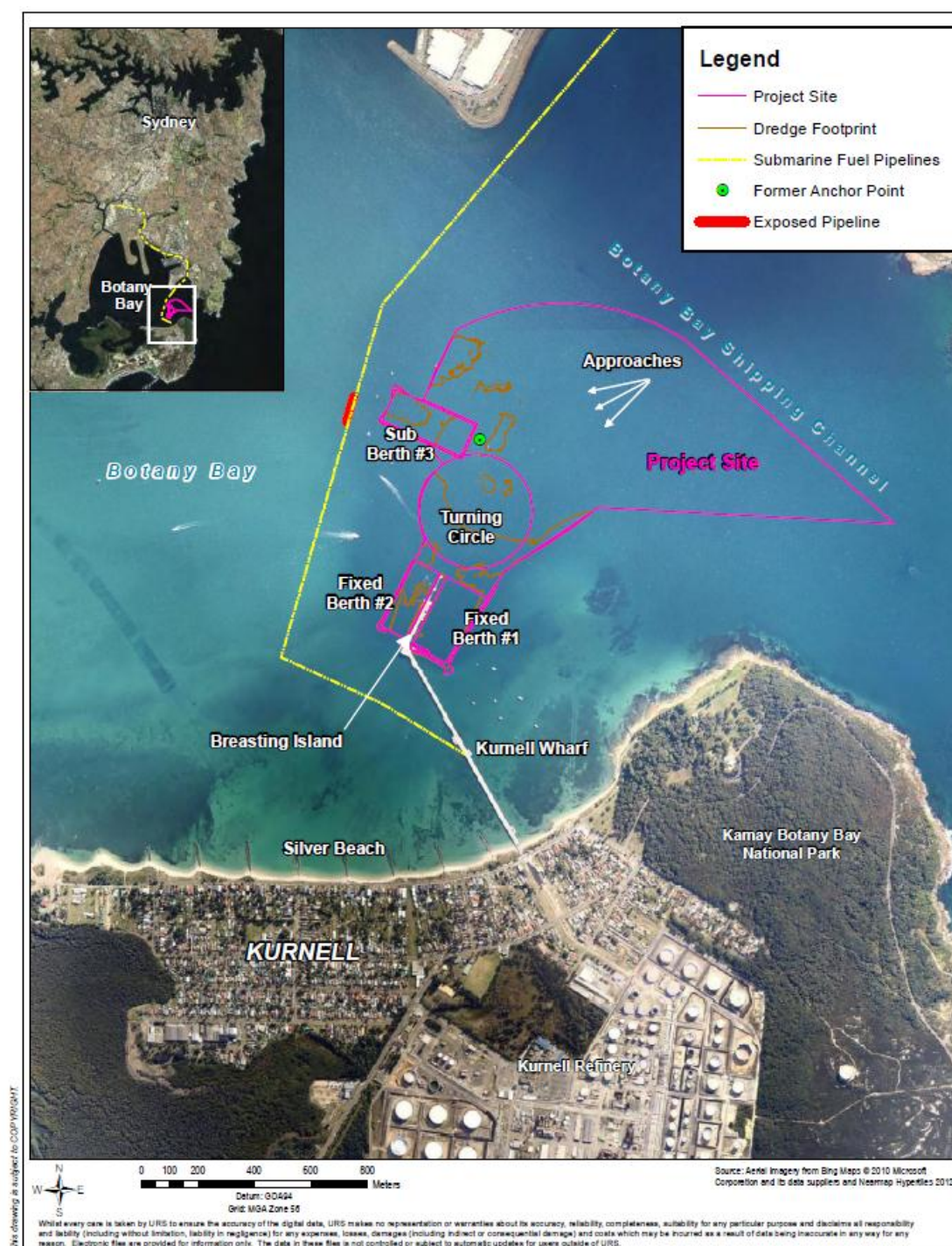


Figure 1-1: Project Site and Context (source: URS 2013)

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1.2 Scope of Works

This CEMP provides the basis for environmental management throughout construction works associated with the installation of a sheet pile wall and a rock revetment only.

A separate CEMP has been prepared for construction of the wharf infrastructure upgrade as part of the Project.

This CEMP does not address environmental management measures associated with project design, nor the environmental management of impacts associated with dredging, or those from port and berthing facility operations.

This CEMP is based on the relevant information and requirements set out in the Environmental Impact Statement (EIS) (URS 2013) for the Project. All relevant changes to the EIS and relevant conditions of consent must be incorporated into this CEMP.

Each Contractor will adopt this CEMP or develop their own Project specific CEMP or integrated Health, Safety and Environment (HSE) Management Plan to manage the environmental risks specifically related to their scope of work on the Project. These Contractor documents will, as a minimum, align with the requirements of this CEMP and are required to be reviewed and approved by the Caltex Environmental Management Representative (EMR) prior to mobilisation to site.

Compliance with this CEMP is mandatory for all personnel and Contractors carrying out construction activities for the installation of the sheet pile wall and rock revetment.

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2 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, 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 and the two fixed berths. Adjacent to the wharf, south of the fixed berths, are a series of additional submarine pipelines that transport fuel under Botany Bay. These pipelines 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.

Caltex is undertaking port and berthing facility upgrade works to increase the capacity of fixed berth #1 to receive larger ships. Further, the upgrade works will adopt the latest design standards to enable efficient loading/unloading and improve handling and ergonomic performance. Improvements will also be made to the fuel loading and unloading equipment located on the wharf, used for fixed berth #1. Other ancillary work will include an upgrade to the fire system on the wharf and the provision of additional stability to the existing wharf piles through construction of a sheet-piled wall and rock revetment at the southern end of fixed berth #1.

The work will be carried out within the existing Marine Security (exclusion) Zone around the Kurnell Wharf (Figure 2-1).

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



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CONSTRUCTION ENVIRONMENTAL MANAGEMENT PLAN

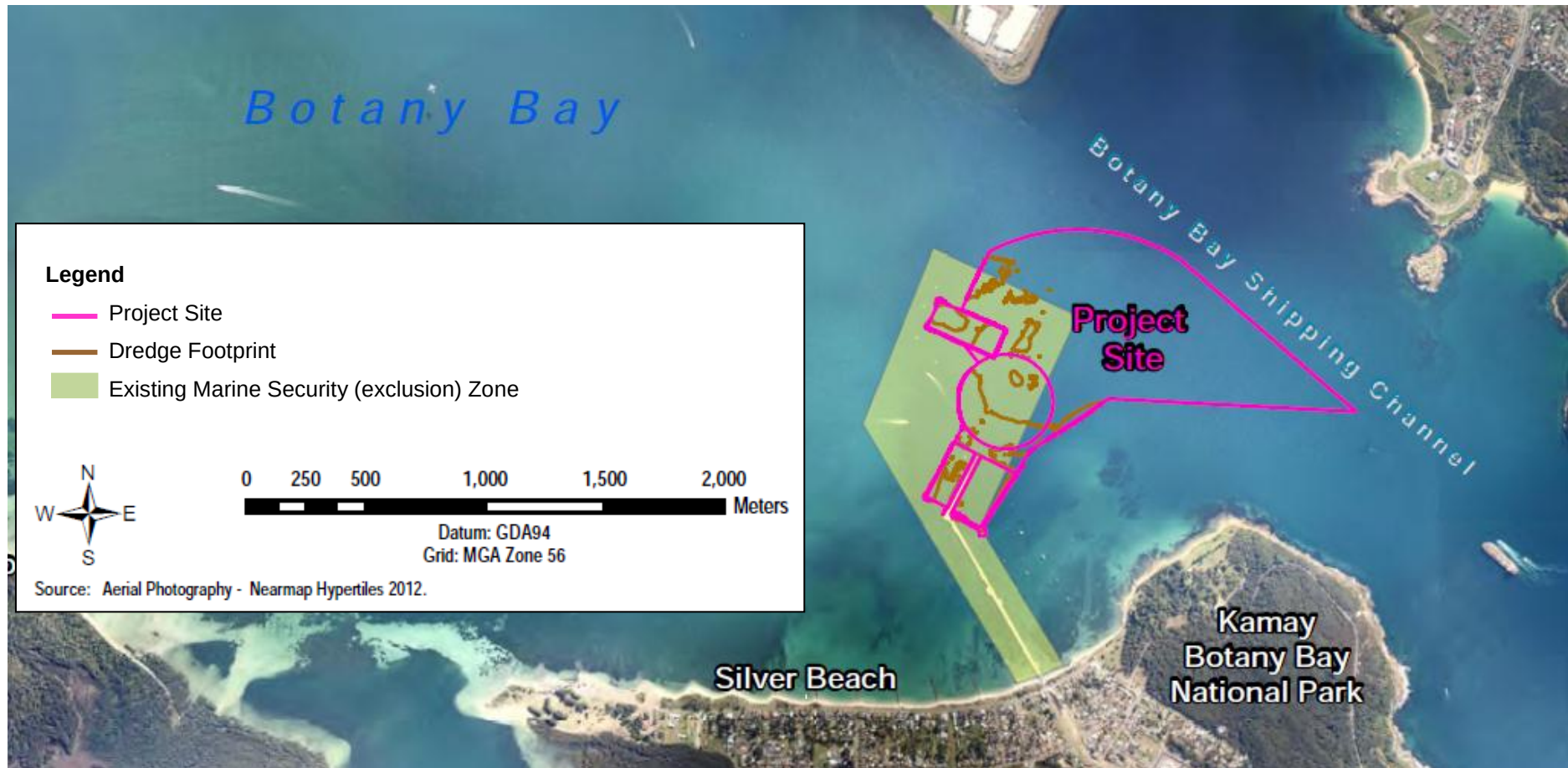


Figure 2-1: Existing Marine Security (exclusion) Zone at the Project Site (adapted from URS 2013)

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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 to 333, the Caltex Emergency number, which should be called first, or 000. Emergency calls to these numbers, if required, may be made by anyone.

All queries or complaints received by personnel will be directed to the Caltex EMR. Under no circumstances will Contractors communicate with the media on any matters concerning the Project.

Caltex's consultation activities will continue throughout construction. This will involve meetings and letter box drops to the closest residents and user groups (including sailing, diving and recreational users), to describe the nature of the works, and to offer opportunity to feedback via a 24-hour hotline number (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 this EIS.

Consultation activities will be carried out with the following, as a minimum:

- The users of Silver Beach.
- The residents of the Ranger's House.
- The residents along Prince Charles Parade (No.s 2 to 174).
- The users of Kamay Botany Bay National Park.
- The users of the Botany Bay Educational Centre (located in the National Park).

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 and changes to the plan are made as required to incorporate learning from the exercises.

The composition of the Caltex Emergency Management System is shown in Figure 7-1.



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KURNELL WHARF INFRASTRUCTURE UPGRADE - INSTALLATION OF A SHEET PILE WALL AND ROCK REVETMENT

CONSTRUCTION ENVIRONMENTAL MANAGEMENT PLAN



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

The POEO Act also requires that the holder of an 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.

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Element	Noise
Corrective Action	- Where the SWL of the piling or rock revetment operations, as reported by the Contractor, 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. - If piling is shown to exceed the required noise limits, additional mitigation will be implemented for these activities, such as: - The use of dampening non-metallic dollies (wooden blocks). - Acoustic screening for piling equipment. - Implement periodic breaks in undertaking the piling. Piling for 12 minutes and stopping for 3 minutes will give an overall reduction of 1 dB(A) when measured as $L_{Aeq,15min}$. Piling for 10 minutes and stopping for 5 minutes will reduce the noise levels by approximately 2 dB(A).* - If rock revetment works are shown to exceed the required noise limits, the additional mitigation measures, developed by the Rock Revetment Contractor in consultation with Caltex and the EPA, will be implemented.*



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Figure 8-1: Noise sensitive receptors in the vicinity of the Project Site



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KURNELL WHARF INFRASTRUCTURE UPGRADE - INSTALLATION OF A SHEET PILE WALL AND ROCK
REVTMENT

CONSTRUCTION ENVIRONMENTAL MANAGEMENT PLAN

8.5 Air Emissions and Odour

Element	Air Emissions and Odour
Performance Objective	<i>To prevent a decrease in regional air quality and to ensure adverse impacts on adjacent areas due to dust are minimised.</i>
Management Actions	▪ Dust control measures will be implemented wherever relevant throughout construction works. ▪ Material stockpiles that have the potential to generate dust will be covered. ▪ Material loads that have the potential to generate dust will be covered during transport. ▪ Dust generating activities will not be carried out during periods of high wind. ▪ Contractors will notify the Caltex EMR of any anomalous odours identified during construction.* ▪ Vessels and equipment will be maintained in good working order to minimise air emissions. ▪ Regular maintenance of construction equipment will be scheduled and carried out by the relevant Contractor.* ▪ Vehicles, vessels and equipment, including generators, will be turned off when not in use.
Performance Indicators	▪ No air quality or odour complaints received.
Monitoring	▪ Contractors will carry out regular visual monitoring to identify areas generating dust. ▪ Contractors will carry out regular visual monitoring to identify equipment producing excessive visible emissions. ▪ Contractors, in collaboration with Caltex, will develop and implement an appropriate monitoring strategy where anomalous odours are identified.
Reporting	▪ The dates and outcomes of visual dust and emissions monitoring will be report by the Contractor to the Caltex EMR fortnightly.

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Element	Air Emissions and Odour
Corrective Action	- Contractors, in collaboration with Caltex, will develop and implemented appropriate management measures where anomalous odours are identified. - Sources of dust emissions will be covered, or if required, wet down. - Equipment observed to be creating excessive air quality emissions will be replaced or serviced within 48 hours.

8.6 Heritage

Element	Heritage
Performance Objective	<i>To protect and preserve Indigenous and Non-Indigenous heritage sites and values.</i>
Management Actions	- Contractors will maintain the site in a clean and tidy state and implement dust and emission control measures (as detailed in Section 8.5) to minimise the visual impact of construction activities to areas of heritage significance, including the Kurnell Peninsula Headland. - Water and sediment 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	Suspected heritage item are dealt with in accordance with the required sequence of corrective actions.*
Monitoring	Works to the sea bed will be visually monitored for the presence of potential heritage items.
Reporting	Details of the discovery of any suspected heritage items will be reported to the Caltex EMR as soon as practicable.
Corrective Action	In the event that a suspected heritage item (Indigenous and Non-Indigenous) is encountered, construction activities in the immediate area will cease and any further disturbance to the area of the item prevented.*

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Element	Heritage
	▪ The discoverer of the item will notify machinery operators in the immediate vicinity of the item so that work can be halted. ▪ Contractors will immediately contact the Caltex EMR, who will notify OEH in accordance with the requirements of Section 146 of the <i>Heritage Act 1977</i>.* ▪ The police will be contacted immediately if human remains are uncovered. ▪ 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.* ▪ An appropriate management strategy for recording and preservation of the item (if warranted) will developed, along with a strategy to return to work as far as possible.* ▪ Works in the immediate area will not resume until approved in writing by the Caltex EMR.

8.7 Marine and Road Traffic

Element	Marine and Road Traffic
Performance Objective	<i>To minimise traffic interactions and appropriately manage traffic interfaces.</i>
Management Actions	▪ Road access to and from Kurnell Wharf will be from Prince Charles Parade.* ▪ Road access to and from the Kurnell Refinery will be via Solander Street.* ▪ All vehicles will observe the sign-posted speed limits. ▪ Vehicles will only be parked in designated areas. ▪ All ships used for the proposed works will hold current certifications in accordance with their class and function.*



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CONSTRUCTION ENVIRONMENTAL MANAGEMENT PLAN

Element	Marine and Road Traffic
	▪ 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.* ▪ All ships will have an on-board Ship-Oil Pollution Emergency Plan (SOPEP) or equivalent applicable to their class. ▪ Caltex will make all Contractors 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 Contractors aware of current practices and standard controls for shipping activities, including SPC Harbour Control being notified of all shipping movements.* ▪ Contractors will be familiar with and adhere to Caltex's current practices and standard controls for shipping activities.* ▪ Caltex will revise its Shipping and Planning Procedure to accommodate the construction works.* ▪ Marine vessels not in use will be moored. ▪ A Port Operating Procedure (POP) will be developed by relevant Contractors (as determined by Caltex) in accordance with the relevant regulations and in conjunction with SPC and RMS.* ▪ A Marine Works Management Plan (MWMP), will be developed by the relevant Contractors (as determined by Caltex) to support the POP.* ▪ The MWMP will include appropriate safety controls that accord with the requirements of the Harbour Master and the SPC's Port Procedures Guide to ensure the safety of waterway traffic during construction works.* ▪ Caltex will liaise with the Harbour Master throughout the construction 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.

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Element	Marine and Road Traffic
	▪ The existing Marine Security (exclusion) Zone around the Kurnell Wharf will remain in place throughout construction works. ▪ Where practicable, construction 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 construction works, or activities and events relocated.*
Performance Indicators	▪ No collisions caused by Project construction vessels. ▪ Harbour Master provided with advance copies of all construction related shipping schedules.* ▪ POP and MWMP developed and implemented by relevant Contractors.*
Monitoring	▪ The Caltex EMR will monitor compliance with the management and interfacing requirements with shipping and the port operations.
Reporting	▪ Collisions or near misses will be reported in accordance with incident reporting procedures set out in Section 7.6.
Corrective Action	▪ Collisions will be managed in accordance with incident management procedures set out in Section 7.6.



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KURNELL WHARF INFRASTRUCTURE UPGRADE - INSTALLATION OF A SHEET PILE WALL AND ROCK REVETMENT

CONSTRUCTION ENVIRONMENTAL MANAGEMENT PLAN

8.8 Waste and Resource Management

Element	Waste and Resource Management
Performance Objectives	<i>To minimise the wastes generated and resources used throughout the life of the proposed works, and maximise opportunities for reduction, reuse and recycling.</i> <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>
Management Actions	- Waste generation will be minimised and all waste will be reused, recycled or disposed of in accordance with best practice and relevant legislation. - The Contractor will maintain the site in a clean and tidy state. - The Contractor will ensure that any waste is disposed of appropriately and no items fall into the surrounding water. - The discharge of any solid waste overboard is prohibited. - Impermeable ground sheets and / or shrouding (comprising shade cloth or similar) should be utilised immediately below and adjacent to demolition works where practicable to prevent debris entering the water. - Impermeable ground sheets and shrouding should be carefully collected (to contain any captured material), bagged and removed on completion of work in each area. No debris will be allowed to enter 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. - All ship generated wastes will be brought ashore for disposal via a licensed contractor.



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CONSTRUCTION ENVIRONMENTAL MANAGEMENT PLAN

Element	Waste and Resource Management
	▪ The following waste hierarchy will be implemented: • Avoid waste by identifying appropriate materials and effective procurement. • Reduction of waste by optimising construction and operation methods. • Reuse waste by identifying sources that can utilise the waste. • Recycle waste by identifying facilities that are able to recycle waste. • Recover energy from waste. • Dispose of waste at an appropriate licensed facility. ▪ Construction activities will be integrated into existing resource efficiency, waste management and handling, emergency response and preparedness plans for the port and berthing facility.* ▪ The Contractor will prepare a works-specific Waste and Resource Management Plan (WRMP).* ▪ The works-specific WRMP will be prepared in accordance with Caltex's Construction Management Plan Standard (ref: 4.20.03.001), the Waste Avoidance and Resource Recovery Act 2001, the POEO Act, the EPA's Waste Classification Guidelines 2009 and Caltex's EPL requirements.* ▪ The works-specific WRMP will incorporate the requirements of this CEMP. The works-specific WRMP will also: • Identify and incorporate requirements consistent with the waste and resource hierarchy and cleaner production initiatives. • Ensure resourcing efficiency is delivered through the design and responsible construction practices.

**CALTEX REFINERIES (NSW) PTY LTD****KURNELL WHARF INFRASTRUCTURE UPGRADE - INSTALLATION OF A SHEET PILE WALL AND ROCK REVETMENT****CONSTRUCTION ENVIRONMENTAL MANAGEMENT PLAN**

Element	Waste and Resource Management
	• Provide consistent clear direction on waste and resource handling, storage, stockpiling, use and reuse management measures (consistent with current management practices relating to Caltex's CEMP procedures). • Identify disposal and management routes consistent with current management practices as adapted for the proposed works. • Set out clear requirements for meeting legislative and regulatory requirements. • Define requirements to support Caltex's sustainable procurement objectives through effective design, construction and procurement. • Set out processes for disposal, including onsite transfer management and the necessary associated approvals. • Include a process for auditing, monitoring and reporting, which would include regular inspections of site activities and the waste management area.* ▪ Resource use will be minimised wherever practicable throughout construction. ▪ Responsible construction practices will be implemented to prevent mismanagement of waste. ▪ The Contractor will carry out regular inspections of site activities and waste management area. ▪ The Contractor will establish and maintain a waste collection and storage area within its work area. ▪ No burning of waste is allowed under any circumstances. ▪ Contractors will ensure appropriate waste containers are available within their works area 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.

**CALTEX REFINERIES (NSW) PTY LTD****KURNELL WHARF INFRASTRUCTURE UPGRADE - INSTALLATION OF A SHEET PILE WALL AND ROCK REVETMENT****CONSTRUCTION ENVIRONMENTAL MANAGEMENT PLAN**

Element	Waste and Resource Management
	▪ Caltex will make all Contractors aware of Caltex's existing procedures for the disposal of sewage, greywater, controlled waste, general waste and recyclable materials (modified as required).* ▪ Contractors will implement Caltex's existing procedures for the disposal of sewage, greywater, controlled waste, general waste and recyclable materials.* ▪ Bilge water discharge is not permitted.* ▪ No 'high risk' (refer DAFF 2011) ballast water or sediments from ballast tanks will be discharged in to Botany Bay.* ▪ Ballast water will be controlled in accordance with the International Convention for the Control and Management of Ships' Ballast Water and Sediments, the IMO Guidelines for the Control and Management of Ships' Ballast Water (1997) and the Australian Ballast Water Management Requirements (Version 5) (DAFF 2011).* ▪ Each construction ship will implement a Ballast Water and Sediment Management Plan that sets out controls to manage ballast and bilge waters in accordance with the International Convention for the Control and Management of Ships' Ballast Water and Sediments, the IMO Guidelines for the Control and Management of Ships' Ballast Water (1997) and the Australian Ballast Water Management Requirements (Version 5) (DAFF 2011).* ▪ Discharge of any solid waste overboard is not permitted.* ▪ Any refuelling taking place at the wharf will be undertaken in accordance with existing Caltex procedures and permits. ▪ Contractors will ensure their construction activities conform to the requirements of the MARPOL Convention, with regard to the statutory controls placed on ships to prevent marine pollution.* ▪ Contractors will ensure their construction activities conform to the pollution prevention requirements set out under Section 120 of the POEO Act.* ▪ Licensed contractors will be utilised to remove and transport waste from the site.*

**CALTEX REFINERIES (NSW) PTY LTD****KURNELL WHARF INFRASTRUCTURE UPGRADE - INSTALLATION OF A SHEET PILE WALL AND ROCK REVETMENT****CONSTRUCTION ENVIRONMENTAL MANAGEMENT PLAN**

Element	Waste and Resource Management
	- Records of Controlled Waste Receipts and Tracking Numbers will be maintained on site. - Environmental issues and impacts will be considered when procuring subcontractors and suppliers. - Suppliers and subcontractors will be made aware of the relevant Project environmental requirements. - Environmental requirements will be included in procurement and subcontract documentation through the contract and scope of works.* - Carefully select suppliers and subcontractors based upon their ability to meet stated requirements including corporate and Project environmental and sustainability initiatives.*
Performance Indicators	- No litter present in construction areas (including in the water). - Appropriate segregation of recyclable material from general waste.* - Environmental requirements included in procurement and subcontract documentation. - No discharge of bilge water from construction vessels.*
Monitoring	- The Contractor will record the types, volumes and management measures (i.e. reuse / recycling / disposal etc) for wastes generated from its construction activities.* - The Contractor will carry out regular inspections of its works areas to ensure wastes, chemicals and hazardous materials are appropriately stored.
Reporting	- 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 construction activities. - Waste generated by Contractors during construction will be incorporated into Caltex's annual reporting of waste.*

**CALTEX REFINERIES (NSW) PTY LTD****KURNELL WHARF INFRASTRUCTURE UPGRADE - INSTALLATION OF A SHEET PILE WALL AND ROCK REVETMENT****CONSTRUCTION ENVIRONMENTAL MANAGEMENT PLAN**

Element	Waste and Resource Management
Corrective Action	- 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.

8.9 Hazardous Substances

Element	Hazardous Substances
Performance Objectives	<i>To prevent the release of hazardous substances to the environment.</i>
Management Actions	- All hazardous and controlled materials and wastes will be stored in a controlled manner. - All fuel and hydraulic oils would be stored in secure, bunded areas and precautions would be taken during any refuelling or oil transfer operations to avoid oil entering the marine environment.* - Any refuelling taking place at the Wharf would be undertaken in accordance with existing procedures and permits.* - Containment facilities will be capable of containing 110% of the stored or handled volume. - All storage and handling equipment for fuels, lubricants and chemicals will be maintained in good working condition. - 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 site. - In the event of an evacuation, hazardous materials will be contained and removed to bunded areas as far as practicable.
Performance Indicators	- No release of hazardous substances to waterways. - Appropriate storage of hazardous substances.

**CALTEX REFINERIES (NSW) PTY LTD****KURNELL WHARF INFRASTRUCTURE UPGRADE - INSTALLATION OF A SHEET PILE WALL AND ROCK REVETMENT****CONSTRUCTION ENVIRONMENTAL MANAGEMENT PLAN**

Element	Hazardous Substances
Monitoring	▪ 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	▪ 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	▪ Any spills will be managed in accordance with the requirements set out in Section 8.1.



CALTEX REFINERIES (NSW) PTY LTD

KURNELL WHARF INFRASTRUCTURE UPGRADE - INSTALLATION OF A SHEET PILE WALL AND ROCK REVETMENT

CONSTRUCTION ENVIRONMENTAL MANAGEMENT PLAN

9 EMERGENCY CONTACTS

Emergency Contacts	
Site Address	Kurnell Wharf, Botany Bay, NSW Access from Prince Charles Parade, Botany Bay, between Silver Beach Road and Captain Cook Drive GPS Location (degrees, minutes, seconds): 34°00'00" south 151°12'35" east Contact Name: Khaled Elomar Contact Number: (02) 9668 1990 Caltex Australia Ltd Head Office: (02) 9250 5000
EMERGENCY	333 (Caltex Emergency Number – call first) or 000
ENVIRONMENTAL ISSUES AND POEO NOTIFICATION Caltex EMR	Contact Name: Simon Caples Contact Number: (02) 9668 1985
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)	(02) 9382 8333 After hours: (02) 9382 2222
SYDNEY PORTS CORPORATION	(02) 9296 4000 or (02) 9296 4001



CALTEX REFINERIES (NSW) PTY LTD

KURNELL WHARF INFRASTRUCTURE UPGRADE - INSTALLATION OF A SHEET PILE WALL AND ROCK REVETMENT

CONSTRUCTION ENVIRONMENTAL MANAGEMENT PLAN

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)



CALTEX REFINERIES (NSW) PTY LTD

**KURNELL WHARF INFRASTRUCTURE UPGRADE - INSTALLATION OF A SHEET PILE WALL AND ROCK
REVTMENT**

CONSTRUCTION ENVIRONMENTAL MANAGEMENT PLAN

10 REFERENCES

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http://www.caltex.com.au/CommunityAndEnvironment/Documents/Kurnell_Refinery_PIRMP.pdf

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Guideline

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Ships' Ballast Water to Minimize the Transfer of Harmful Aquatic Organisms and Pathogens. Adopted
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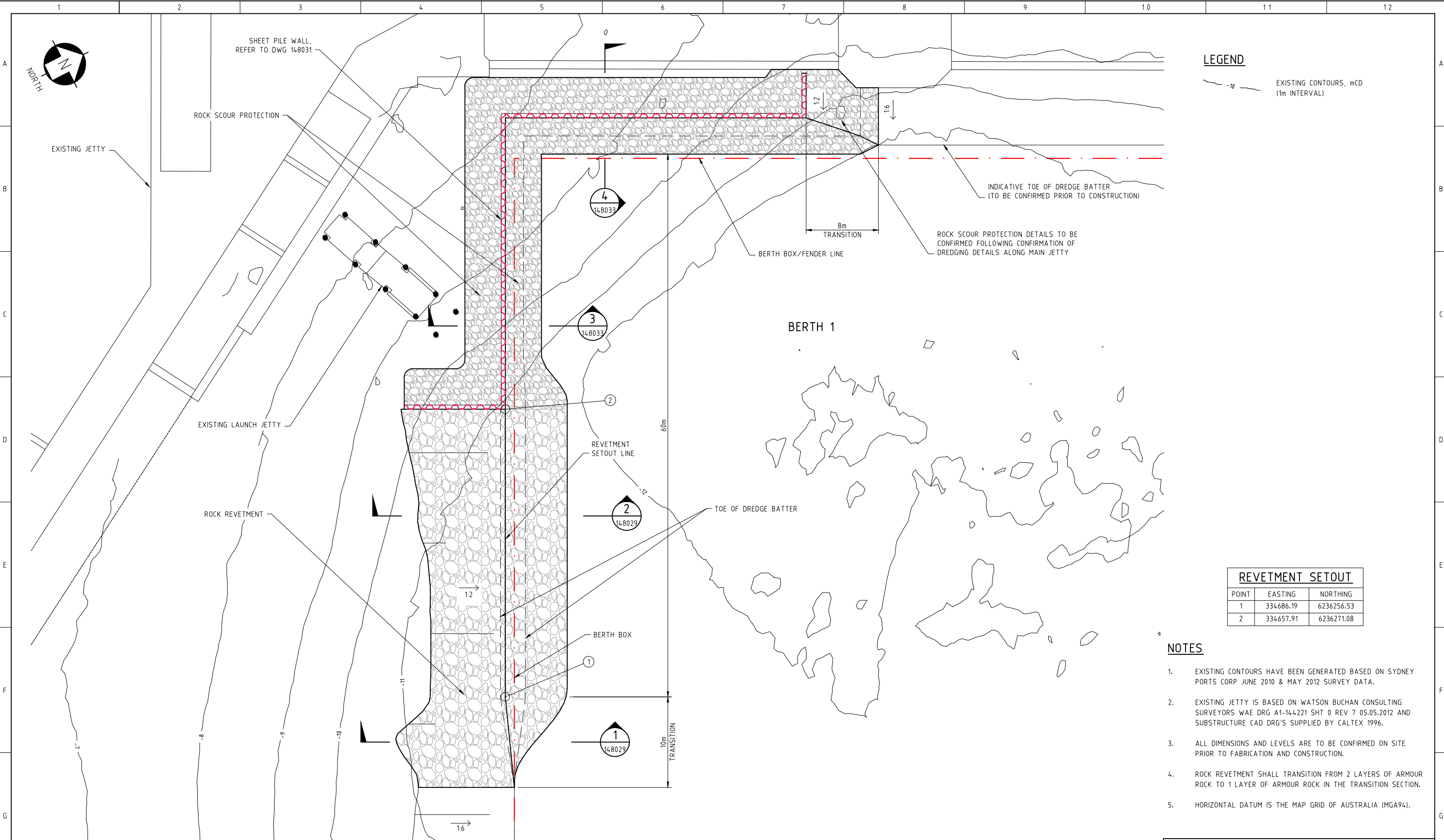


CALTEX REFINERIES (NSW) PTY LTD

**KURNELL WHARF INFRASTRUCTURE UPGRADE - INSTALLATION OF A SHEET PILE WALL AND ROCK
REVTMENT**

CONSTRUCTION ENVIRONMENTAL MANAGEMENT PLAN

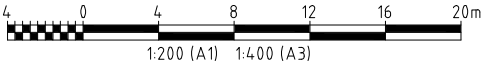
ATTACHMENT 1: GENERAL ARRANGEMENTS PLANS 14028, 148029 AND 148031



REVETMENT SETOUT		
POINT	EASTING	NORTHING
1	334686.19	6236256.53
2	334657.91	6236271.08

NOTES

- EXISTING CONTOURS HAVE BEEN GENERATED BASED ON SYDNEY PORTS CORP JUNE 2010 & MAY 2012 SURVEY DATA.
- EXISTING JETTY IS BASED ON WATSON BUCHAN CONSULTING SURVEYORS WAE DRG A1-144221 SHT 0 REV 7 05.05.2012 AND SUBSTRUCTURE CAD DRG'S SUPPLIED BY CALTEX 1996.
- ALL DIMENSIONS AND LEVELS ARE TO BE CONFIRMED ON SITE PRIOR TO FABRICATION AND CONSTRUCTION.
- ROCK REVETMENT SHALL TRANSITION FROM 2 LAYERS OF ARMOUR ROCK TO 1 LAYER OF ARMOUR ROCK IN THE TRANSITION SECTION.
- HORIZONTAL DATUM IS THE MAP GRID OF AUSTRALIA (MGA94).



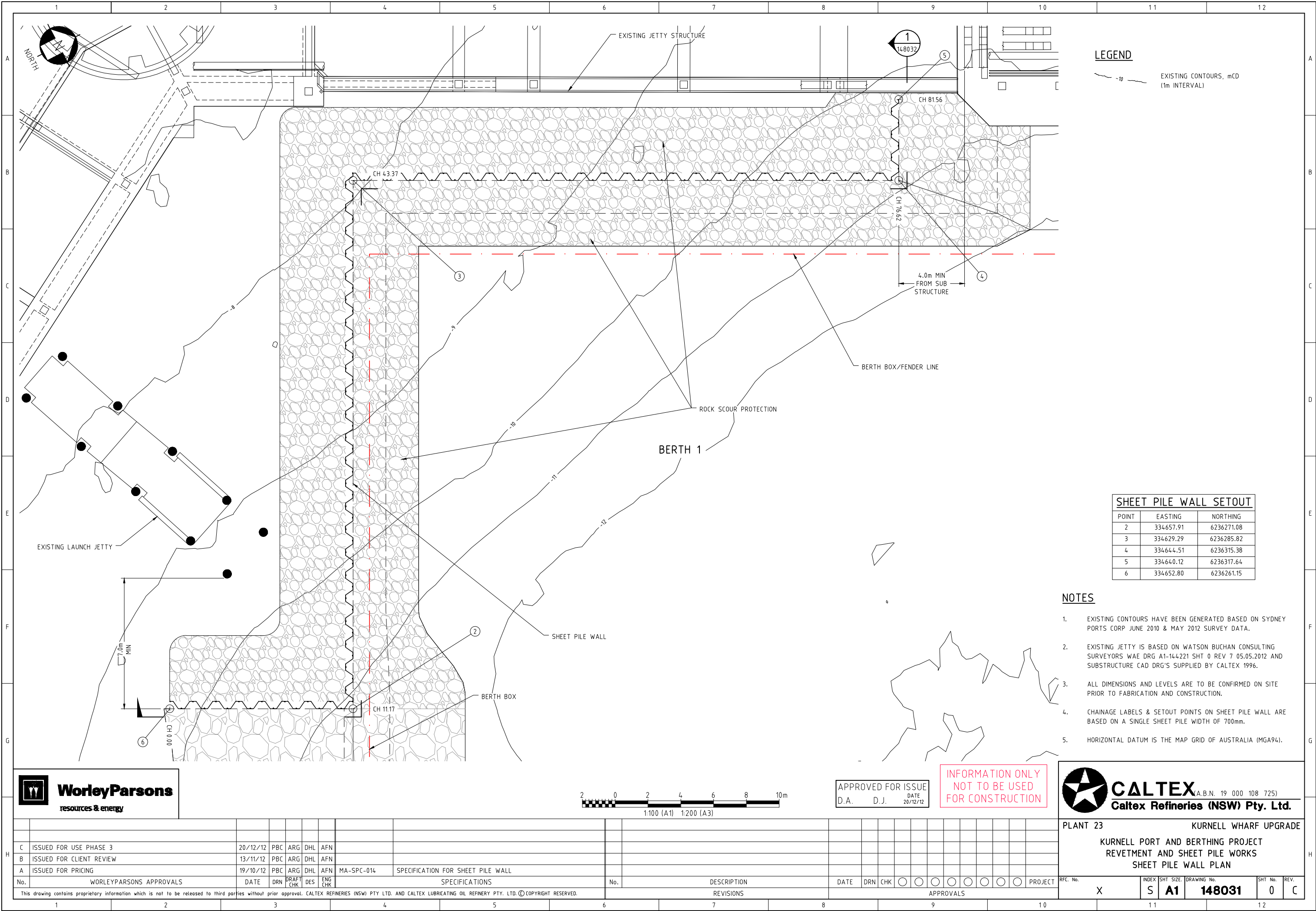
APPROVED FOR ISSUE
D.A. D.J. DATE 20/12/12

INFORMATION ONLY
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FOR CONSTRUCTION



No.	WORLEYPARSONS APPROVALS	DATE	DRN	DRAFT CHK	DES	ENG CHK	MA-SPC-003	SPECIFICATION FOR REVETMENT AND SCOUR PROTECTION	No.	DESCRIPTION	DATE	DRN	CHK	APPROVALS	PROJECT
C	ISSUED FOR USE PHASE 3	20/12/12	PBC	ARG	DHL	AFN									
B	ISSUED FOR CLIENT REVIEW	12/11/12	PBC	ARG	DHL	AFN									
A	ISSUED FOR PRICING	19/10/12	PBC	ARG	DHL	AFN									
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PLANT 23		KURNELL WHARF UPGRADE					
KURNELL PORT AND BERTHING PROJECT REVETMENT AND SHEET PILE WORKS REVETMENT PLAN							
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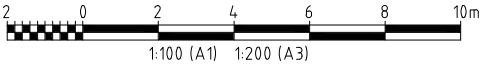
LEGEND

EXISTING CONTOURS, mCD
(1m INTERVAL)

SHEET PILE WALL SETOUT		
POINT	EASTING	NORTHING
2	334657.91	6236271.08
3	334629.29	6236285.82
4	334644.51	6236315.38
5	334640.12	6236317.64
6	334652.80	6236261.15

NOTES

- EXISTING CONTOURS HAVE BEEN GENERATED BASED ON SYDNEY PORTS CORP JUNE 2010 & MAY 2012 SURVEY DATA.
- EXISTING JETTY IS BASED ON WATSON BUCHAN CONSULTING SURVEYORS WAE DRG A1-144221 SHT 0 REV 7 05.05.2012 AND SUBSTRUCTURE CAD DRG'S SUPPLIED BY CALTEX 1996.
- ALL DIMENSIONS AND LEVELS ARE TO BE CONFIRMED ON SITE PRIOR TO FABRICATION AND CONSTRUCTION.
- CHAINAGE LABELS & SETOUT POINTS ON SHEET PILE WALL ARE BASED ON A SINGLE SHEET PILE WIDTH OF 700mm.
- HORIZONTAL DATUM IS THE MAP GRID OF AUSTRALIA (MGA94).



APPROVED FOR ISSUE
DATE 20/12/12
D.A. D.J.

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NOT TO BE USED
FOR CONSTRUCTION



PLANT 23 KURNELL WHARF UPGRADE
KURNELL PORT AND BERTHING PROJECT
REVTMENT AND SHEET PILE WORKS
SHEET PILE WALL PLAN

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WorleyParsons

resources & energy



CALTEX REFINERIES (NSW) PTY LTD

Kurnell Wharf Infrastructure Upgrade Construction Environmental Management Plan

301015-03067 – 301015-03067-EN-REP-009

9 April 2013

Infrastructure & Environment

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North Sydney NSW 2060
Australia

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ABN 61 001 279 812

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**CALTEX REFINERIES (NSW) PTY LTD
KURNELL WHARF INFRASTRUCTURE UPGRADE
CONSTRUCTION ENVIRONMENTAL 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 / B Fitzgerald		24-01-13	N/A	
B	Issued for client review	N Cowlshaw	S Mason-Jones		25-01-13		
0	Issued for use	N Cowlshaw	S Mason-Jones	S Rachkidi	05-02-13		
1	Reissued for use	N Cowlshaw	S Mason-Jones	D Aubourg	09-04-13		



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GLOSSARY

Acronym / Term	Definition
BHD	Backhoe dredge
CEMP	Construction Environmental Management Plan
Cetacean	Carnivorous marine mammals, including whales, dolphins, and porpoises
CD	Chart Datum
DAFF	Department of Agriculture, Fisheries and Forestry
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
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
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
ERT	Emergency Response Team
GPS	Global positioning system
HSE	Health, safety and environment



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Acronym / Term	Definition
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	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 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.
MSDS	Material Safety Data Sheet
MWMP	Marine Works Management Plan
OEH	Office of Environment and Heritage
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	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. 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.
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
SPL	Sound pressure level
SSD	State Significant Development
SWL	Sound power level
WRMP	Waste and Resource Management Plan
TMP	Traffic Management Plan
WWTP	Waste water treatment plant



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1 INTRODUCTION, LOCATION AND SCOPE OF WORK

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.

The upgrade to existing elements of the berthing infrastructure includes an upgrade to the Kurnell wharf infrastructure and installation of a sheet pile wall and rock revetment.

This Construction Environmental Management Plan (CEMP) provides the basis for environmental management throughout construction works associated with the wharf infrastructure only.

Environmental management requirements for the installation of a sheet pile wall and installation of a rock revetment are set out in the *Installation of a Sheet Pile Wall and Rock Revetment Construction Environmental Management Plan (Sheet Pile Wall and Rock Revetment CEMP)*.

Environmental management requirements for dredging are set out in the *Dredge and Spoil Disposal Management Plan (DSDMP)*.

1.1 Location

The Kurnell Wharf is located in Botany Bay, off Silver Beach (Figure 1-1).

The Project is 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 800 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 Rangers 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).



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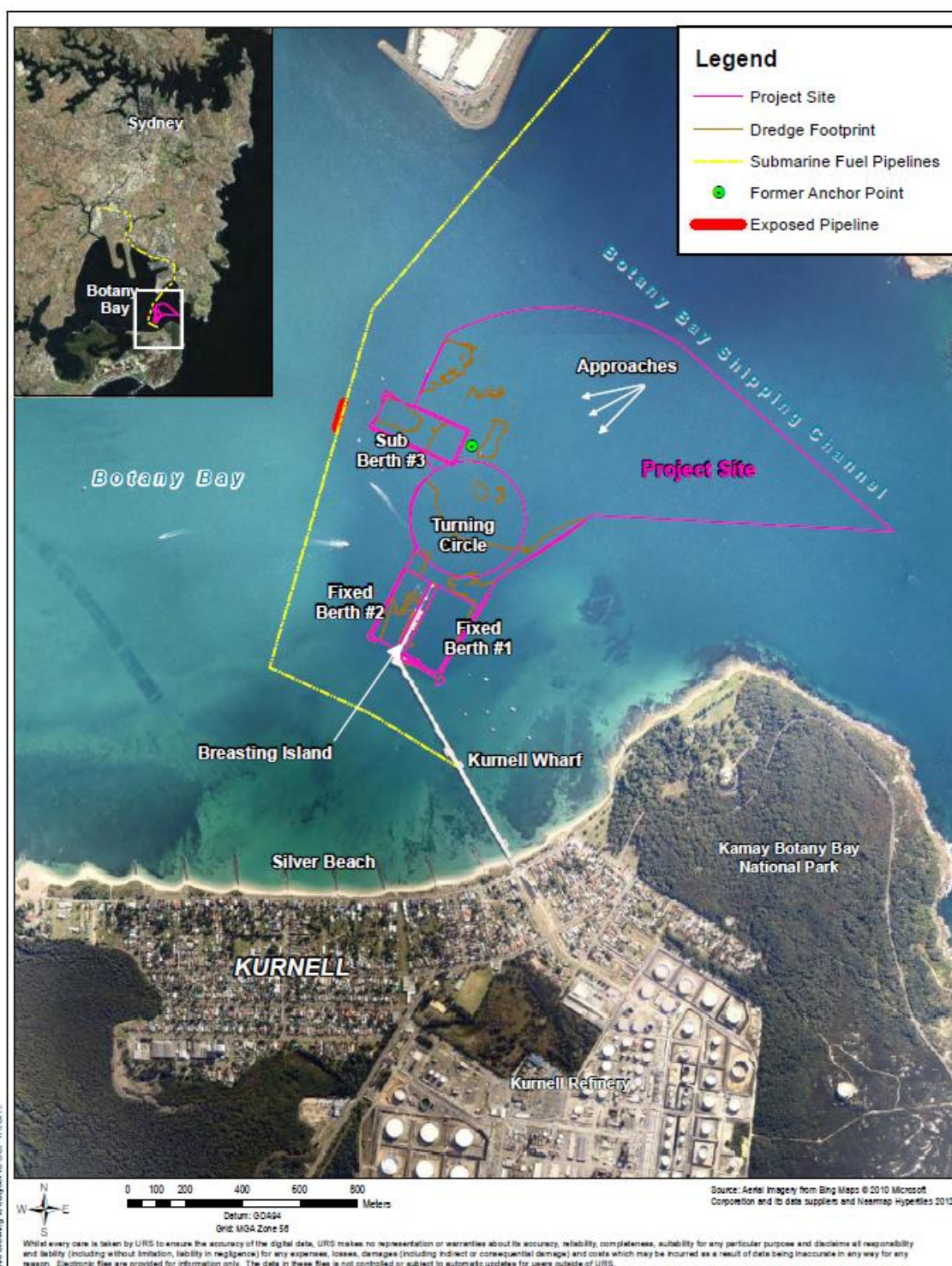


Figure 1-1: Project Site and Context (source: URS 2013)



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1.2 Scope of Works

This CEMP provides the basis for environmental management throughout construction works associated with the wharf infrastructure only.

A separate CEMP has been prepared for installation of a sheet pile wall and rock revetment as part of the Project.

This CEMP does not address environmental management measures associated with project design, nor the environmental management of impacts associated with dredging, or those from port and berthing facility operations.

This CEMP is based on the relevant information and requirements set out in the Environmental Impact Statement (EIS) (URS 2013) for the Project. All relevant changes to the EIS and relevant conditions of consent must be incorporated into this CEMP.

Each Contractor will adopt this CEMP or develop their own Project specific CEMP or integrated Health, Safety and Environment (HSE) Management Plan to manage the environmental risks specifically related to their scope of work on the Project. These Contractor documents will, as a minimum, align with the requirements of this CEMP and are required to be reviewed and approved by the Caltex Environmental Management Representative (EMR) prior to mobilisation to site.

Compliance with this CEMP is mandatory for all personnel and Contractors carrying out construction activities for the Kurnell Wharf infrastructure upgrade.



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2 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, 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 and the two fixed berths. Adjacent to the wharf, south of the fixed berths, are a series of additional submarine pipelines that transport fuel under Botany Bay. These pipelines 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.

Caltex is undertaking port and berthing facility upgrade works to increase the capacity of fixed berth #1 to receive larger ships. Further, the upgrade works will adopt the latest design standards to enable efficient loading/unloading and improve handling and ergonomic performance. Improvements will also be made to the fuel loading and unloading equipment located on the wharf, used for fixed berth #1. Other ancillary work will include an upgrade to the fire system on the wharf and the provision of additional stability to the existing wharf piles through construction of a sheet-piled wall and rock revetment at the southern end of fixed berth #1.

The majority of work will be carried out within the existing Marine Security (exclusion) Zone around the Kurnell Wharf (Figure 2-1). Where works take place outside the existing Marine Security (exclusion) Zone, a Temporary Marine Security Zone, with a 100 m radius around the construction vessels, will be established by Caltex in consultation with Sydney Ports Corporation (SPC) and Roads and Maritime Services (RMS). The Temporary Marine Security Zone will move as the vessels move, with the vessels remaining as its centre.

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).

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



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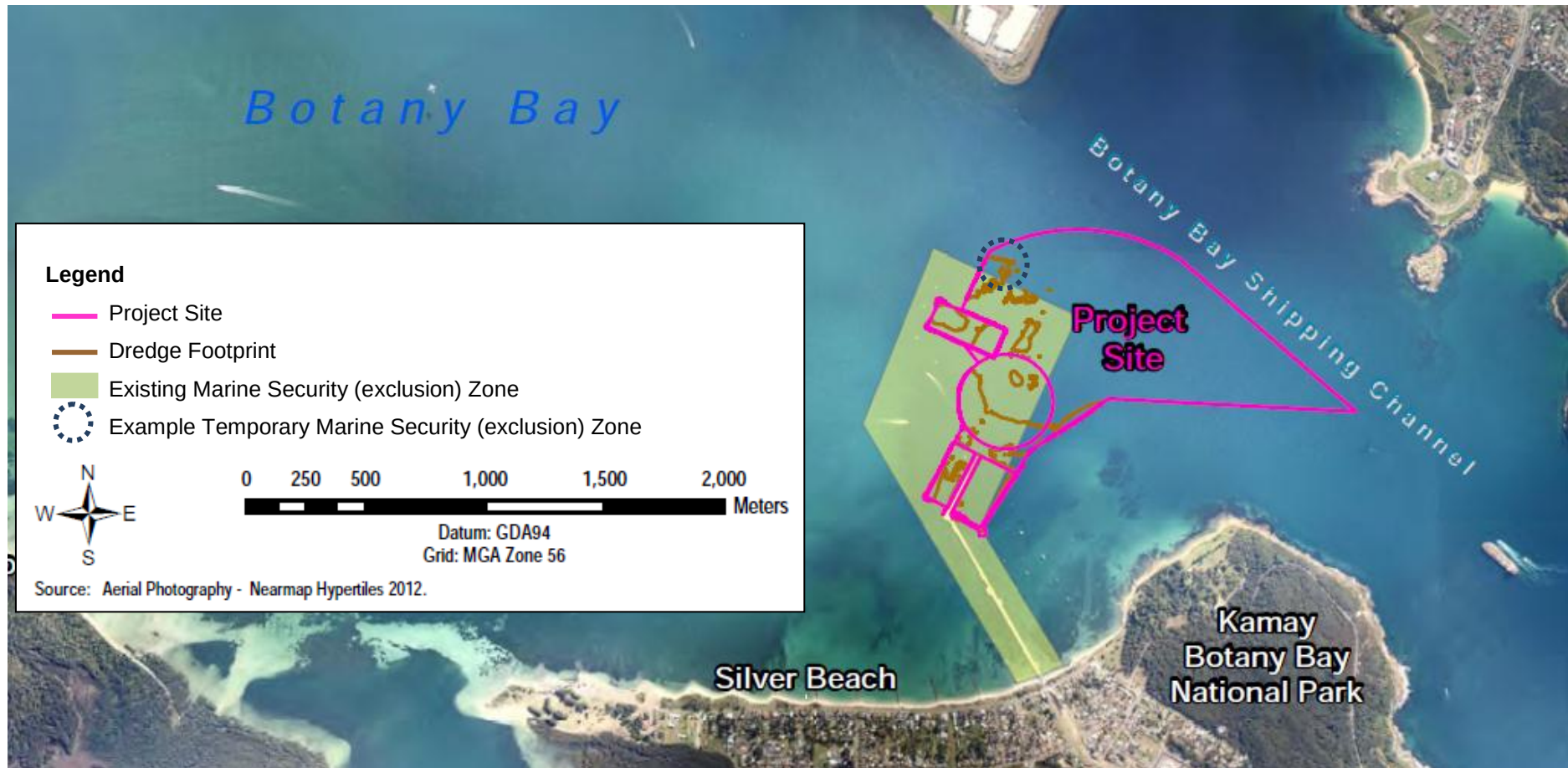


Figure 2-1: Existing and Temporary Marine Security (exclusion) Zones at the Project Site (adapted from URS 2013)



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2.1 Berthing Infrastructure Upgrade

The infrastructure used for fixed berth #1 has a number of design limitations, which currently restrict the size of ship that can be berthed, the peak flow pumping rate and ease of operation due to the use of a manual system. The upgrade works will increase the ability of fixed berth #1 to receive larger ships, up to 100,000 deadweight tonnes (DWT). No major works are proposed at fixed berth #2. The infrastructure upgrade works at fixed berth #1 are shown in the general arrangement plans provided at Attachment 1 and will include:

- Decommissioning of existing berthing facilities:
 - The initial phase of works will decommission the existing berthing facilities associated with fixed berth #1. This will require closing the berth, and removing the existing equipment, including taking down an existing structure located in the proposed location of the new loading arms.

This phase will include isolation of the existing fuel lines to fixed berth #1. Once isolated, the equipment will be flushed with water and air to ensure no residual fuel or vapours are present. This will allow 'hot working' to take place if required.

The water flushed through the equipment will be directed to specific 'slop drums'. The oily water will then be pumped to the dedicated 'slop line' using the existing 'slop pumps' installed on the wharf. The oily water will be treated in the Kurnell Refinery at its dedicated waste water treatment plant (WWTP) prior to disposal under the terms of the site environment protection licence (EPL No. 837). It is estimated that the flushing waters will total approximately 10,000 m³.

Once the supply lines are deemed gas-free they will either be cold-cut or hot-worked into 6 m sections. The pipe ends will be sealed with plastic, taped and loaded on to semi-trailers and transported on to the main refinery site where they will be hydro-blasted in a dedicated area to remove any residual oil. Any oily water generated will be treated in the WWTP prior to its controlled disposal in accordance with EPL No. 837.

The loading arms and manifold equipment will be dismantled and cleaned in the same fashion as the supply lines. The redundant pipe and loading arms will be held in the metal yard at the refinery prior to being recycled offsite.

- Installation of a supporting manifold:
 - To allow the installation of the new loading arms, a new manifold will be installed in the middle of the breasting island adjacent to the existing fixed berth #2 manifold.
- The new manifold will be installed onto an existing 50 m² steel structure anchored into the concrete deck of the breasting island. The new manifold will be connected to the existing supply lines that currently run from the wharf to the refinery.



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All works at the breasting island will be managed under Caltex's operational environmental management plan (OEMS Process - Permit to Work PRO. DESC 4.07.01.001).

- Installation of hydraulic loading arms and replacement of bollards with quick release hooks:
 - The replacement and relocation of the loading arms (approximately 16 m north of the current loading arms) will be undertaken from the wharf deck. Three loading arms will be mounted onto a prefabricated steel structure that will be anchored to the existing wharf top deck. Three short piping spools will be installed at the wharf lower deck to connect the loading arms to the new manifold.

The loading arms will be consistent with the design of fixed berth #2, although fractionally smaller in extended height than the existing mechanical arms (19.5 m).

Quick-release hooks will be installed at various locations to replace the existing bollards. The hooks will be anchored to the wharf top deck concrete structure.

Electrical cabling will be installed to supply a small hydraulic station for the loading arms, quick release hooks and valves. The cabling will be ducted, running from the existing motor control centre located on the wharf.

- Installation of breasting and bow mooring dolphins:
 - A single mooring dolphin and two berthing dolphins (forming a breasting dolphin) will be installed to allow the berthing of larger ships. Each will comprise an approximate 10 m by 10 m structure suspended on a concrete cap structure on tubular steel piles. A remotely operated quick release hook will be installed on each dolphin along with a hand railing, rope railing, lighting, power supply, access ladder and life jackets.

Each dolphin will require foundations to be piled approximately 25 to 30 m into the seabed. The preferred method of piling is driven steel piles, whereby each tubular steel pile is vibrated until refusal or until the pile reaches depths of 1 to 2 m above the final embedment depth. The piling will then be completed by driving the piles with a drop hammer. The piles will be handled, pitched, secured to the seabed and installed by a crane/rig mounted either on a jack-up barge or floating barge restrained by mooring lines.

Approximately six piles for each berthing dolphin and eight piles for the mooring dolphin will be installed, requiring truck and barge deliveries during the course of the works.

Geotechnical conditions may require further action for installing the piles. This may require the piling contractor to drill, chisel or bore into the seabed to achieve the required embedment. It is also possible that if adequate embedment cannot be achieved in the sandy seabed strata alone then some of the piles may need to be anchored to the bedrock.



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Anchoring into rock would be achieved by drilling 4 to 10 m into the bedrock and installing a steel anchored rod, then placing concrete to the base of the pile to achieve an anchor plug. If anchoring is required, a steady working platform such as a jack-up barge will be used.

Following the completion of the piling works and trimming of piles to their approximate level, a temporary works platform will be installed by clamping it to the piles. The platform will allow workers to install bracing to the pile group to then allow the precast berthing and bow mooring dolphin units to be installed.

The over-water concrete work would use precast elements so that limited formwork/falsework will be required. The precast elements will then be 'stitched together' using an in-situ concrete topping. This will be provided by trucks pumping the concrete from the wharf.

The fenders will be installed from floating plant or mobile cranes on the working platform.

The quick release hooks and handrails will be installed once the dolphins are in place.

The access walkway will be fabricated offsite and transported in sections for assembly onsite. The walkway will be positioned by cranes and barge-mounted cranes.

The bow mooring will be located approximately 40 m from the existing northern berthing dolphin.

- Upgrade of the existing fire safety system:
 - The current wharf firewater system will be upgraded to cover the scenario of having both berths simultaneously occupied by ships. The upgrade will require the installation of a new monitor which will sit atop a 15 m high pipe stack attached to the wharf with the capacity to reach and cover the entire tankage and deck of the larger ships. The monitor will connect directly into the existing fire water header.
- A range of minor ancillary works:
 - Minor ancillary works will include the upgrade (by replacement) of the existing fender and fender panels.



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2.2 Sub Berth Upgrade

The proposed changes to the sub berth are limited to an upgrade of its mooring system to comply with the latest industry standards and return it to its design depth of 14 m below CD. Whilst the works will not increase the berthing capacity they will allow ships ranging from 60,000 to 200,000 DWT to safely moor in the berth.

The sub berth moorings and buoys currently fall outside of the berthing box. They are either not optimally configured or have reached the end of their design life. The infrastructure upgrade works at the sub berth will include:

- Decommissioning of the existing mooring equipment.
- Installation of prefabricated equipment, delivered to the sub berth by barge, as follows:
 - An upgrade of the mooring system to comply with the latest design safety guidelines (Oil Companies International Marine Forum (OCIMF) Guidelines 2010).
 - Replacement of the N°.3 Buoy with a swamp mooring to allow safer mooring close to the submarine fuels pipelines that run behind the sub berth.
 - Replacement of the N°.9 Buoy with a twin hull mooring buoy (with two separate mooring lines) given that the existing buoy does not sit flat on the water, creating a navigation risk.
 - The addition of swamp mooring lines to be labelled N°.6A, which will be located forward of the swamp mooring line of N°.6 Buoy.
 - The replacement of the existing chains with higher quality and higher grade chains.
 - Replacement of the swamp mooring lines with high performance mooring lines.
 - The replacement of N°.1, N°.2, N°.4 and N°.5 twin hull mooring buoys with new twin hull mooring buoys fitted with twin remote operated quick release hooks.

2.3 Equipment

The works to upgrade fixed berth #1 will include the requirement for the use the following equipment:

- Barge mounted cranes.
- Work barges.
- Work boats.
- Dive boats.
- Fork lifts.
- Compressor.
- Mobile cranes.



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- Jack-up barge and rock hammer.
- Vibratory pile.
- Diesel generators.
- An air-operated bevelling machine.
- Welding and cutting equipment, including oxy acetylene cutting.
- Hand-held grinders.
- X-Ray equipment.
- Hydrostatic test pump for hydrotesting of pipe spools.

The works to upgrade the sub berth will include the requirement for the use the following equipment:

- A barge that would include:
 - A crane.
 - A crib room.
 - A workshop.
 - A 400 cubic-foot per minute (cfm) compressor.
 - A 20 kilovolt-ampere (kVa) generator.
 - A hydraulically-operated anchoring system that would include chain rollers and winches.
 - Oxy-cutting and welding equipment.
 - Diving equipment including umbilicals, control panels and a 25-30 cfm compressor.
- A tugboat, which would accompany the barge at all times.
- A crew boat.

2.3.1 Transport and Temporary Storage

The piles for the dolphins, along with the prefabricated buoys, anchors and moorings for the berths will be delivered to site via barge, road or potentially a mixture of both. The piles and metal work will be delivered directly to Botany Bay, requiring 15 to 20 barge-loads over the duration of the works.

Set down and temporary storage of marine based equipment for construction of the port and berthing facility works will be within the existing safeguarded easement (right of way) located behind the berth. The tugboat will be moored to the east of the breasting island near fixed berth #1, while the barge will be moored in one of the fixed berths.



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A small amount of road traffic will be generated as a result of undertaking the proposed works. Road transport will include equipment deliveries and personnel movements to and from the wharf, refinery, laydown areas and one or more of the dedicated storage locations. Road access to and from Kurnell Wharf will be from Prince Charles Parade. Access to and from Kurnell Refinery will be via Solander Street.

In total, it is anticipated that 60 to 100 truck movements will be required, infrequently and intermittently, over the duration of the works. The upper limit accounts for the alternative of transporting the piles to site by road or a mixture of road and barge. These trucks would arrive at ad-hoc intervals over the two-year construction period. There will be no peak delivery to site. Total truck movements would therefore only equate to one or two trucks on any given day with long periods where there would be no truck movements.

In addition, 100 concrete trucks will be required to make deliveries to site over a six to eight week period. The program anticipates the requirement to pour concrete on nine days during this period. The amount of concrete required for each pour will vary. On the majority of the days eight to nine trucks will be required for each pour, however the largest pour could see 25 trucks arriving at site on one day. On the days when concrete pouring takes place, the trucks will be required to arrive regularly throughout the day.

The works will require the use of two temporary laydown areas during construction. The temporary laydown for the loading arms and quick release hooks will be within the refinery site. The temporary laydown for the proposed manifold pipe spools (connecting lengths of pipe) will be within the current storage areas contained in the right of way adjacent to Prince Charles Parade.

Additional materials to be shipped immediately to site will be stored at one or more of the following dedicated existing storage sites (in order of preference):

- Fishburn Road, Molineux Point.
- Lewis Anchorage, Taren Point.
- Sydney Ports Facility.
- Glebe Island.
- White Bay.
- Sydney Harbour.
- Port Kembla.

The final storage location(s) will depend on the requirements of the works' contractor and availability and capacity at the time. Temporary site offices will be located within the main refinery site adjacent to the main workshop in the northwest corner.



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2.4 Construction Program

The Project is expected to be undertaken in two stages over a two year period, commencing in the third quarter (Q3) of 2013. Works to fixed berth # 1 are anticipated to extend throughout the two year construction period, with peak activities extending over an 18 month period.

The Project is expected to utilise approximately 25 personnel during the upgrade of fixed berth #1, including installation of the rock revetment, sheet pile wall and scour protection and approximately 12 personnel during the upgrade of the sub berth.

The approximate construction program for the Project is shown in Table 2-1.

Table 2-1: Approximate construction program

Works	Duration	2013			2014				2015	
		Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2
Dredging and Reuse Works	25 weeks									
Sheet Piling Works	3 weeks									
Rock Revetment and Scour Protection Works	4 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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3 ENVIRONMENTAL POLICY

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

Copies of this policy will be displayed in a prominent position in the Project site office and on HSE notice boards as a minimum. Contractors are encouraged to also have their 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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CONSTRUCTION ENVIRONMENTAL MANAGEMENT PLAN**

3.1 Relationship to other Plans

This CEMP provides the basis for environmental management throughout the installation of the sheet pile wall and rock revetment works for the Project. The CEMP is based on the relevant information and requirements set out in the (EIS) (URS 2013) for the Project. The EIS lists various sub-plans as being included within the CEMP. Where practicable, these sub-plans have been incorporated into the CEMP, however some sub-plans are required to be developed by Caltex or the Contractor, as set out below:

- Spill control plan (SCP) - to be developed and implemented by the Contractor in accordance with the requirements set out in Section 8.1 of the CEMP.
- Fauna management sub-plan - incorporated into Section 8.3 of the CEMP.
- Underwater noise management sub-plan - incorporated into Section 8.3 of the CEMP.
- Traffic management during concrete pouring - to be developed and implemented by the Contractor in accordance with the requirements set out in Section 8.7 of the CEMP.
- 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 8.7 of the CEMP.
- Waste and resource management sub-plan - incorporated into Section 8.8 of the CEMP.

The CEMP is supported by these sub-plans and a number of procedures prepared and implemented by Caltex and the Contractor, as shown in Figure 3-1.



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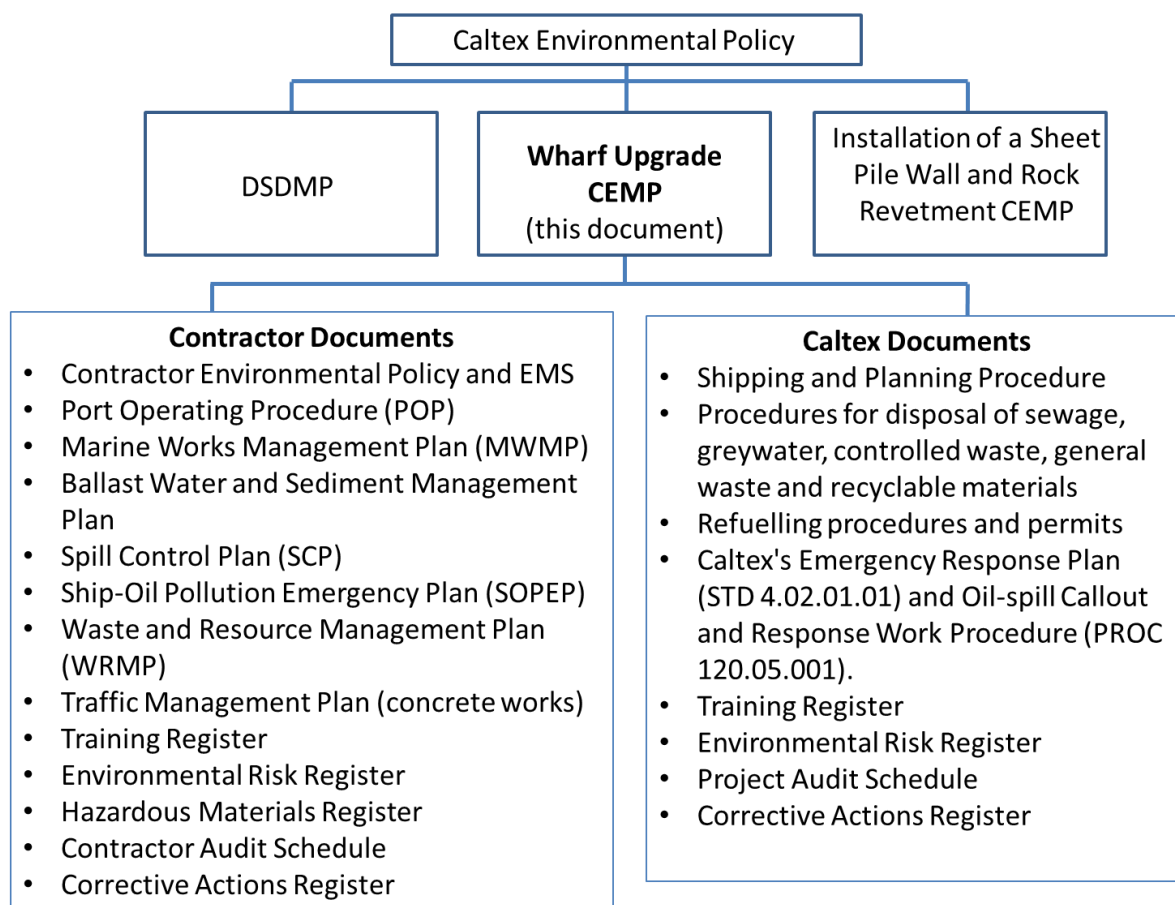


Figure 3-1: Interaction of the CEMP with Sub-plans and Procedures



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4 ENVIRONMENTAL RISKS

A works-specific Construction Environmental Risk Register will be developed by each Contractor to identify the environmental risks applicable to their works during the construction phase of the Project and assess the significance of their impacts. The Construction Environmental Risk Register will be provided to Caltex for review and updated as required by Caltex, prior to mobilisation to site.

The Construction Environmental Risk Register will be reviewed at least each six months and 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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5 LEGAL AND OTHER REQUIREMENTS

The Project 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.

All works associated with the construction of the upgrade to the wharf infrastructure 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.
- Harbour Master Approval under the NSW Management of Waters and Waterside Lands Regulations 1972.
- A water pollution licence under the NSW *Protection of the Environment Operations Act 1997*.
- The requirement to prepare a remediation action plan 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 CEMP and related Project procedures will be updated if necessary to meet future approvals and related conditions imposed on the Project.



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6 ENVIRONMENTAL OBJECTIVES

The intent of this CEMP is to achieve the following overarching objectives:

- Ensure that all Caltex personnel and Contractors clearly understand their environmental obligations and receive appropriate training to perform their duties in a competent manner.
- Comply with all relevant Commonwealth and State environmental requirements.
- Comply with relevant Australian and other recognised standards.
- Aim for zero significant environmental incidents during construction as part of Caltex's Incident and Injury Free (IIF) operations.

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



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7 IMPLEMENTATION

7.1 Responsibilities and Authorities

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

Key Project personnel including the Caltex Project Manager, Caltex Construction Supervisors, Caltex EMR, 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 construction. 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 CEMP.
- Ensure an EMR is appointed for the Project.
- Ensure contracts contain relevant environmental provisions.
- Review and sign off on this CEMP and subsequent revisions.

Caltex Construction Supervisors

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

Caltex Environmental Management Representative (EMR)

- Accountable for construction related environmental matters on the Project.
- Provide support to Caltex personnel and Contractors as required to ensure this CEMP is implemented and complied with.
- Provide advice to the Caltex Project Manager and Caltex Construction Supervisors to ensure compliance with legal requirements, achievement of environmental objectives and continual improvement in environmental performance.
- Review effectiveness and implementation of this CEMP.



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- Review Contractor environmental management plans and registers, as required by this CEMP, 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).

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

- Delegate community notification role, if necessary, prior to the arrival of emergency services, with consideration of communications tools such as phone calls, door knocking and letter box drops, as appropriate for the incident and its impact.
- Responsible for the overall control of the emergency.

Contractor Project Manager

- Overall responsibility for the development and implementation of the Contractor's own project specific CEMP or integrated HSE Management Plan.
- Ensure compliance with the requirements of this CEMP throughout its works.
- Appoint an Environment or HSE Representative.

Contractor Environment / HSE Representative

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

All Construction Personnel (Caltex and Contractors)

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



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7.2 Induction

Caltex will develop and deliver a Project Induction prior to commencement of construction. The Caltex Project Induction will include the requirement for mandatory compliance with this CEMP by all personnel and Contractors. The Caltex Project Induction will include emergency procedures for the Project Site.

The induction will be reviewed at least annually or more frequently if there are significant changes in environmental conditions or requirements.

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

7.3 Training

Relevant Caltex and Contractor personnel will undergo training, to be provided by Caltex, in the implementation of this CEMP. 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 Contractors, 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 8.3).

The Contractor will implement appropriate training to ensure its personnel are aware of their environmental responsibilities, including requirements set out in their works-specific CEMP.

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

All personnel and Contractors are required to discuss environmental issues as a regular component of their toolbox talks and site meeting agendas.

Environmental notice boards will be established by Caltex to inform personnel of relevant environmental information such as minutes of meetings, results of monitoring, performance standards, environmental incident alerts and company environmental notices. The notice board will be refreshed periodically with up-to-date information.



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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 to 333, the Caltex Emergency number, which should be called first, or 000. Emergency calls to these numbers, if required, may be made by anyone.

All queries or complaints received by personnel will be directed to the Caltex EMR. Under no circumstances will Contractors communicate with the media on any matters concerning the Project.

Caltex's consultation activities will continue throughout construction. This will involve meetings and letter box drops to the closest residents and user groups (including sailing, diving and recreational users), to describe the nature of the works, and to offer opportunity to feedback via a 24-hour hotline number (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 this EIS.

Consultation activities will be carried out with the following, as a minimum:

- The users of Silver Beach.
- The residents of the Ranger's House.
- The residents along Prince Charles Parade (No.s 2 to 174).
- The users of Kamay Botany Bay National Park.
- The users of the Botany Bay Educational Centre (located in the National Park).

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 and changes to the plan are made as required to incorporate learning from the exercises.

The composition of the Caltex Emergency Management System is shown in Figure 7-1.



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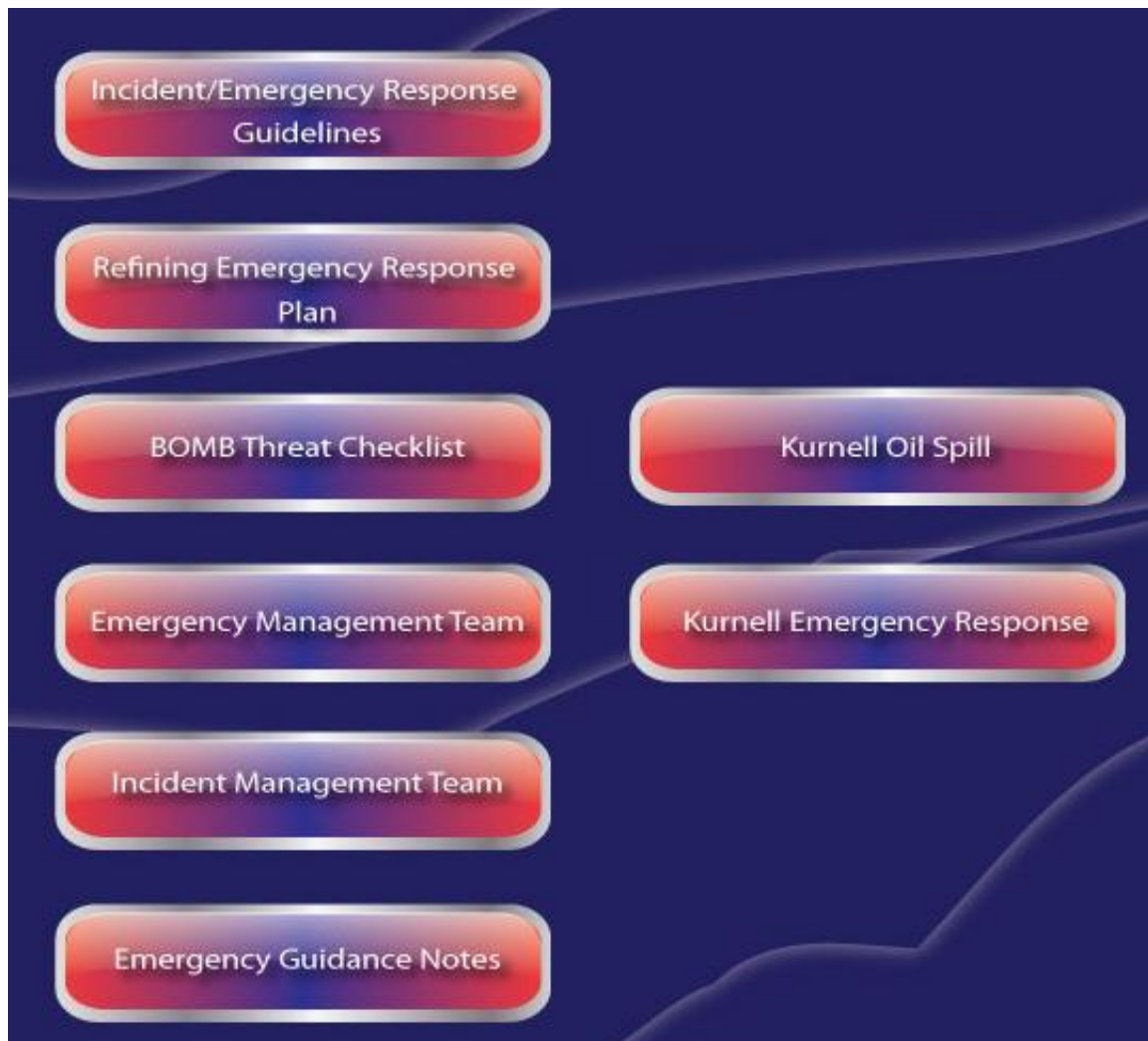


Figure 7-1: Caltex Emergency Management System Framework (source: Caltex Refinery PIRMP)

The POEO Act also requires that the holder of an 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 CEMP. 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. Construction 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.

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 environment¹, as set out below and in Section 8.1.

¹ 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 be also 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 will continue to implement its existing complaint management procedures, including for response to, investigation and reporting of complaints.

Caltex manages pollution complaints in accordance with the requirements of EPL 837, including:

- Reporting complaints in the Annual Return for EPL 837.
- 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 continue to operate its 24-hour hotline number (1800 802 385 toll free) to receive feedback and complaints associated with the Project. All feedback and complaints will be relayed to the Refinery Manager, Community Relations Manager and the head of the Environmental Group, as relevant depending on their nature.



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

7.8 Corrective Actions

Corrective actions may be generated from a number of sources, including but not limited to incidents, audits, inspections and management reviews. Corrective actions will be systematically managed to ensure issues raised are recorded and closed.

A Corrective Actions Register for recording all corrective actions raised and closeout details will be maintained on site. The close out details will include the date closed and the name of the person verifying completion of the required action.

Specific corrective actions for each of the environmental elements relevant to the Project are set out in Section 8.

7.9 Reporting

Contractor will provide a brief report to the Caltex EMR on a fortnightly basis, including all information require by this CEMP.

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

7.10 Control of Records

Records will be developed and maintained in relation to this CEMP 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.

Contractors are required to forward all records generated as a result of this CEMP to the Caltex EMR on a monthly basis. Records will be maintained on site by the Caltex EMR.



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7.11 Audit and Compliance Management

Regular 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 construction activities and risks. The Project Audit Schedule will be risk based and higher risk activities will be the subject of increased audit and inspection.

Audits may be conducted as integrated HSE audits or specific environmental audits. Environmental audits and inspections will include:

- Area and task specific inspections – these will typically be documented using inspection checklists.
- Caltex Environmental Management System (EMS) audits – these will be documented in audit reports.
- Contractor EMS audits (for major Contractors only) – these will be documented in audit reports.
- Ad hoc audits requested by Caltex – these will be documented as best fits to suit the scope and intended outcomes of the audit.

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.

7.11.1 Contractor Audits and Inspections

Contractors will conduct environmental or integrated HSE inspections at regular intervals. This interval will be detailed in the Contractor's CEMP.

Contractors will submit copies of completed audit and inspection forms to the Caltex EMR on a monthly basis.

7.11.2 CEMP Compliance Audits

Implementation of this CEMP will be audited within six weeks of the commencement of site construction works for the upgrade to the wharf infrastructure.

The findings of CEMP compliance audits will be recorded in the Corrective Actions Register as required and reported to the Caltex EMR with the names of responsible persons and agreed timeframes for the implementation of corrective actions.



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7.11.3 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. 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.

7.11.4 CEMP Review

This CEMP is based on the relevant information and requirements set out in the Project EIS (URS 2013) for the works. All relevant changes to the EIS and relevant conditions of approval must be incorporated into this CEMP.

This CEMP will be reviewed at least each six months and in response to audits, incidents and changes to the scope of works, as relevant. Any changes will be formally communicated by Caltex to all construction personnel.



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8 ENVIRONMENTAL PROCEDURES

Specific control measures required to undertake the construction works are set out in Sections 8.1 to 8.8. These measures will be complied with by all Caltex personnel and Contractors 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 are marked with an asterisk (*).

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

8.1 Water and Sediment Quality

Element	Water and Sediment Quality
Performance Objectives	<i>To prevent the pollution of water and the generation of excessive turbidity.</i> <i>To minimise the environmental impact of any spills and excessive turbidity that occur.</i>
Management Actions	▪ Contractors will maintain the site in a clean and tidy state. ▪ The site should be swept clean, rather than washed down with water. ▪ Water used to clean equipment should not be allowed to flow directly into Botany Bay, instead it should be allowed to filter through hessian sacks or similar. ▪ Contractors will ensure that any waste is disposed of appropriately and no items fall into the surrounding water. ▪ Fabrication will be undertaken off-site as far as possible. ▪ Impermeable ground sheets and / or shrouding (comprising shade cloth or similar) should be utilised immediately below and adjacent to demolition works where practicable to prevent debris entering the water.



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Element	Water and Sediment Quality
	▪ Impermeable ground sheets and shrouding should be carefully collected (to contain any captured material), bagged and removed on completion of work in each area. No debris will be allowed to enter the water. ▪ Biodegradable oil will be used within the pile rig.* ▪ Vessels and equipment will be maintained in good working order to minimise the risk of leaks and spills. ▪ Regular servicing and maintenance of construction equipment will be scheduled and carried out by the relevant Contractor.* ▪ Pre start checks will be undertaken prior to commencement of piling to ensure equipment is operating correctly.* ▪ Ships used during construction works will be subject to the controls to limit pollution and spill risks currently in place for ships berthing at the Kurnell Wharf.* ▪ Contractors will ensure their construction activities conform to the requirements of the MARPOL Convention, with regard to the statutory controls placed on ships to prevent marine pollution.* ▪ Contractors will ensure their construction activities conform to the pollution prevention requirements set out under Section 120 of the POEO Act.* ▪ Caltex will make all Contractors aware of Caltex's Emergency Response Plan (STD 4.02.01.01) and Oil-spill Callout and Response Work Procedure (PROC 120.05.001). ▪ Contractors 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).* ▪ Appropriate spill kits and booms will be available on the wharf and aboard barges and workboats actively involved in the construction works.*



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Element	Water and Sediment Quality
	▪ Spill kits will be tailored to the type and volume of potential spills and will include, as a minimum: • Absorbent pads. • Spill containment booms. • Personal protection equipment. • Contaminated waste bags and ties. • Instruction sheets. ▪ All spills will be stopped at the source and contained as soon as possible. ▪ Spilt material will be recovered, where possible, and contaminated spill recovery materials will be collected and disposed at an appropriate licensed facility. ▪ In the event of a spill, incident or emergency, construction activities in the immediate area will cease immediately.* ▪ In the event of a 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). ▪ The KROSRT 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 minimise and 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.



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Element	Water and Sediment Quality
	▪ Where a pollution incident occurs that is causing or threatening material harm to the environment², 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)* ▪ 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 a spill, accident or emergency situation, the Contractor will undertake any relevant required repairs and modify their working methods as appropriate.

² 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	Water and Sediment Quality
	- Contractors will develop and implement a works-specific Spill Control Plan (SCP) that incorporates the requirements of this CEMP and the following: - 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 works' 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 Caltex and 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.
Performance Indicators	- No turbid plumes visually detectable outside the Project Site. - Spill response procedures implemented in accordance with the relevant works-specific SCP.* - Regular maintenance of construction equipment scheduled and carried out by the relevant Contractor.
Monitoring	- Visual inspections for turbid plumes will be carried out daily during works involving disturbance to the sea bed. - The Contractors will carry out regular inspections of its works areas to ensure the SCP is being implemented.*



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Element	Water and Sediment Quality
Reporting	▪ Caltex will report all relevant complaints, spills and incidents under the terms of the current EPL No. 837.* ▪ Caltex, with assistance from Contractors as relevant, will prepare an incident investigation report for all incidents.
Corrective Action	▪ Where turbid plumes are visually detected outside the Project Site, the results of the Project Sediment and Water Quality Monitoring Program will be reviewed and where parameters exceed the relevant trigger levels, the potential for use of silt curtains will be investigated by the Contractor, in consultation with Caltex. ▪ Where spill response procedures are not being implemented in accordance with the relevant works-specific SCP, Contractors will review and revise their SCP and provide further training as relevant.

8.2 Flora

Element	Flora
Performance Objective	<i>To minimise impacts to native marine and terrestrial flora and prevent the introduction of new introduced marine flora, including Caulerpa taxifolia.</i>
Management Actions	▪ Contractors will carry out regular inspections of the construction works areas and equipment 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.* ▪ No 'high risk' (refer DAFF 2011) ballast water or sediments from ballast tanks will be discharged in to Botany Bay.*



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Element	Flora
	- Ballast water will be controlled in accordance with the International Convention for the Control and Management of Ships' Ballast Water and Sediments, the IMO Guidelines for the Control and Management of Ships' Ballast Water (1997) and the Australian Ballast Water Management Requirements (Version 5) (DAFF 2011).* - Each construction ship will implement a Ballast Water and Sediment Management Plan that sets out controls to manage ballast and bilge waters in accordance with the International Convention for the Control and Management of Ships' Ballast Water and Sediments, the IMO Guidelines for the Control and Management of Ships' Ballast Water (1997) and the Australian Ballast Water Management Requirements (Version 5) (DAFF 2011).* - No clearing of, or disturbance to, seagrass beds is permitted.* - No clearing of, or disturbance to, native terrestrial vegetation is permitted.*
Performance Indicators	- No introduction or spread of <i>Caulerpa taxifolia</i>. - No clearing of, or disturbance to, seagrass beds or native terrestrial vegetation.
Monitoring	Regular inspections of construction works areas and equipment carried out to check for the presence of <i>Caulerpa taxifolia</i>.*
Reporting	The dates and outcomes of <i>Caulerpa taxifolia</i> inspections will be reported by the Contractor to the Caltex EMR fortnightly.
Corrective Action	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>.*



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8.3 Fauna

Element	Fauna
Performance Objective	<i>To minimise injury to or death of fauna and minimise loss of fauna habitat.</i>
Management Actions	▪ Native fauna will be protected at all times and will not be fed, harassed or otherwise interfered with. ▪ Feral animals will not be encouraged to enter or remain in the Project Site through feeding, access to artificial waterbodies or inadequate waste disposal practices. ▪ Pipe ends will be capped during pipe-laying works to prevent fauna getting caught in pipes. Uninjured trapped fauna will be released to a nearby area of suitable habitat. ▪ Contractors will maintain the site in a clean and tidy state. ▪ Contractors will ensure that any waste is disposed of appropriately and no items fall into the surrounding water. ▪ Caltex will enable regular inspections of the Project Site by DAFF to check for the introduction of marine pest species.* ▪ All vessels will adhere to the four knot speed limit within the Project Site to prevent collision injuries or fatalities to fauna.* ▪ Lighting on construction ships and equipment will be minimised to that required for safe operations and to meet regulatory navigational safety requirements.* ▪ Construction lighting will be positioned to prevent excess light spill into areas that are not required to be lit.* ▪ No 'high risk' (refer DAFF 2011) ballast water or sediments from ballast tanks will be discharged in to Botany Bay.* ▪ Ballast water will be controlled in accordance with the International Convention for the Control and Management of Ships' Ballast Water and Sediments, the IMO Guidelines for the Control and Management of Ships' Ballast Water (1997) and the Australian Ballast Water Management Requirements (Version 5) (DAFF 2011).*



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Element	Fauna
	- Each construction ship will implement a Ballast Water and Sediment Management Plan that sets out controls to manage ballast and bilge waters in accordance with the International Convention for the Control and Management of Ships' Ballast Water and Sediments, the IMO Guidelines for the Control and Management of Ships' Ballast Water (1997) and the Australian Ballast Water Management Requirements (Version 5) (DAFF 2011).* - Trained marine fauna spotters (monitors) will be used to make observations for marine turtles, cetaceans, pinnipeds, dugongs and instances of shoaling fish up to a distance of 420 m from active piling areas prior to start up and throughout piling works.* - Piling works will not commence if marine turtles, cetaceans, pinnipeds or dugongs are sighted within 150 m of piling works.* - If marine turtles, cetaceans, pinnipeds or dugongs are observed within 420 m of active piling areas, the Contractor will be placed on standby to cease piling works.* - If marine turtles, cetaceans, pinnipeds or dugongs are observed within 150 m of active piling areas, the Contractor will cease piling. Works will not recommence until 30 minutes after the animal has moved more than 150 m away, or 30 minutes after the animal was last sighted.* - Slow start up measures will be used for all construction activities that generate underwater noise to ensure any noise-sensitive marine fauna are able to move away from the noise source.*
Performance Indicators	- No piling works whilst marine turtles, cetaceans, pinnipeds or dugongs are within 150 m of active piling areas.* - No fauna deaths directly associated with construction activities.
Monitoring	Marine fauna monitoring will be used to make observations for marine turtles, cetaceans, pinnipeds, dugongs and instances of shoaling fish up to a distance of 420 m from active piling areas prior to start up and throughout piling works.*
Reporting	All fauna injuries or deaths will be reported to the Caltex EMR as soon as practicable.



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Element	Fauna
	- 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. - Marine fauna monitors will utilise a Marine Fauna Sighting Log to record observations of marine turtles, cetaceans, pinnipeds or dugongs and any required actions taken (i.e. delay in start of work, standby or temporary cessation of works).* - The dates and outcomes of marine fauna monitoring will be reported by the Contractor to the Caltex EMR fortnightly. - Caltex will notify the whale migratory team within the NSW Office of Environment and Heritage (OEH) of whale sightings between June and October, during the construction period.*
Corrective Action	If fauna is injured during construction, 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.

8.4 Noise

Element	Noise
Performance Objective	<i>To minimise disturbance to sensitive receivers and marine fauna from airborne and underwater noise.</i>
Management Actions	- Marine fauna monitoring will be carried out as detailed in Section 8.3.* - Noise generation will be managed within regulatory and licence requirements. - All construction activities (except sub berth works) will be restricted to the standard working hours set out in the Interim Construction Noise Guidelines (ICNG), being between the hours of 0700 and 1800 Monday to Friday; 0800 to 1300 Saturday; with no work on Sundays or public holidays.*



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Element	Noise
	▪ Sub berth construction activities may also be undertaken on Saturdays and Sundays between the hours of 0800 and 1800.* ▪ Fabrication will be undertaken off-site as far as possible. ▪ Vessels and equipment will be maintained in good working order to minimise noise. ▪ Regular maintenance of construction equipment will be scheduled and carried out by the relevant Contractor.* ▪ Slow start up measures will be used for all construction activities that generate underwater noise to ensure any noise-sensitive marine fauna are able to move away from the noise source.* ▪ During works outside of standard working hours, noise levels along Prince Charles Parade will be maintained below or equal to $L_{Aeq(15min)} = 46 \text{ dB(A)}$. ▪ Piling operations with a SWL of 113 dB(A) or less should be utilised wherever possible. ▪ Noise levels during piling works will be maintained within the following limits: • Calculated 15-minute sound power levels (SWLs) $L_{w,eq,15min}$ less than or equal to 113 dB(A) at source. • Measured 15-minute sound pressure levels (SPLs) $L_{p,eq,15min}$ less than or equal to 85 dB(A) measured at 10 m from the source in-situ or in a similar location where the works are to be carried out.* ▪ During piling works, noise levels along Prince Charles Parade (Figure 8-1) will be maintained below or equal to $L_{Aeq(15min)} = 53 \text{ dB(A)}$.* ▪ Noise measurements will be carried out by a qualified acoustics consultant (i.e. a member of the Australian Acoustical Society (AAS) or the Association of Australian Acoustical Consultants (AAAC)) and undertaken in accordance with relevant Australian Standards for acoustic measurement of equipment in the field.* ▪ Caltex will specifically consult with the residents of Prince Charles Parade and other local community groups ahead of starting the piling works.*



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Element	Noise
Performance Indicators	- No exceedences of the Noise Affected Management Level of $L_{Aeq(15min)} = 46$ dB(A) at sensitive receptors (Figure 8-1) during works outside of standard working hours (sub berth works only). - Works carried out within the required hours.* - No piling whilst cetaceans, pinnipeds or dugongs are within 150 m of active piling areas.*
Monitoring	- Where sub berth works are undertaken outside the standard working hours set out in the ICNG (i.e. outside the hours 0700 to 1800 Monday to Friday and 0800 to 1300 Saturdays), monthly attended noise monitoring will be carried out to verify noise levels along Prince Charles Parade are below or equal to $L_{Aeq(15min)} = 46$ dB(A).* - Noise monitoring will be carried out during piling works to ensure compliance with required levels. - Marine fauna monitoring will be used to make observations for marine turtles, cetaceans, pinnipeds, dugongs and instances of shoaling fish up to a distance of 420 m from active piling areas prior to start up and throughout piling works.*
Reporting	- The Contractor will report the SWL of the piling operations to the Caltex EMR prior to commencement of piling.* - The dates and outcomes of monthly attended noise monitoring for sub berth works outside of standard working hours will be reported by the Contractor to the Caltex EMR as soon as results are available. - The dates and outcomes of noise monitoring for piling 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.
Corrective Action	Where the SWL of the piling operations, as reported by the Contractor, is higher than that used in the noise modelling set out in the EIS (117 dB(A)), Caltex will give consideration to additional modelling and the potential for implementation of additional noise mitigation measures.



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Element	Noise
	▪ Where monthly attended noise monitoring demonstrates persistent exceedances of required noise levels, the Contractor will implement additional noise management controls in line with the ICNG and in consultation with Caltex.* ▪ Additional noise management controls for sub berth works may include further liaison with affected residents or restriction of noisy activities (such as grinding, cutting and the use of compressors and generators) to within standard working hours. ▪ If piling is shown to exceed the required noise limits, additional mitigation will be implemented for these activities, such as: • The use of dampening non-metallic dollies (wooden blocks). • Acoustic screening for piling equipment. • Implement periodic breaks in undertaking the piling. Piling for 12 minutes and stopping for 3 minutes will give an overall reduction of 1 dB(A) when measured as $L_{Aeq,15min}$. Piling for 10 minutes and stopping for 5 minutes will reduce the noise levels by approximately 2 dB(A).*



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Figure 8-1: Noise sensitive receptors in the vicinity of the Project Site



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8.5 Air Emissions and Odour

Element	Air Emissions and Odour
Performance Objective	<i>To prevent a decrease in regional air quality and to ensure adverse impacts on adjacent areas due to dust are minimised.</i>
Management Actions	▪ Dust control measures will be implemented wherever relevant throughout construction works. ▪ Material stockpiles that have the potential to generate dust will be covered. ▪ Material loads that have the potential to generate dust will be covered during transport. ▪ Dust generating activities will not be carried out during periods of high wind. ▪ Contractors will notify the Caltex EMR of any anomalous odours identified during construction.* ▪ Vessels and equipment will be maintained in good working order to minimise air emissions. ▪ Regular maintenance of construction equipment will be scheduled and carried out by the relevant Contractor.* ▪ Vehicles, vessels and equipment, including generators, will be turned off when not in use.
Performance Indicators	▪ No air quality or odour complaints received.
Monitoring	▪ Contractors will carry out regular visual monitoring to identify areas generating dust. ▪ Contractors will carry out regular visual monitoring to identify equipment producing excessive visible emissions. ▪ Contractors, in collaboration with Caltex, will develop and implement an appropriate monitoring strategy where anomalous odours are identified.
Reporting	▪ The dates and outcomes of visual dust and emissions monitoring will be report by the Contractor to the Caltex EMR fortnightly.
Corrective Action	▪ Contractors, in collaboration with Caltex, will develop and implemented appropriate management measures where anomalous odours are identified.



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Element	Air Emissions and Odour
	- Sources of dust emissions will be covered, or if required, wet down. - Equipment observed to be creating excessive emissions will be replaced or serviced within 48 hours.

8.6 Heritage

Element	Heritage
Performance Objective	<i>To protect and preserve Indigenous and Non-Indigenous heritage sites and values.</i>
Management Actions	- Contractors will maintain the site in a clean and tidy state and implement dust and emission control measures (as detailed in Section 8.5) to minimise the visual impact of construction activities to areas of heritage significance, including the Kurnell Peninsula Headland. - Water and sediment 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	Suspected heritage item are dealt with in accordance with the required sequence of corrective actions.*
Monitoring	Works to the sea bed will be visually monitored for the presence of potential heritage items.
Reporting	Details of the discovery of any suspected heritage items will be reported to the Caltex EMR as soon as practicable.
Corrective Action	- In the event that a suspected heritage item (Indigenous and Non-Indigenous) is encountered, construction 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. - Contractors will immediately contact the Caltex EMR, who will notify OEH in accordance with the requirements of Section 146 of the <i>Heritage Act 1977</i>.*



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Element	Heritage
	▪ The police will be contacted immediately if human remains are uncovered. ▪ 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.* ▪ An appropriate management strategy for recording and preservation of the item (if warranted) will developed, along with a strategy to return to work as far as possible.* ▪ Works in the immediate area will not resume until approved in writing by the Caltex EMR.

8.7 Marine and Road Traffic

Element	Marine and Road Traffic
Performance Objective	<i>To minimise traffic interactions and appropriately manage traffic interfaces.</i>
Management Actions	▪ Road access to and from Kurnell Wharf will be from Prince Charles Parade.* ▪ Road access to and from the Kurnell Refinery will be via Solander Street.* ▪ All vehicles will observe the sign-posted speed limits. ▪ Vehicles will only be parked in designated areas. ▪ A Traffic Management Plan (TMP) will be developed and implemented for concrete pouring works. The TMP will comply with all relevant regulations and bylaws and in particular address safe access and egress to Prince Charles Parade when arriving and leaving the wharf and/or laydown area.* ▪ All ships used for the proposed 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.*



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Element	Marine and Road Traffic
	▪ All ships will be operated in full accordance with international, Commonwealth and State navigational safety and environmental protection standards and regulations.* ▪ All ships will have an on-board Ship-Oil Pollution Emergency Plan (SOPEP) or equivalent applicable to their class. ▪ Caltex will make all Contractors 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 Contractors aware of current practices and standard controls for shipping activities, including SPC Harbour Control being notified of all shipping movements.* ▪ Contractors will be familiar with and adhere to Caltex's current practices and standard controls for shipping activities.* ▪ Caltex will revise its Shipping and Planning Procedure to accommodate the construction works.* ▪ Marine vessels not in use will be moored. ▪ A Port Operating Procedure (POP) will be developed by relevant Contractors (as determined by Caltex) in accordance with the relevant regulations and in conjunction with SPC and RMS.* ▪ A Marine Works Management Plan (MWMP), will be developed by the relevant Contractors (as determined by Caltex) to support the POP.* ▪ The MWMP will include appropriate safety controls that accord with the requirements of the Harbour Master and the SPC's Port Procedures Guide to ensure the safety of waterway traffic during construction works.* ▪ Caltex will liaise with the Harbour Master throughout the construction 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. ▪ The existing Marine Security (exclusion) Zone around the Kurnell Wharf will remain in place throughout construction works.



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Element	Marine and Road Traffic
	- Temporary exclusion zones of a 100 m radius around construction vessels will be established and managed by Caltex, in consultation with NSW RMS, SPC and the NSW Water Police, when working outside the existing Marine Security (exclusion) Zone.* - Recreational and commercial vessels will be required to remain outside the Temporary Marine Security Zones. - Caltex will notify the community and relevant stakeholders of the temporary exclusion zones in accordance with the methods set out in Section 7.5. - Where practicable, construction 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 construction works, or activities and events relocated.*
Performance Indicators	- No collisions caused by Project construction vessels. - Harbour Master provided with advance copies of all construction related shipping schedules.* - POP and MWMP developed and implemented by relevant Contractors.*
Monitoring	The Caltex EMR will monitor compliance with the management and interfacing requirements with shipping and the port operations.
Reporting	Collisions or near misses will be reported in accordance with incident reporting procedures set out in Section 7.6.
Corrective Action	Collisions will be managed in accordance with incident management procedures set out in Section 7.6.



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8.8 Waste and Resource Management

Element	Waste and Resource Management
Performance Objectives	<i>To minimise the wastes generated and resources used throughout the life of the proposed works, and maximise opportunities for reduction, reuse and recycling.</i> <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>
Management Actions	▪ Waste generation will be minimised and all waste will be reused, recycled or disposed of in accordance with best practice and relevant legislation. ▪ The Contractor will maintain the site in a clean and tidy state. ▪ The Contractor will ensure that any waste is disposed of appropriately and no items fall into the surrounding water. ▪ The discharge of any solid waste overboard is prohibited. ▪ Impermeable ground sheets and / or shrouding (comprising shade cloth or similar) should be utilised immediately below and adjacent to demolition works where practicable to prevent debris entering the water. ▪ Impermeable ground sheets and shrouding should be carefully collected (to contain any captured material), bagged and removed on completion of work in each area. No debris will be allowed to enter 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. ▪ All ship generated wastes will be brought ashore for disposal via a licensed contractor.



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Element	Waste and Resource Management
	▪ The following waste hierarchy will be implemented: • Avoid waste by identifying appropriate materials and effective procurement. • Reduction of waste by optimising construction and operation methods. • Reuse waste by identifying sources that can utilise the waste. • Recycle waste by identifying facilities that are able to recycle waste. • Recover energy from waste. • Dispose of waste at an appropriate licensed facility. ▪ Construction activities will be integrated into existing resource efficiency, waste management and handling, emergency response and preparedness plans for the port and berthing facility.* ▪ The Contractor will prepare a works-specific Waste and Resource Management Plan (WRMP).* ▪ The works-specific WRMP will be prepared in accordance with Caltex's Construction Management Plan Standard (ref: 4.20.03.001), the Waste Avoidance and Resource Recovery Act 2001, the POEO Act, the EPA's Waste Classification Guidelines 2009 and Caltex's EPL requirements.* ▪ The works-specific WRMP will incorporate the requirements of this CEMP. The works-specific WRMP will also: • Identify and incorporate requirements consistent with the waste and resource hierarchy and cleaner production initiatives. • Ensure resourcing efficiency is delivered through the design and responsible construction practices. • Provide consistent clear direction on waste and resource handling, storage, stockpiling, use and reuse management measures (consistent with current management practices relating to Caltex's CEMP procedures).



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Element	Waste and Resource Management
	• Identify disposal and management routes consistent with current management practices as adapted for the proposed works. • Set out clear requirements for meeting legislative and regulatory requirements. • Define requirements to support Caltex's sustainable procurement objectives through effective design, construction and procurement. • Set out processes for disposal, including onsite transfer management and the necessary associated approvals. • Include a process for auditing, monitoring and reporting, which would include regular inspections of site activities and the waste management area.* ▪ Resource use will be minimised wherever practicable throughout construction. ▪ Responsible construction practices will be implemented to prevent mismanagement of waste. ▪ The Contractor will carry out regular inspections of site activities and waste management area. ▪ The Contractor will establish and maintain a waste collection and storage area within its work area. ▪ No burning of waste is allowed under any circumstances. ▪ Contractors will ensure appropriate waste containers are available within their works area 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. ▪ Caltex will make all Contractors aware of Caltex's existing procedures for the disposal of sewage, greywater, controlled waste, general waste and recyclable materials (modified as required).*



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Element	Waste and Resource Management
	- Contractors will implement Caltex's existing procedures for the disposal of sewage, greywater, controlled waste, general waste and recyclable materials.* - Bilge water discharge is not permitted.* - No 'high risk' (refer DAFF 2011) ballast water or sediments from ballast tanks will be discharged in to Botany Bay.* - Ballast water will be controlled in accordance with the International Convention for the Control and Management of Ships' Ballast Water and Sediments, the IMO Guidelines for the Control and Management of Ships' Ballast Water (1997) and the Australian Ballast Water Management Requirements (Version 5) (DAFF 2011).* - Each construction ship will implement a Ballast Water and Sediment Management Plan that sets out controls to manage ballast and bilge waters in accordance with the International Convention for the Control and Management of Ships' Ballast Water and Sediments, the IMO Guidelines for the Control and Management of Ships' Ballast Water (1997) and the Australian Ballast Water Management Requirements (Version 5) (DAFF 2011).* - Discharge of any solid waste overboard is not permitted.* - Any refuelling taking place at the wharf will be undertaken in accordance with existing Caltex procedures and permits. - Contractors will ensure their construction activities conform to the requirements of the MARPOL Convention, with regard to the statutory controls placed on ships to prevent marine pollution.* - Contractors will ensure their construction activities conform to the pollution prevention requirements set out under Section 120 of the POEO Act.* - Licensed contractors will be utilised to remove and transport waste from the site.* - Records of Controlled Waste Receipts and Tracking Numbers will be maintained on site. - Environmental issues and impacts will be considered when procuring subcontractors and suppliers.



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Element	Waste and Resource Management
	- Suppliers and subcontractors will be made aware of the relevant Project environmental requirements. - Environmental requirements will be included in procurement and subcontract documentation through the contract and scope of works.* - Carefully select suppliers and subcontractors based upon their ability to meet stated requirements including corporate and Project environmental and sustainability initiatives.*
Performance Indicators	- No litter present in construction areas (including in the water). - Appropriate segregation of recyclable material from general waste.* - Environmental requirements included in procurement and subcontract documentation. - No discharge of bilge water from construction vessels.*
Monitoring	- The Contractor will record the types, volumes and management measures (i.e. reuse / recycling / disposal etc) for wastes generated from its construction activities.* - The Contractor will carry out regular inspections of its works areas to ensure wastes, chemicals and hazardous materials are appropriately stored.
Reporting	- 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 construction activities. - Waste generated by Contractors during construction will be incorporated into Caltex's annual reporting of waste.*
Corrective Action	- 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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8.9 Hazardous Substances

Element	Hazardous Substances
Performance Objectives	<i>To prevent the release of hazardous substances to the environment.</i>
Management Actions	- All hazardous and controlled materials and wastes will be stored in a controlled manner. - All fuel and hydraulic oils would be stored in secure, bunded areas and precautions would be taken during any refuelling or oil transfer operations to avoid oil entering the marine environment.* - Any refuelling taking place at the Wharf would be undertaken in accordance with existing procedures and permits.* - Containment facilities will be capable of containing 110% of the stored or handled volume. - All storage and handling equipment for fuels, lubricants and chemicals will be maintained in good working condition. - 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 site. - In the event of an evacuation, hazardous materials will be contained and removed to bunded areas as far as practicable.
Performance Indicators	- No release of hazardous substances to waterways. - Appropriate storage of hazardous substances.
Monitoring	- 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	- 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.



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Element	Hazardous Substances
Corrective Action	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	Kurnell Wharf, Botany Bay, NSW Access from Prince Charles Parade, Botany Bay, between Silver Beach Road and Captain Cook Drive GPS Location (degrees, minutes, seconds): 34°00'00" south 151°12'35" east Contact Name: Khaled Elomar Contact Number: (02) 9668 1990 Caltex Australia Ltd Head Office: (02) 9250 5000
EMERGENCY	333 (Caltex Emergency Number – call first) or 000
ENVIRONMENTAL ISSUES AND POEO NOTIFICATION Caltex EMR	Contact Name: Simon Caples Contact Number: (02) 9668 1985
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)	(02) 9382 8333 After hours: (02) 9382 2222
SYDNEY PORTS CORPORATION	(02) 9296 4000 or (02) 9296 4001



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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 REFERENCES

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International Maritime Organization (IMO) (1997) Guidelines for the Control and Management of Ships' Ballast Water to Minimize the Transfer of Harmful Aquatic Organisms and Pathogens. Adopted on 27 November 1997. Available online at: <http://globallast.imo.org/868%20english.pdf>

URS (2013) Kurnell Port and Berthing Facility Environmental Impact Statement. Volume 1, Main Report. Accessed 13 March 2013. Available online at: http://majorprojects.planning.nsw.gov.au/index.pl?action=view_job&job_id=5353



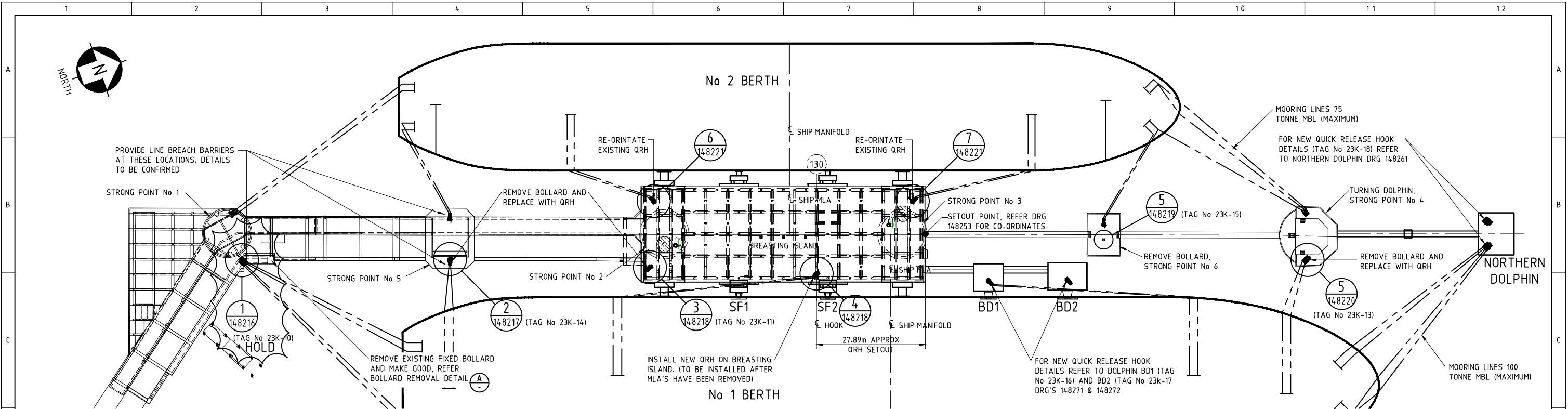
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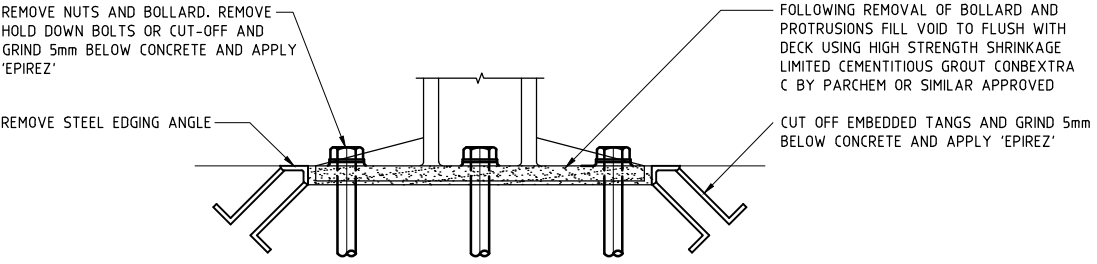
ATTACHMENT 1: GENERAL ARRANGEMENTS PLANS 148215 AND 148229



MOORING UPGRADE GENERAL ARRANGEMENT

PLAN

1:500



BOLLARD REMOVAL DETAIL

DETAIL A
1:10

QUICK RELEASE HOOKS SCHEDULE - No 2 BERTH (NEW STRUCTURES)						
LOCATION	HOOK SWL CAPACITY (TONNE)	TYPE OF UNIT	HOOK ASSEMBLY ORIENTATION (DEGREES)	HOOK MINIMUM HORIZONTAL MOVEMENT 1 (DEGREES)		ROPE VERTICAL ANGLE (DEGREES)
BD1	100	1 x DOUBLE	+45°	-90°, +45	-45°, +90°	-15°, +40°
BD2	100	1 x DOUBLE	+45°	-90°, +45	-45°, +90°	-15°, +40°
NORTHERN DOLPHIN	100	1 x QUAD	-45°	-90°, +45	±45°	-15°, +40°

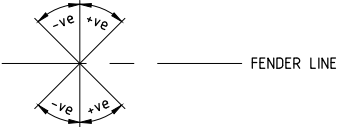
QUICK RELEASE HOOKS SCHEDULE - No 1 BERTH (UPGRADE MOORING BOLLARDS TO QRH)						
LOCATION	HOOK SWL CAPACITY (TONNE)	TYPE OF UNIT	HOOK ASSEMBLY ORIENTATION (DEGREES)	HOOK MINIMUM HORIZONTAL MOVEMENT 1 (DEGREES)		ROPE VERTICAL ANGLE (DEGREES)
STRONG POINT No 1 DETAIL 1	100	1 x QUAD	+45°	-90°, +45	±45°	-45°, +90°
STRONG POINT No 2 DETAIL 3	100	1 x DOUBLE	-45°	-90°, +45	-45°, +90°	-15°, +40°
NEAR SF2 DETAIL 4	100	1 x DOUBLE	-45°	-90°, +45	±45°	-15°, +40°
STRONG POINT No 4 DETAIL 5	100	1 x TRIPLE	-45°	-90°, +45	±45°	-45°, +90°
STRONG POINT No 5 DETAIL 2	75	1 x DOUBLE	0°	-90°, +45	-45°, +90°	-15°, +40°

QUICK RELEASE HOOKS SCHEDULE - No 2 BERTH (RE-ORIENTATION OF EXISTING HOOKS)						
STRONG POINT No. 2 DETAIL 6	75	1 x EXISTING DOUBLE	-45°	-90° +45°	-45° +90°	-15° +40°
STRONG POINT No. 3 DETAIL 7	75	1 x EXISTING DOUBLE	+45°	-90° +45°	-45° +90°	-15° +40°

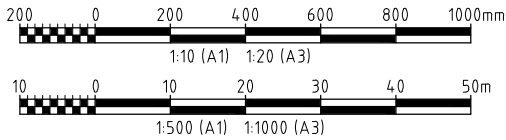
NOTE: HORIZONTAL MOVEMENT RELATIVE TO QRH CENTERLINE

NOTES FOR TABLE:

1. QUICK RELEASE HOOK ASSEMBLY ORIENTATION REFERENCED AS SHOWN



2. ROPE VERTICAL ANGLE IS +VE UPWARDS, -VE DOWNWARDS FROM HORIZONTAL.
3. HOOK MINIMUM HORIZONTAL MOVEMENT IS THE MINIMUM ROTATION ANGLE OF EACH HOOK ABOUT THE HOOK AXIS OF SYMMETRY +VE ROTATION IS AWAY FROM THE AXIS OF SYMMETRY -VE ROTATION IS TOWARDS THE AXIS OF SYMMETRY



APPROVED FOR ISSUE
D.A. D.J. DATE 20.12.12

INFORMATION ONLY
NOT TO BE USED
FOR CONSTRUCTION



DRAWINGS ARE BASED ON WATSON BUCHAN CONSULTING SURVEYORS WAE DRG A1-144221 SHT 0 REV 7 05.05.2012 AND SUBSTRUCTURE CAD DRG'S SUPPLIED BY CALTEX 1996. ALL DIMENSIONS AND LEVELS ARE TO BE CONFIRMED ON SITE PRIOR TO FABRICATION AND CONSTRUCTION.

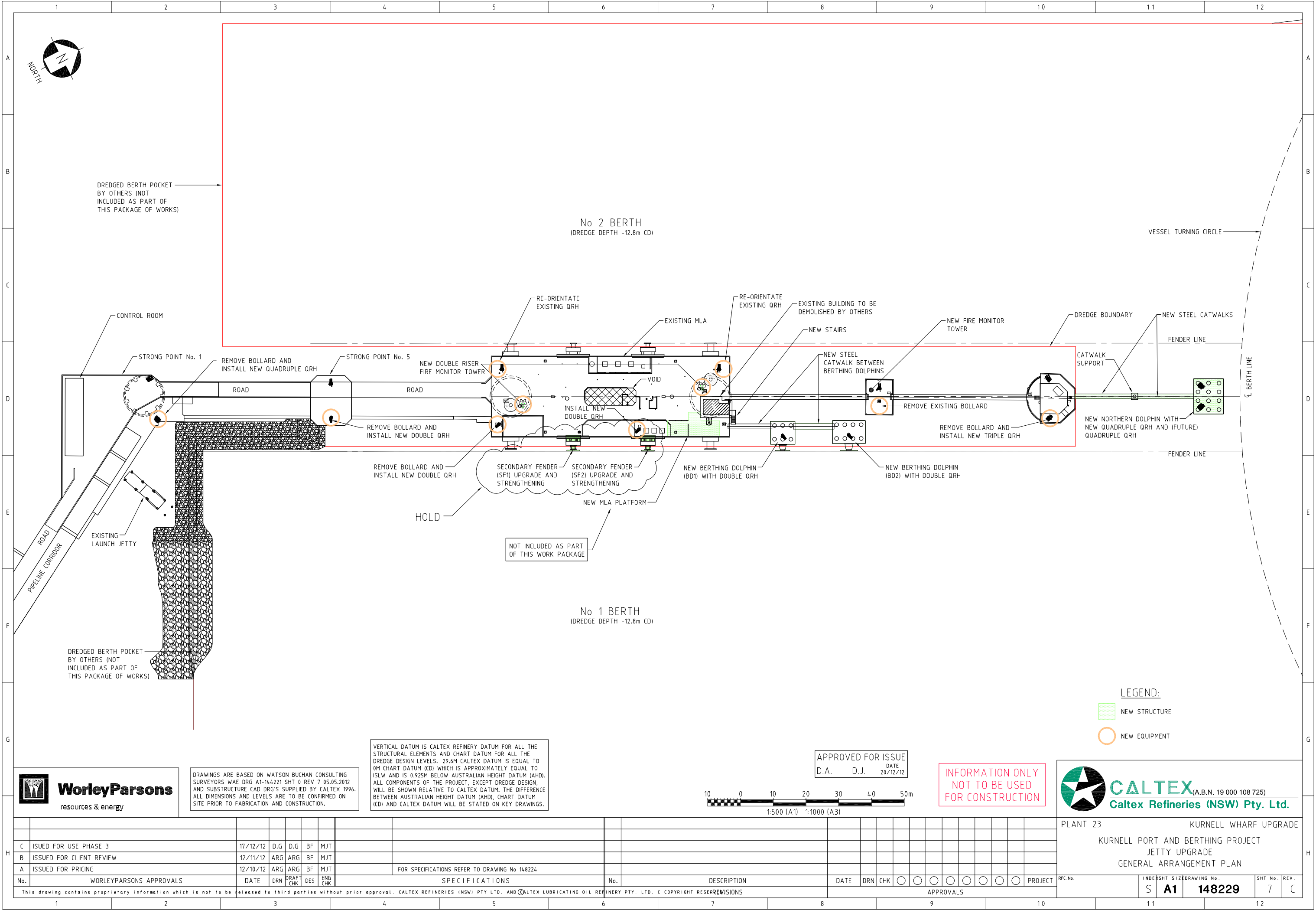


MOORING NOTES:

- THE MOORING HOOKS DOCUMENTED ON THESE DRAWINGS HAVE BEEN DESIGNED FOR THE MOORING LINES OF A MAXIMUM 100,000 DWT (120,000 DISPLACEMENT) VESSEL AT BERTH No1, HOWEVER, THE BERTHING AND MOORING OF THE 100,000 DWT VESSEL IS CURRENTLY BEING REVIEWED AND MAY REQUIRE UPGRADING OF THE JETTY TO ACCOMMODATE THIS VESSEL.
- UNTIL THE UPGRADE OF THE JETTY IS COMPLETE THE MAXIMUM VESSEL SIZE THAT CAN USE THE BERTH IS LIMITED TO 65,000 DISPLACEMENT VESSEL AS PER SKM VESSEL BERTHING AND MORRING REPORT 1994

No.	WORLEYPARSONS APPROVALS	DATE	DRN	DRAFT CHK	DES	ENG CHK	SPECIFICATIONS	No.	DESCRIPTION	DATE	DRN	CHK	APPROVALS	PROJECT
C	ISSUED FOR USE PHASE 3	20/12/12	IJH	BG	SO'R	MT								
B	ISSUED FOR CLIENT REVIEW	12/11/12	VIP	ARG	SOR	BF								
A	ISSUED FOR PRICING	12/10/12	ARG	PBC	SOR	BF	FOR SPECIFICATIONS REFER TO DRAWING No 148213							
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PLANT 23			KURNELL WHARF UPGRADE		
KURNELL PORT AND BERTHING PROJECT					
MOORING UPGRADE					
GENERAL ARRANGEMENT PLAN, SCHEDULE AND DETAILS					
RFC No.	INDEX	SHT SIZE	DRAWING No.	SHT No.	REV.
	S	A1	148215	0	C



LOCATION: W:_INFRASTRUCTURE\PROJECTS\30015\03067_CALTEX KURNELL JETTY UPGRADE\12 0 DRAWINGS\DRG\STRUCTURAL\148229-230 GA+EXIST GA.DWG USER NAME: ian.harder PLOT DATE & TIME: 20/12/2012 14:46:38 PM



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Kurnell Wharf Infrastructure Upgrade Dredge and Spoil Disposal Management Plan

301015-03067 – 301015-03067-EN-REP-010

26 April 2013

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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 Cowlishaw	S Mason-Jones		27-Mar-13	N/A	
B	Issued for client review	N Cowlishaw	S Mason-Jones	D Aubourg	28-Mar-13		
0	Issued for use	C Jones	S Mason-Jones	D Aubourg	26-Apr-13		



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DREDGE AND SPOIL DISPOSAL MANAGEMENT PLAN**

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DREDGE AND SPOIL DISPOSAL MANAGEMENT PLAN

GLOSSARY

Acronym / Term	Definition
BHD	Backhoe dredge
CEMP	Construction Environmental Management Plan
Cetacean	Carnivorous marine mammals, including whales, dolphins, and porpoises
CD	Chart Datum
DAFF	Department of Agriculture, Fisheries and Forestry
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
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
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
ERT	Emergency Response Team
GPS	Global positioning system
HSE	Health, safety and environment



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Acronym / Term	Definition
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	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 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.
MSDS	Material Safety Data Sheet
MWMP	Marine Works Management Plan
OEH	Office of Environment and Heritage
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	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. 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.
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 Monitoring Program



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DREDGE AND SPOIL DISPOSAL MANAGEMENT PLAN**

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) provides the basis for environmental management related to the dredging works only.

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).

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 Rangers 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).



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DREDGE AND SPOIL DISPOSAL MANAGEMENT PLAN

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.

This DSDMP is based on the relevant information and requirements set out in the Environmental Impact Statement (EIS) (URS 2013) for the Project. All relevant changes to the EIS and relevant conditions of consent must be incorporated into this DSDMP. The conditions of the Sea Dumping Permit, which is currently being sought under the Commonwealth *Environmental Protection (Sea Dumping) Act 1981* and the water pollution licence, which is currently being sought under the NSW *Protection of the Environment Operations Act 1997*, must also be incorporated into this DSDMP.

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



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DREDGE AND SPOIL DISPOSAL MANAGEMENT PLAN**

2 OBJECTIVES AND STRUCTURE OF THE DSDMP

2.1 Objectives

The Objectives of the DSDMP are to:

- Describe the proposed dredging and spoil disposal program
- Outline the management measures, including actions and associated performance indicators, that will be implemented throughout the dredging program to minimise and manage potential impacts on the environment
- Outline the environmental monitoring and inspection programs that will be implemented
- Outline effective and timely corrective actions that will be implemented in the event that specified threshold limits for environmental receptors and indicators are exceeded
- Outline how the environmental management strategies will be implemented, including definition of clear and accountable roles and responsibilities, communication, auditing and reporting requirements
- Ensure that all Caltex personnel and the Contractor clearly understand their environmental obligations and receive appropriate training to perform their duties in a competent manner
- Comply with all relevant Commonwealth and State environmental requirements
- Comply with relevant Australian and other recognised standards
- Aim for zero material harm environmental incidents during dredging, as part of Caltex's Incident and Injury Free (IIF) operations

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

2.2 Content

The content 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**



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DREDGE AND SPOIL DISPOSAL MANAGEMENT PLAN

Provides a copy of the Caltex Environmental Policy, which sets out the overarching principles for minimising the environmental impact of the Project and the interactions of the DSDMP with the policy and other management plans

- **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 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 REFERENCES**

Lists the documents referenced within the DSDMP



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3 ENVIRONMENTAL POLICY

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

Copies of this policy will be displayed in a prominent position in the Project site office and on HSE notice boards as a minimum. The Contractor is encouraged to also have 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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DREDGE AND SPOIL DISPOSAL MANAGEMENT PLAN**

3.1 Relationship to other Plans

The DSDMP provides the basis for environmental management throughout the dredging works for the Project. The DSDMP is based on the relevant information and requirements set out in the (EIS) (URS 2013) for the Project. The EIS lists various sub-plans as being included within the DSDMP. Where practicable, these sub-plans have been incorporated into this DSDMP, however some sub-plans are required to be developed by Caltex or the Contractor, as set out below:

- Spill control plan (SCP) - to be developed and implemented by the Contractor in accordance with the requirements set out in Section 8.1 of the DSDMP
- Sediment and water quality monitoring program (SWQMP) - provided at Attachment 1
- Flora management sub-plan - incorporated into Section 8.3 of the DSDMP
- Fauna management sub-plan - incorporated into Section 8.4 of the DSDMP
- Underwater noise management sub-plan - incorporated into Section 8.4 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
- Waste and resource management sub-plan - incorporated into Section 8.9 of the DSDMP

The DSDMP is supported by these sub-plans and a number of procedures prepared and implemented by Caltex and the Contractor, as shown in Figure 3-1.



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DREDGE AND SPOIL DISPOSAL MANAGEMENT PLAN**

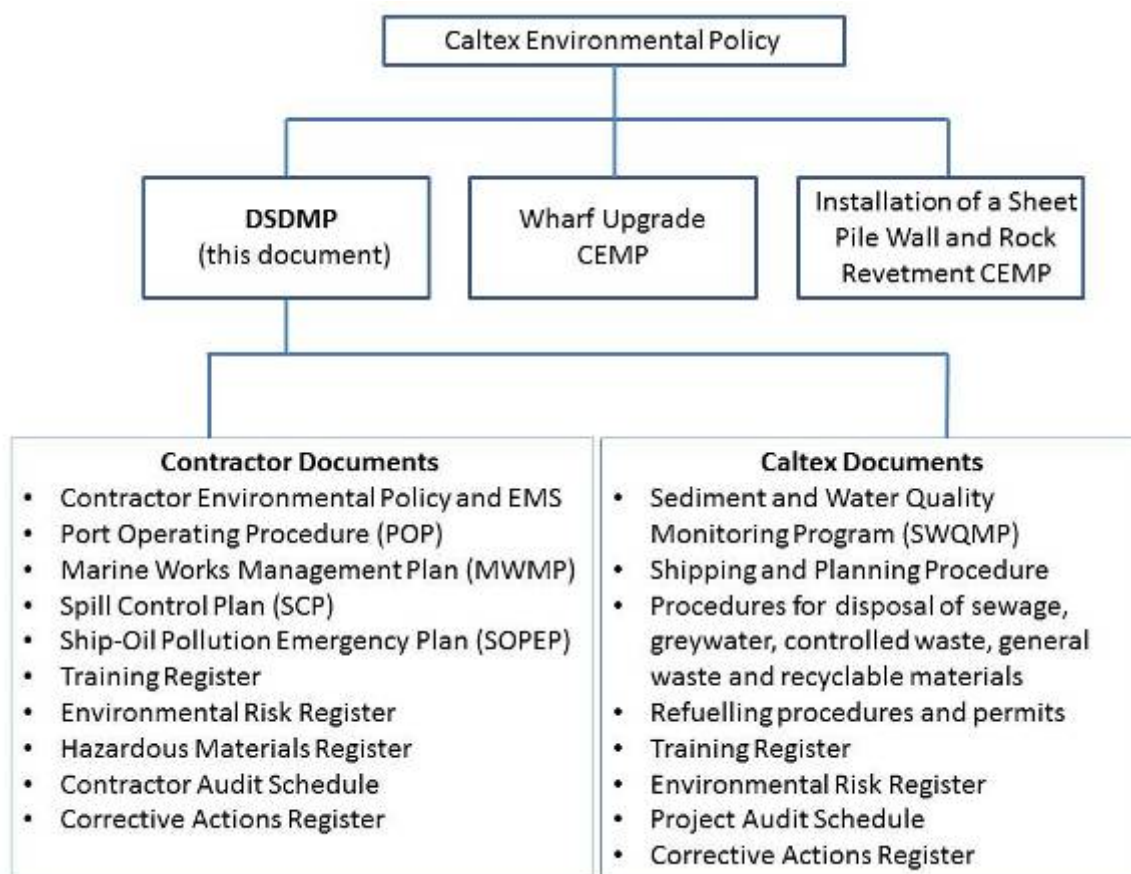


Figure 3-1: Interaction of the DSDMP with Sub-plans and Procedures



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DREDGE AND SPOIL DISPOSAL MANAGEMENT PLAN

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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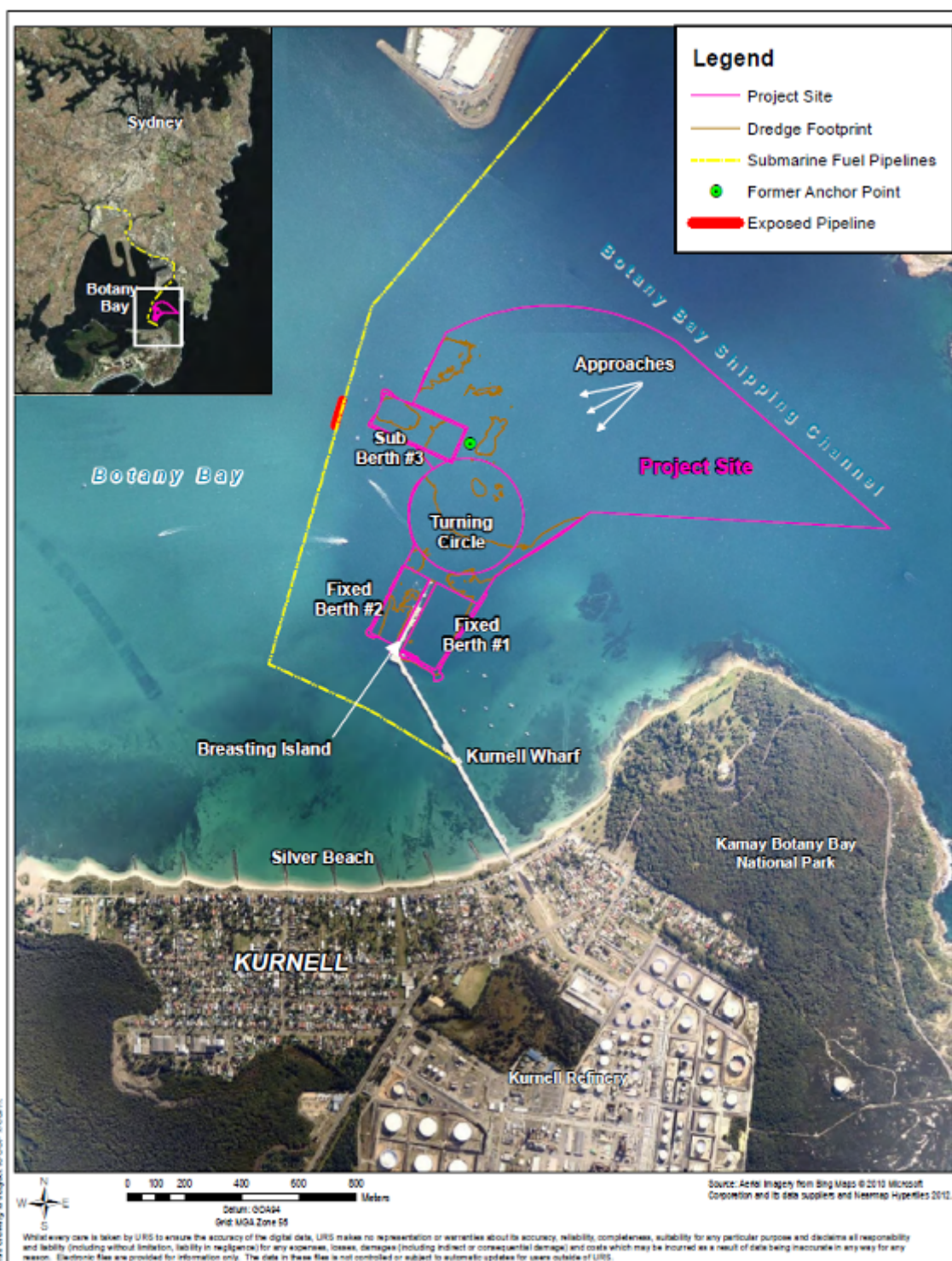


Figure 4-1: Project Site and Context (source: URS 2013)



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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 CD
- Sub berth returned to the design depth of 14m 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.



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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.					

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 (pending approval of a sea dumping permit, which is currently being sought 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.



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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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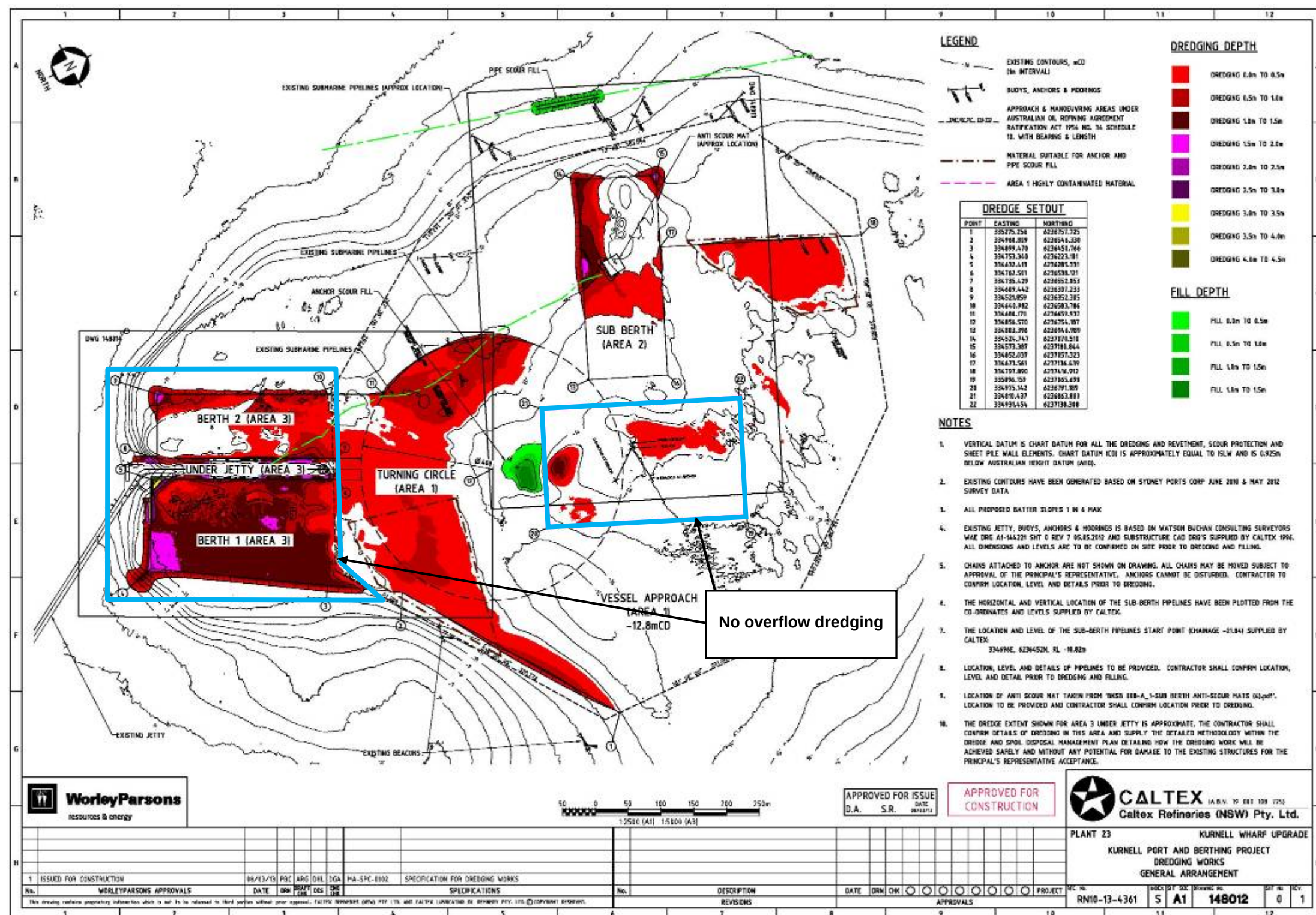


Figure 4-2: Dredge footprint and “no overflow dredging” areas

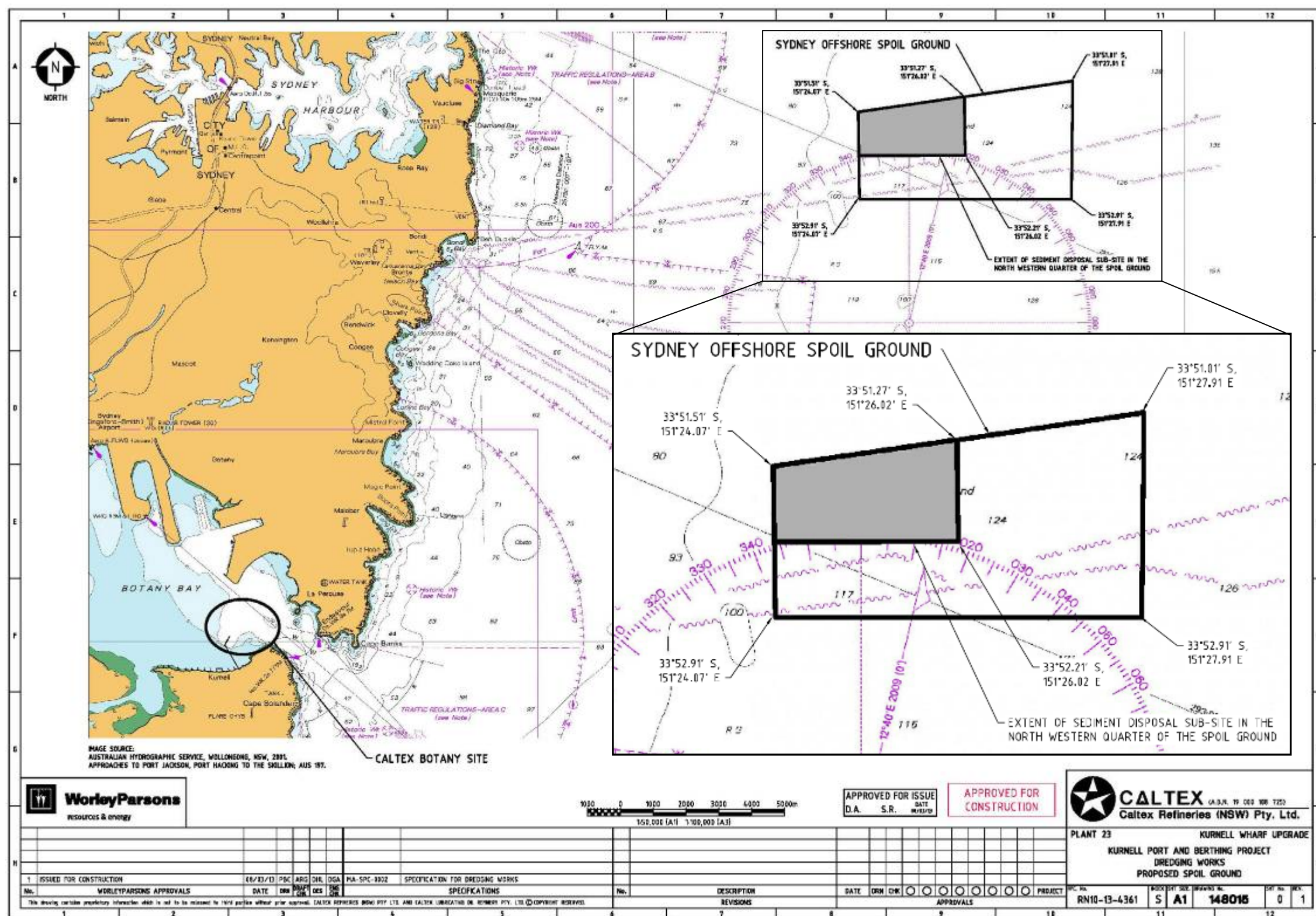


Figure 4-3: Dredge disposal site within Sydney Offshore Spoil Ground



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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.

The BHD will utilise diesel generators, compressors and pumps to undertake the works. The BHD will utilise 'spuds' (anchoring legs) to create a suspended platform on the seabed, removing the need for anchor lines. Whilst working in the fixed berths, the BHD, if feasible, may be moored against the breasting island.

It is anticipated that a BHD with the following specifications will be used to carry out the required dredging works:

▪ Overall length	50 m
▪ Breadth	15 m
▪ Moulded depth	3 m
▪ Dredging draught	2 m
▪ Tonnage	646 GT
▪ Maximum dredging depth	19.5 m
▪ Grab capacity up to	6 m ³
▪ Total power installed	1,380 kW
▪ Typical noise generated at source*	100 to 110 dB(A)

*The noise generated by each BHD depends on the type and age of BHD. Newer BHDs are typically fitted with better acoustic insulation.

It is expected that barges with a capacity to hold 500 m³ 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.

The dredging works will generate small quantities of waste diesel, oils and lubricants, hydraulic fluid, sewage, cooking oil, ablutions and detergents. There will be no requirement to stockpile spoil or waste materials (on land) during the works. However, limited materials will be set down within the existing storage area along Prince Charles Parade.

The BHD will have a sewage purification plant on board, 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.



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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 are 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. 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 gradually drop out.

To enable continuous dredging and therefore minimise the duration of the works, it is anticipated that four hoppers (and supporting tugboats) will be used on a rotational basis. One hopper will be in the process of being loaded, with one moored alongside the BHD. The remaining two will be either in transit to, or from, the disposal or reuse area. A tugboat will be used to position and manoeuvre each hopper. When not in use, the hoppers will moor east of the breasting island near fixed berth #1.

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 approximately 374 hopper loads to remove the total volume of dredged sediments, assuming loads taken from the fixed berths contain 30% excess water. Of these, approximately 12 hopper loads will be required to 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).

There will be short breaks in the dredging program to allow for crew change over (assuming two rotational crews, each working 12-hour shifts) and for the BHD to be repositioned and resupplied. This will equate to approximately a 2-hour break in dredging each day.

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.



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The majority of dredging will be carried out within the existing Marine Security (exclusion) Zone around the Kurnell Wharf (Figure 4-4). Where dredging and reuse works take place outside the existing Marine Security (exclusion) Zone, a Marine Works Security Zone, with a 100 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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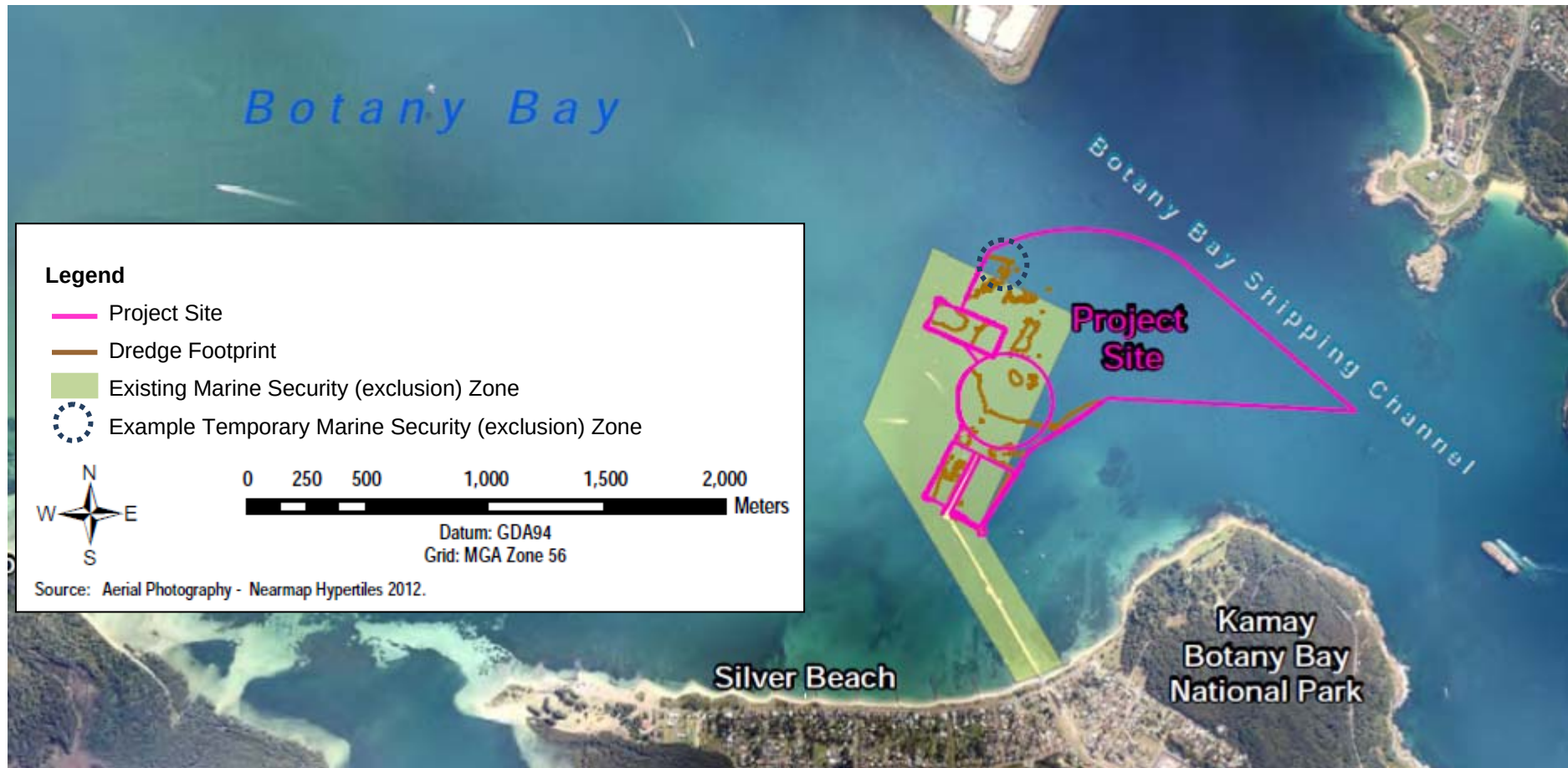


Figure 4-4: Existing and Temporary Marine Security (exclusion) Zones at the Project Site (adapted from URS 2013)



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Overflow Dredging

The dredged sediment will include a volume of surplus water. The volume of surplus water depends on the composition of the material being dredged and can be considerable, especially in areas of softer sandier sediment as are present within the majority of the dredge footprint.

In order to reduce the duration of 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 elsewhere.

The rate of overflow dredging depends on the size and type of hopper barge used. Assuming the use of 500 m³ capacity hoppers, it is anticipated that approximately 15 to 20 m³ of water will overflow every minute. The overflow will also contain a quantity of finer sediment, which would not instantly settle out in the hopper. The spill rate of this sediment is anticipated to be approximately 10 to 15 kg per second.

Overflow dredging is not permitted within the fixed berths or immediately east of the sub berth due to the presence of sediments with elevated concentrations of tributyltin (TBT). 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 4-4.

Table 4-4: 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 - 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



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4.2 Project Program

The Project is expected to be undertaken in two stages over a two year period, with works scheduled to commence in the third quarter (Q3) of 2013. The dredging works are anticipated to extend over a period of 25 weeks, from Q3 2013 to Q1 2014. The approximate Project program is shown in Table 4-5.

Dredging works, including operation of the BHD and tug boats, will utilise approximately 30 personnel, working 12-hour shifts over the 25 week dredging program.

Table 4-5: Approximate Project program

Works	Duration	2013			2014			2015		
		Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2
Dredging Works (including one week mobilisation / demobilisation)	25 weeks									
Reuse Works	1 week									
Sheet Piling Works	3 weeks									
Rock Revetment and Scour Protection Works	4 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.

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
- A water pollution licence under the NSW *Protection of the Environment Operations Act 1997*
- The requirement to prepare a 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 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 EMR, 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 an EMR is appointed for the Project.
- 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.
- 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.



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- 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).

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

- Delegate community notification role, if necessary, prior to the arrival of emergency services, with consideration of communications tools such as phone calls, door knocking and letter box drops, as appropriate for the incident and its impact.
- Responsible for the overall control of the emergency.

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 will develop and deliver a Project Induction prior to commencement of dredging works. The Caltex Project Induction will include the requirement for mandatory compliance with this DSDMP by all personnel and the Contractor involved in dredging activities. The Caltex Project Induction will 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 dredging activities on the Project.

7.3 Training

All Project personnel will be fully trained 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

All personnel and the Contractor are required to discuss environmental issues as a regular component of their toolbox talks and site meeting agendas.

Environmental notice boards will be established by Caltex to inform personnel of relevant environmental information such as minutes of meetings, results of monitoring, performance standards, environmental incident alerts and company environmental notices. The notice board will be refreshed periodically with up-to-date information.



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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 to 333, the Caltex Emergency number, which should be called first, or 000. Emergency calls to these numbers, if required, may be made by anyone.

All queries or complaints received by personnel will be directed to the 24-hour hotline number. Under no circumstances will the Contractor communicate with the media on any matters concerning 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 (including sailing, diving and recreational users), to describe the nature of the works, and to offer opportunity to feedback via a 24-hour hotline number (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 and changes to the plan are made as required to incorporate learning from the exercises.

The composition of the Caltex Emergency Management System is shown in Figure 7-1.



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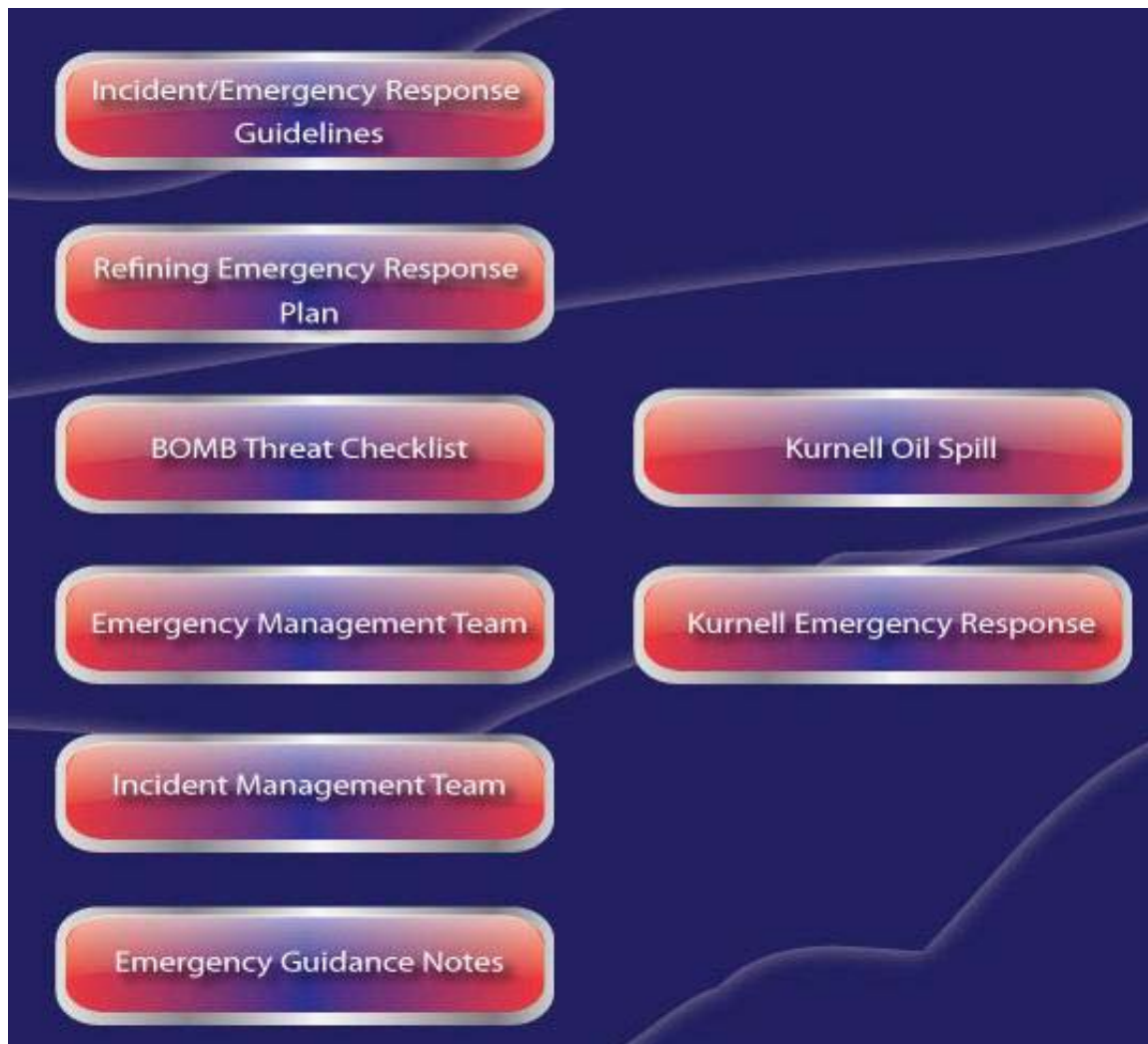


Figure 7-1: Caltex Emergency Management System Framework (source: Caltex Refinery PIRMP)

The POEO Act also requires that the holder of an 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.

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 environment¹, as set out below and in Section 8.1.

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)

¹ 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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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.

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.



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7.7 Complaint Management

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

Caltex manages pollution complaints in accordance with the requirements of EPL 837, including:

- Reporting complaints in the Annual Return for EPL 837
- 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 continue to operate its 24-hour hotline number (1800 802 385 toll free) to receive feedback and complaints associated with the Project. All feedback and complaints will be 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 within 48 hours of receiving the complaint.

7.8 Corrective Actions

Corrective actions may be generated from a number of sources, including but not limited to incidents, audits, inspections and management reviews. Corrective actions will be systematically managed to ensure issues raised are recorded and closed.



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A Corrective Actions Register for recording all corrective actions raised and closeout details, will be maintained on site. The close out details will include the date closed and the name of the person verifying completion of the required action.

Specific corrective actions for each of the environmental elements relevant to the Project are set out in Section 8.

7.9 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.

7.10 Control of Records

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.

7.11 Audit and Compliance Management

Regular 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 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.



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Audits may be conducted as integrated HSE audits or specific environmental audits. Environmental audits and inspections will include:

- Area and task specific inspections – these will typically be documented using inspection checklists
- Caltex Environmental Management System (EMS) audits – these will be documented in audit reports
- Contractor EMS audits (for major Contractors only) – these will be documented in audit reports
- Ad hoc audits requested by Caltex – these will be documented as best fits to suit the scope and intended outcomes of the audit

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.

7.11.1 Contractor 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.

7.11.2 DSDMP Compliance Audits

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

The findings of DSDMP compliance audits will be recorded in the Corrective Actions Register as required and reported to the Caltex EMR with the names of responsible persons and agreed timeframes for the implementation of corrective actions.

7.11.3 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. 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.



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7.11.4 DSDMP Review

This DSDMP is based on the relevant information and requirements set out in the Project EIS (URS 2013) for the works. All relevant changes to the EIS and relevant conditions of approval must be incorporated into this DSDMP. The conditions of the Sea Dumping Permit, which is currently being sought under the Commonwealth Environmental Protection (Sea Dumping) Act 1981 and the water pollution licence, which is currently being sought under the NSW *Protection of the Environment Operations Act 1997*, must also be incorporated into this 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 are marked with an asterisk (*).

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 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.

8.1 Water and Sediment Quality

Element	Water and Sediment Quality
Performance Objectives	<i>To prevent the pollution of water and the generation of excessive turbidity.</i> <i>To minimise the environmental impact of any spills and excessive turbidity that occur.</i>
Management Actions	▪ 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.* ▪ 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 immediately east of the sub berth due to the presence of sediments with elevated concentrations of tributyltin (TBT).*



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Element	Water and Sediment Quality
	▪ Sediments will be lifted and loaded so as to prevent excessive disturbance and agitation, whilst also preventing excessive spillage.* ▪ 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.* ▪ The Contractor will ensure their activities conform to the pollution prevention requirements set out under Section 120 of the POEO Act.* ▪ 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). ▪ 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



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Element	Water and Sediment Quality
	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: • 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). ▪ 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.



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Element	Water and Sediment Quality
	▪ Where a pollution incident occurs that is causing or threatening material harm to the environment², 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)* ▪ 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.* ▪ The Contractor will develop and implement a works-specific Spill Control Plan (SCP) that incorporates the requirements of this DSDMP and the following: • The requirement for staff to understand the limitations, controls, and methods to manage and prevent spills

² 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	Water and Sediment Quality
	• 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 Monitoring Program (SWQMP) provided at Attachment 1. ▪ 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	▪ Spill response procedures implemented in accordance with the relevant works-specific SCP.* ▪ Regular maintenance of dredging equipment scheduled and carried out by the Contractor.
Monitoring	▪ The SWQMP will be implemented prior to and during dredging. ▪ The Contractor will carry out regular inspections of its works areas to ensure the SCP is being implemented.*
Reporting	▪ Caltex will report all relevant complaints, spills and incidents under the terms of the current EPL No. 837.*



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Element	Water and Sediment Quality
	- 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	- 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.

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 odours.</i>
Management Actions	- Overflow dredging is not permitted within the fixed berths or 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	- No odour complaints received. - No drying of sediments within hoppers. - pH and DO level monitoring



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Element	Acid Sulphate Soils
Monitoring	▪ 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.* ▪ pH and DO level monitoring
Reporting	▪ The Contractor will notify the Caltex EMR of any adverse odours identified during dredging.* ▪ Where adverse odours or other performance indicators exceeding trigger values are identified, the Contractor will notify the Caltex EMR as soon as practicable. * ▪ Log books will be maintained of all monitoring of performance indicators. This will need to include the corrective actions that were taken for instances where adverse odours or exceedences of trigger values of performance indicators were recorded.*
Corrective Action	▪ Where adverse odours or exceedences of trigger values were identified, the Contractor, in collaboration with Caltex, will implement one of the following measures: • Identification of prevailing wind direction and strength and the potential for odours to reach sensitive receptors; • In exceptional circumstances, investigation of potential for limits on the rate of dredging to reduce the odour emissions.* ▪ Where a veneer of water is not present over dredged sediments in the hoppers, additional sea water will be added to the hoppers.*



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8.3 Flora

Element	Flora
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	- 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.* - 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	- No introduction or spread of <i>Caulerpa taxifolia</i>. - No clearing of, or disturbance to, seagrass beds.
Monitoring	Regular inspections of dredging and disposal areas and equipment will be carried out to check for the presence of <i>Caulerpa taxifolia</i>.*
Reporting	The dates and outcomes of <i>Caulerpa taxifolia</i> inspections will be reported by the Contractor to the Caltex EMR fortnightly.
Corrective Action	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>.*



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8.4 Fauna

Element	Fauna
Performance Objective	<i>To minimise injury to or death of fauna and minimise loss of fauna habitat.</i>
Management Actions	- Native fauna will be protected at all times and will not be fed, harassed or otherwise interfered with. - Caltex will enable regular inspections of the Project Site by DAFF to check for the introduction of marine pest species.* - All vessels will adhere to the four knot speed limit within the Project Site to prevent collision injuries or fatalities to fauna.* - 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.* - Trained marine fauna spotters (monitors) will be used to make observations for marine turtles, cetaceans, pinnipeds, dugongs and instances of shoaling fish up to a distance of 420 m from active dredging, reuse and disposal areas prior to start up and throughout dredging, reuse and disposal works.* - Works will not commence if marine turtles, cetaceans, pinnipeds or dugongs are sighted within 150 m of dredging, reuse or disposal works.* - If marine turtles, cetaceans, pinnipeds or dugongs are observed within 420 m of active dredging, reuse or disposal areas, the Contractor will be placed on standby.* - If marine turtles, cetaceans, pinnipeds or dugongs are observed within 150 m of active dredging, reuse or disposal areas whilst works are taking place, the Contractor will cease any dredging, reuse or disposal works.* - Works will not recommence until 30 minutes after the animal has moved more than 150 m away, or 30 minutes after the animal was last sighted.*



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Element	Fauna
	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	- No dredging, reuse or disposal works whilst marine turtles, cetaceans, pinnipeds or dugongs are within 150 m of active dredging, reuse or disposal areas.* - No fauna deaths directly associated with dredging activities.
Monitoring	Marine fauna monitors will be used to make observations for marine turtles, cetaceans, pinnipeds, dugongs and instances of shoaling fish up to a distance of 420 m from active dredging areas prior to start up and throughout dredging works.*
Reporting	- 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.
Corrective Action	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

Element	Noise																			
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 following Noise Criteria Management Levels dB(A) ($L_{Aeq(15min)}$)*																			
	<table><tr><th rowspan="2">Sensitive Receptors</th><th colspan="2">Standard Hours (Mon-Fri: 0700-1800 and Sat 0800-1300)</th><th>Outside Standard Hours</th></tr><tr><th>Noise Affected Management Level $L_{Aeq(15min)}$ [RBL + 10]</th><th>Highly Noise affected Level $L_{Aeq(15min)}$</th><th>Noise Affected Management Level $L_{Aeq(15min)}$ [RBL + 5]</th></tr><tr><td>Residential dwellings at Nos. 2 – 174 Prince Charles Parade</td><td>51 dB(A)</td><td>75 dB(A)</td><td>46 dB(A)</td></tr><tr><td>Ranger's House</td><td>51 dB(A)</td><td>75 dB(A)</td><td>46 dB(A)</td></tr><tr><td>Silver Beach (Passive recreational area)</td><td colspan="3">60 dB(A) (when facilities are being used)</td></tr></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)		
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)																	
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Element	Noise			
	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]
	Kamay Botany Bay National Park (Passive recreational area)	60 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.				

Performance Indicators

- No exceedences of the Noise Affected Management Level of $L_{Aeq(15min)} = 46$ 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 150 m of active dredging, reuse or disposal areas.*

Monitoring

- 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), periodic noise monitoring depending on perceived noise levels and activities being undertaken, will be carried out to verify noise levels along Prince Charles Parade are below or equal to $L_{Aeq(15min)} = 46$ dB(A).*
- Marine fauna monitoring will be used to make observations for marine turtles, cetaceans, pinnipeds, dugongs and instances of shoaling fish up to a distance of 420 m from active dredging areas



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Element	Noise
	prior to start up and throughout dredging works.*
Reporting	▪ 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 periodic 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.
Corrective Action	▪ 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: - o Further consultation with sensitive receivers - o Consideration of favourable wind conditions - o Additional noise shielding, if possible.



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Figure 8-1: Noise sensitive receptors in the vicinity of the Project Site



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8.6 Air Emissions

Element	Air Emissions
Performance Objective	<i>To prevent a decrease in regional air quality</i>
Management Actions	▪ 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.
Performance Indicators	▪ No air quality complaints received.
Monitoring	▪ The Contractor will carry out regular visual monitoring to identify equipment producing excessive visible emissions.
Reporting	▪ The dates and outcomes of visual emissions monitoring will be reported by the Contractor to the Caltex EMR fortnightly.
Corrective Action	▪ Equipment observed to be creating emissions will be replaced or serviced within 48 hours.

8.7 Heritage

Element	Heritage
Performance Objective	<i>To protect and preserve Indigenous and Non-Indigenous heritage sites and values.</i>
Management Actions	▪ 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. ▪ Water and sediment quality management actions will be implemented (as detailed in Section 8.1) to minimise the potential for impacts to areas adjacent to heritage sites.



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Element	Heritage
Performance Indicators	Suspected heritage items are to be dealt with in accordance with the required sequence of corrective actions.*
Monitoring	Works to the sea bed will be visually monitored for the presence of potential heritage items.
Reporting	Details of the discovery of any suspected heritage items will be reported to the Caltex EMR as soon as practicable.
Corrective Action	- 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 OEH in accordance with the requirements of Section 146 of the <i>Heritage Act 1977</i>.* - The police will be contacted immediately if human remains are uncovered. - 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.* - 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.* - Works in the immediate area will not resume until approved in writing by the Caltex EMR.



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8.8 Marine Traffic

Element	Marine Traffic
Performance Objective	<i>To minimise traffic interactions and appropriately manage traffic interfaces.</i>
Management Actions	▪ 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.* ▪ 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.*



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Element	Marine Traffic
	▪ 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 be 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. ▪ Where works take place outside the existing Marine Security (exclusion) Zone, Marine Works Security Zones of a 100 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.*



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Element	Marine Traffic
	- 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.*
Performance Indicators	- 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	Caltex will monitor compliance with the management and interfacing requirements with shipping and the port operations.
Reporting	Collisions or near misses will be reported in accordance with incident reporting procedures set out in Section 7.6.
Corrective Action	Collisions will be managed in accordance with incident management procedures set out in Section 7.6.

8.9 Waste and Resources

Element	Waste and Resources
Performance Objectives	<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> <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>
Management Actions	All waste management and disposal will be carried out in accordance with legislative requirements and relevant guidelines.



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Element	Waste and Resources
	▪ 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. ▪ The following waste hierarchy will be implemented: • 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 facilities that are able to recycle waste • Recover energy from waste • Dispose of waste at an appropriate licensed facility ▪ 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).*



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Element	Waste and Resources
	▪ Caltex will make all the Contractor aware of Caltex's existing procedures for the disposal of sewage, greywater, controlled waste, general waste and recyclable materials (modified as required).* ▪ The Contractor will implement Caltex's existing procedures for the disposal of sewage, greywater, controlled waste, 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.* ▪ Selection of subcontractors and suppliers will include consideration of their ability to meet stated requirements including corporate and Project environmental and sustainability initiatives.*
Performance Indicators	▪ 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	▪ 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.*



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Element	Waste and Resources
Reporting	- 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	- 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.

8.10 Hazardous Substances

Element	Hazardous Substances
Performance Objectives	<i>To prevent the release of hazardous substances to the environment</i>
Management Actions	- 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.*



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Element	Hazardous Substances
	▪ 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	▪ No release of hazardous substances to waterways. ▪ Appropriate storage of hazardous substances.
Monitoring	▪ 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	▪ 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	▪ 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	Kurnell Wharf, Botany Bay, NSW Access from Prince Charles Parade, Botany Bay, between Silver Beach Road and Captain Cook Drive GPS Location (degrees, minutes, seconds): 34°00'00" south 151°12'35" east Contact Name: Khaled Elomar Contact Number: (02) 9668 1990 or 0425 217 017 Caltex Australia Ltd Head Office: (02) 9250 5000
EMERGENCY	333 (Caltex Emergency Number – call first) or 000
ENVIRONMENTAL ISSUES AND POEO NOTIFICATION Caltex EMR	Contact Name: Simon Caples Contact Number: (02) 9668 1985 or 0415 225 474
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)	(02) 9382 8333 After hours: (02) 9382 2222



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Emergency Contacts	
SYDNEY PORTS CORPORATION	(02) 9296 4000 or (02) 9296 4001
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



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Emergency Contacts	
CALTEX COMMUNITY CONCERNS HOTLINE 24 hours, 7 days a week	1800 802 385 (Toll Free)



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10 REFERENCES

Caltex (undated) Kurnell Refinery Pollution Incident Response Management Plan. Available online at:
http://www.caltex.com.au/CommunityAndEnvironment/Documents/Kurnell_Refinery_PIRMP.pdf

Department of Environment and Climate Change (DECC) (2009) Interim Construction Noise Guideline

URS (2013) Kurnell Ports and Berthing Facility Environmental Impact Statement. Volume 1, Main Report. February 2013. Accessed 13 March 2013. Available online at:
http://majorprojects.planning.nsw.gov.au/index.pl?action=view_job&job_id=5353



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ATTACHMENT 1: FRAMEWORK SEDIMENT AND WATER QUALITY MONITORING PROGRAM



WorleyParsons

resources & energy

CALTEX REFINERIES (NSW) PTY LTD

Kurnell Wharf Infrastructure Upgrade Sediment and Water Quality Monitoring Program

301015-03067 – 301015-03067-EN-REP-011

26 April 2013

Infrastructure & Environment

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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	S Mason-Jones	N Cowlshaw		27-Mar-13	N/A	
B	Issued for client review	S Mason-Jones	N Cowlshaw	D Aubourg	28-Mar-13		
0	Issued for use	S Mason-Jones	C Jones	D Aubourg	26-Apr-13		



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1 INTRODUCTION AND LOCATION

1.1 Introduction

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 Sediment and Water Quality Monitoring Program (SWQMP) relates only to the dredging component of the works.

1.2 Location

The Project is located in the waters of Botany Bay off Silver Beach, 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 (100 m to the south), which support a range of threatened species, and 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 Rangers 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).

The location of the Project Site and dredge footprint is shown in Figure 1-1.

The location of the Project Site relative to places with important ecological values is shown in Figure 1-2.



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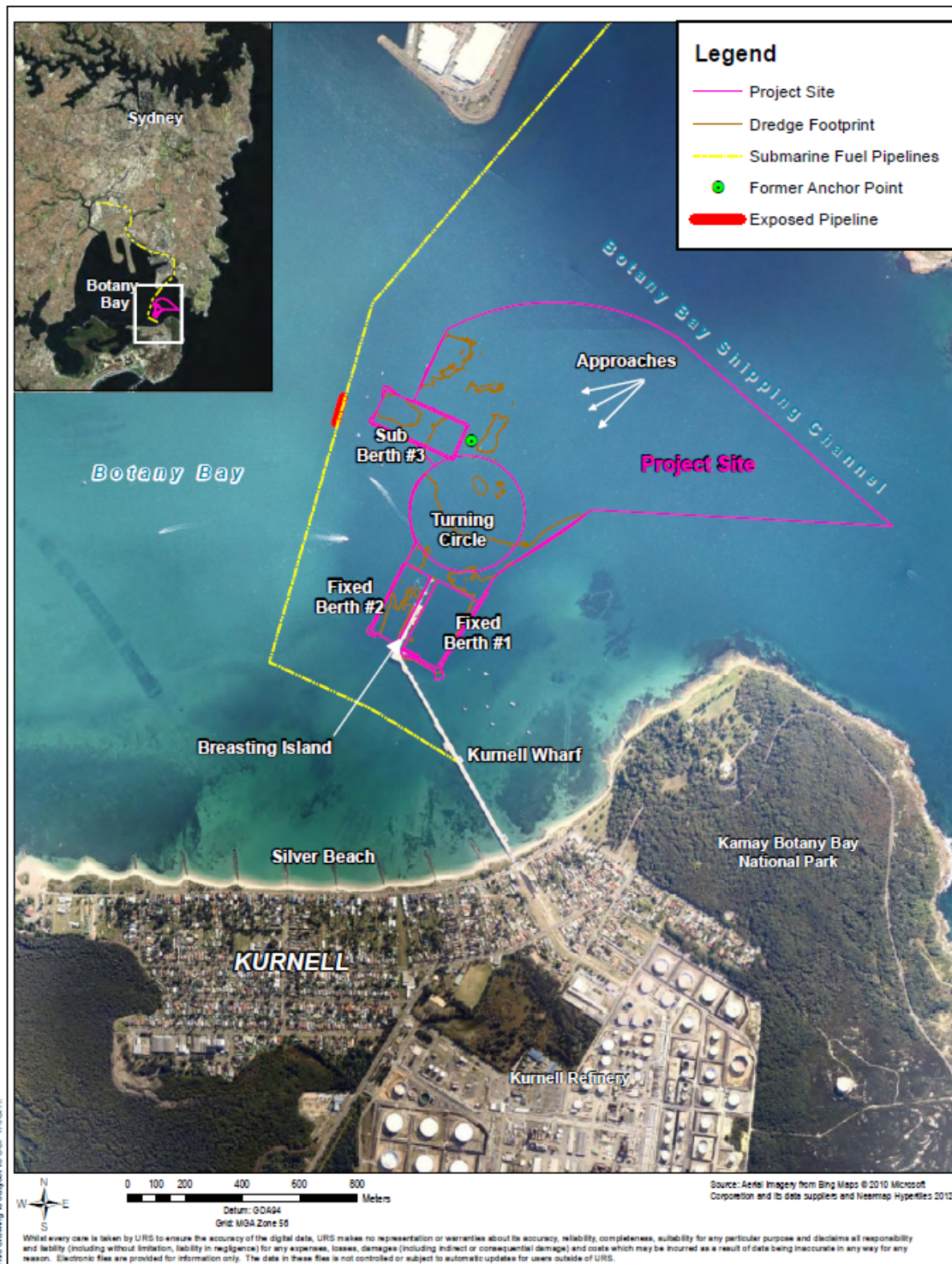


Figure 1-1: Project Site and dredge footprint (source: URS 2013)



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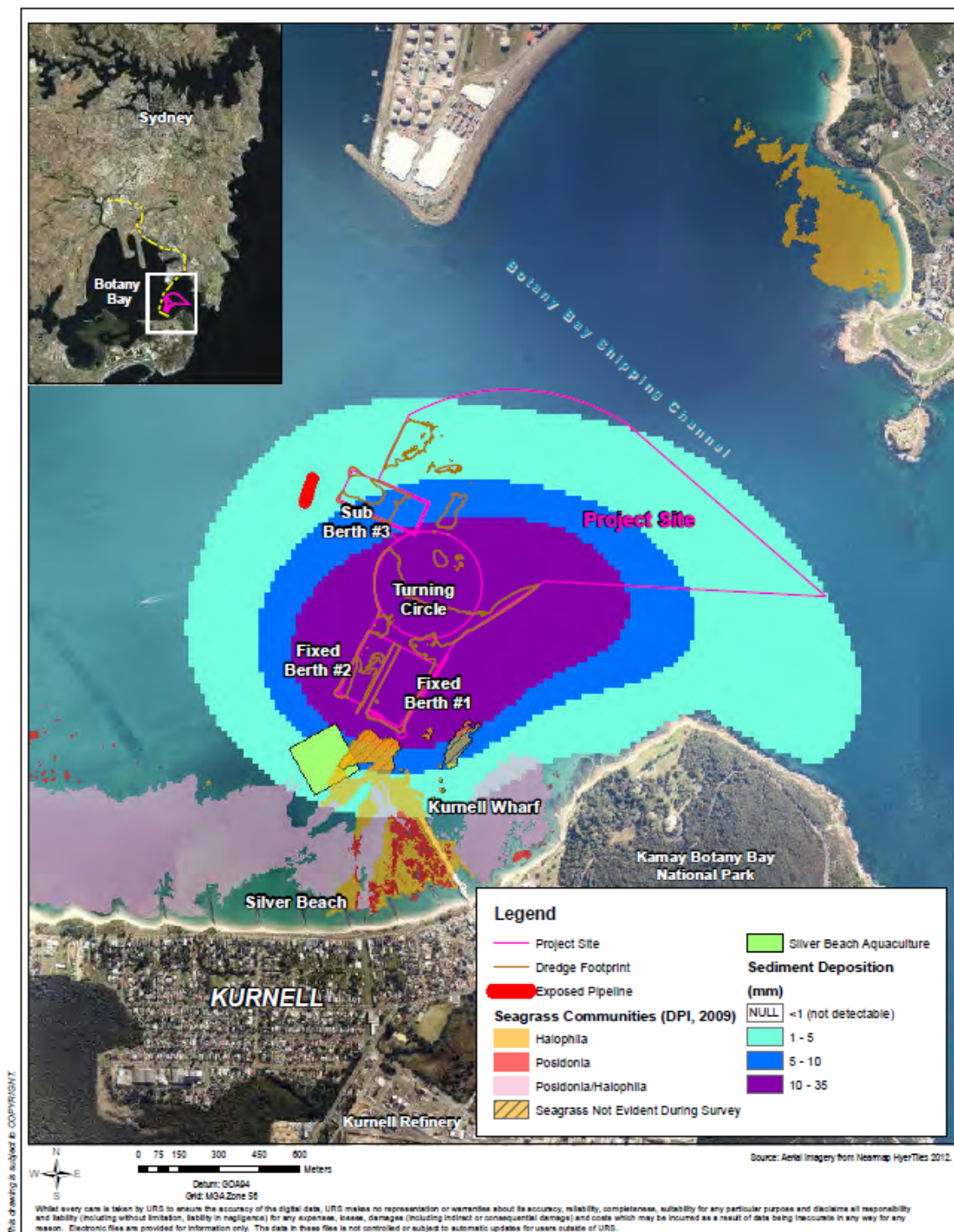


Figure 1-2: Modelled sediment deposition relative to places of important ecological value (URS 2013)



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2 DREDGING, REUSE 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 1-1.

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 CD
- Sub berth returned to the design depth of 14m below CD
- Fixed berths increased to overall effective depth of 12.8 m below CD

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 (Figure 1-2.)

The majority of dredged sediments (approximately 147,000 m³) will be disposed of at the Sydney Offshore Spoil Ground (pending approval of a Sea Dumping Permit, which is currently being sought under the Commonwealth *Environmental Protection (Sea Dumping) Act 1981*).

The SWQMP is relevant to dredging at the Project Site and reuse of dredged sediments within Botany Bay. The SWQMP is not relevant to disposal of dredged sediments at the Sydney Offshore Spoil Ground.



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3 STRUCTURE OF THE SWQMP

This SWQMP provides the basis for sediment and water quality monitoring associated with dredging activities related to the upgrade of berthing infrastructure at Kurnell Wharf.

The SWQMP defines a monitoring program to be implemented prior to and during dredging activities, with the key focus on the protection of waters and aquatic ecosystems of Botany Bay and Towra Point Nature and Aquatic Reserves.

The SWQMP is to be read in conjunction with the Dredge and Spoil Disposal Management Plan (DSDMP) which includes measures to prevent or minimise impacts to water quality during dredging.

The SWQMP is based on the relevant information, requirements and water quality impacts of dredging, as identified in the Environmental Impact Statement (EIS) (URS 2013) for the Project.

All relevant changes to the EIS and relevant conditions of consent must be incorporated into the SWQMP. The conditions of the Sea Dumping Permit, which is currently being sought under the Commonwealth *Environmental Protection (Sea Dumping) Act 1981*, must also be incorporated into the SWQMP. The conditions of the Water Pollution Licence (required but not yet sought) under the NSW *Protection of the Environment Operations Act 1997* will also need to be incorporated.

The dredging Contractor/s will adopt the SWQMP to manage the environmental risks specifically related to their scope of work on the Project.

Compliance with the SWQMP is mandatory for all personnel and Contractors involved in dredging activities for the Project.

3.1 Purpose

The purpose of the SWQMP is to monitor changes in turbidity, pH and dissolved oxygen (DO) prior to and during dredging. The outcomes of this monitoring will be used to determine sediment and water quality impacts, if any, arising from dredging and where required, implement corrective actions to avoid or minimise impacts to flora and fauna.

3.2 Objectives

The objectives of the SWQMP are to:

- Outline the environmental monitoring programs that will be implemented for dredging activities
- Ensure that background water quality is monitored to confirm that the modelling inputs used in the EIS were representative of normal dry-weather conditions experienced in this location within Botany Bay
- Ensure that water quality is monitored throughout dredging activities to confirm that the modelling results presented in the EIS were accurate and representative of normal dry-weather conditions experienced in this location within Botany Bay



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- Ensure that water quality is monitored throughout dredging activities
- Identify potential and actual exceedences of specified trigger levels for environmental indicators
- Outline effective and timely corrective actions that will be implemented in the event that specified trigger levels for environmental indicators are expected to be exceeded or are actually exceeded
- Outline how the monitoring program will be implemented

3.3 Approval and Revision

The SWQMP has been prepared based on the EIS (URS 2013) documentation. On completion of the environmental assessment process, the SWQMP will be revised to incorporate the requirements of:

- The Minister of Planning and Infrastructure
- The Commonwealth Minister for Sustainability, Environment, Water, Population and Communities
- Conditions of the water pollution licence under the NSW *Protection of the Environment Operations Act 1997*

The SWQMP will be updated to include a table outlining each relevant condition and where it has been addressed in the SWQMP.



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4 LEGISLATION AND POLICY

The SWQMP 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.

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

- Commonwealth Guidelines for Fresh and Marine Water Quality 2000
- A water pollution licence under the NSW *Protection of the Environment Operations Act 1997*
- Georges River – Botany Bay System: Statement of Intent 2003
- 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
- The requirement to prepare a remediation action plan under State Environmental Planning Policy No 55 - Remediation of Land
- A dredging licence under the NSW *Marine Services Act 1998*
- A Sea Dumping Permit under the Commonwealth *Environmental Protection (Sea Dumping) Act 1981*

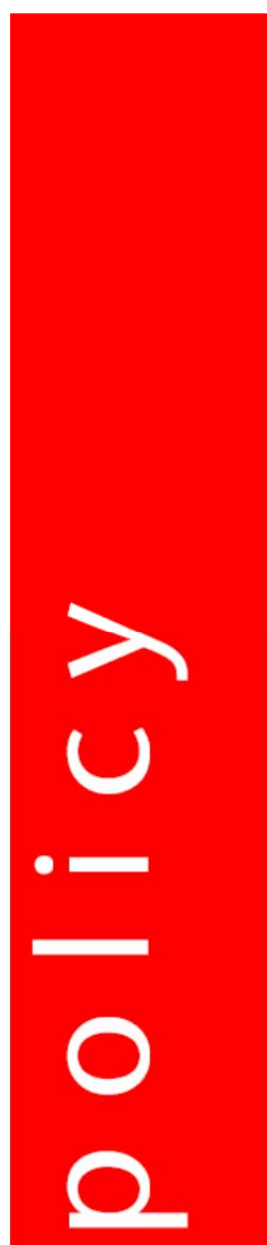


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5 ENVIRONMENTAL POLICY

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

Copies of this policy will be displayed in a prominent position in the Project site office and on HSE notice boards as a minimum. Contractors are encouraged to also have their 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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6 ENVIRONMENTAL RISKS

Two types of physical and chemical stressors that directly affect aquatic ecosystems can be distinguished: those that are directly toxic to biota, and those that, while not directly toxic, can result in adverse changes to the ecosystem.

The EIS identifies that the physical and chemical characteristics of water and marine sediments can be affected by dredging in the following ways:

- Reduce the amount of available light (i.e. increase light attenuation) as a result of increased concentrations of suspended sediments (turbidity). This is particularly important as it limits photosynthetic biota such as seagrass.
- Directly affect key water quality parameters used as indicators for declining ecosystem health such as pH and DO
- Result in sediment deposition and the build-up of sediments on the seabed coating key benthic habitat with sediment
- Cause the mobilisation of nutrients and toxicants present within disturbed sediments. These nutrients can cause algal blooms, whilst the toxicants can:
 - o Cause direct mortality to aquatic biota
 - o Impede the ability for biota to withstand or avoid other stressors (natural or anthropogenic)
 - o Bioaccumulate and therefore affect organisms or humans that may consume plants or animals that have taken up those toxicants

The likely impact of the dredging on local water and sediment quality is dependent upon how dredged sediments suspend and disperse within the water column and settle out.

The monitoring methodology outlined at Section 9 is proposed to record baseline levels and ensure that dredging activities are monitored and managed to minimise water quality impacts.



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7 RESPONSIBILITIES AND AUTHORITIES

Overall responsibility for the implementation of the SWQMP rests with Caltex. Implementation of monitoring and corrective action set out in the SWQMP may be delegated in writing by Caltex to specific Contractors.

Key Project personnel including the Caltex Project Manager, Caltex Construction Supervisors, Caltex Environmental Management Representative (EMR), Contractor Project Manager and the Contractor Environment / HSE Representative will ensure that all monitoring and corrective action are undertaken to a satisfactory standard and that all personnel are aware of their responsibilities with respect to environmental matters.

All personnel involved in the implementation of the SWQMP will be appropriately trained to do so.



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8 LOCATION OF MONITORING POINTS

The EIS identifies the need for a sediment and water quality monitoring at the following locations:

- Project Site
- Silver Beach Aquaculture Site
- Seagrass communities along Silver Beach

The location of the monitoring points is shown in Figure 8-1. These monitoring points are:

- | | |
|----------------------|---|
| • Monitoring Point 1 | Reference Site (seagrass - Posidonia / Halophila) |
| • Monitoring Point 2 | Aquaculture Site |
| • Monitoring Point 3 | Seagrass Site (Posidonia) |
| • Monitoring Point 4 | Seagrass Site (Posidonia / Halophila) |
| • Monitoring Point 5 | Project Site |



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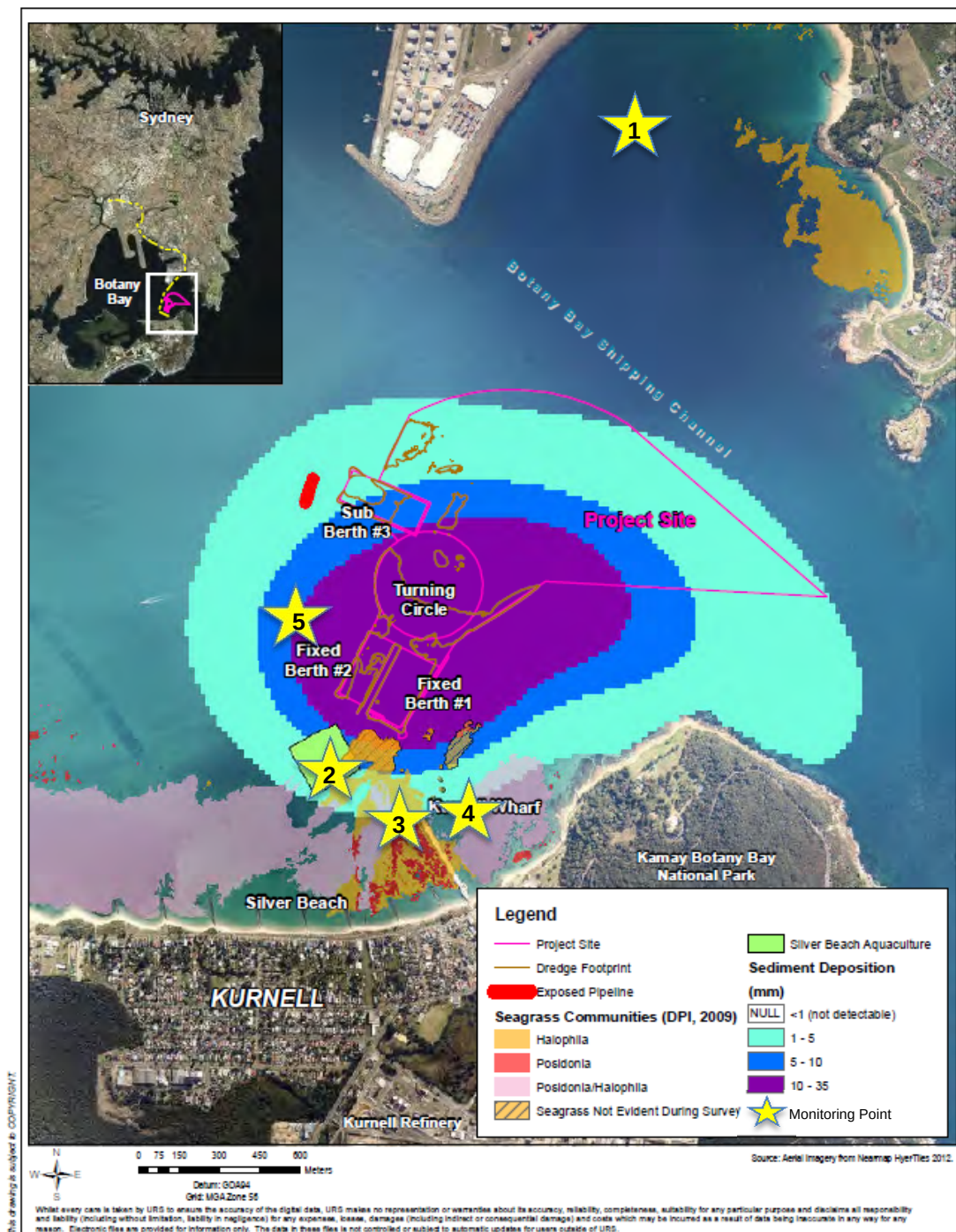


Figure 8-1: Location of sediment and water quality monitoring points



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9 MONITORING METHODOLOGY

Live monitoring will be carried out prior to and during the dredging activities for turbidity, pH and DO. This will be achieved through the deployment of a continuous water quality monitoring buoy at each of the monitoring points shown on Figure 8-1.

The monitoring locations shown on Figure 8-1 should be adjusted to ensure anchoring of monitoring buoys does not result in the disturbance of seagrasses, including by placement or movement of the anchor or the anchor chain.

Water quality monitoring buoys will monitor, record and transmit turbidity levels at approximately 15 minute intervals. The framework set out in Section 9.1 will be implemented prior to and during dredging. The transmitted data will be monitored against the trigger levels set out in Section 9.2.

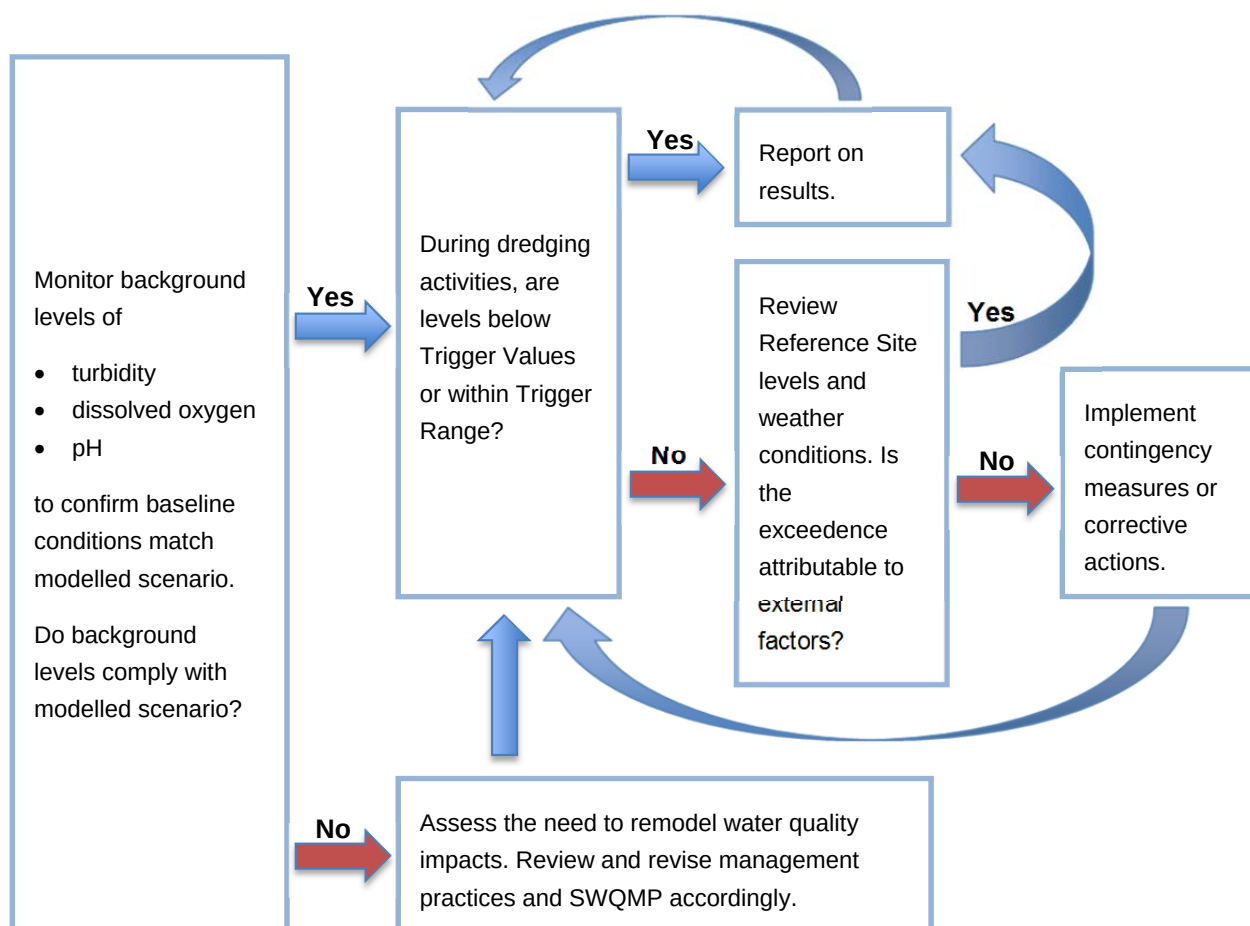
Monitoring of background water quality should be carried out for a period of at least four weeks to enable confirmation that the modelling inputs used in the EIS were representative of normal dry-weather conditions experienced at the Project within Botany Bay. This monitoring should be undertaken at least four weeks prior to commencement of dredging to ensure any required remodelling of water quality impacts and subsequent review and revision of management practices does not delay the commencement of dredging.

Water quality monitoring will be carried out continuously during dredging at the Project Site and during reuse of dredged sediments within Botany Bay. Water quality monitoring will continue for one week following completion of dredging activities.



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9.1 Framework



9.2 Trigger Values

Trigger values or ranges are described in Table 9-1 for each of the water quality parameters to be monitored during dredging activities. The location at which each trigger value or range applies is provided, as is the source of the trigger values or ranges and the actions to be implemented where trigger values or ranges are exceeded.

The EIS sets out the required trigger values for turbidity, while the trigger ranges for pH and DO have been sourced from the Australian and New Zealand Guidelines for Fresh and Marine Water Quality produced by the Australian and New Zealand Environment and Conservation Council (ANZECC) and the Agriculture and Resource Management Council of Australia and New Zealand (ARMCANZ) (the Guidelines for Fresh and Marine Water Quality, ANZECC and ARMCANZ 2000).



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Table 9-1: Trigger values and ranges for monitored water quality parameters during dredging activities

Parameter	Location	Trigger Value or Range	Source	Action
<i>What is being measured</i>	<i>Where the parameter is being measured</i>	<i>Value or range that the parameter should not exceed</i>	<i>Where the value or range has come from</i>	<i>What to do if the value or range is exceeded and not attributable to external factors, following a review of Reference Site levels and weather conditions</i>
Turbidity	- Aquaculture Site (Monitoring Point 2) - Seagrass beds (Monitoring Points 3 and 4)	>10 mg/L (above reference point)	EIS (<i>Guidelines for Fresh and Marine Water Quality Table 3.3.3</i>)	- Two exceedence within a 24 hour period - reduce rate of overflow dredging - More than three exceedences within a 24 hour period - cease overflow dredging - Continued exceedences over more than 24 hours - relocate dredging activities to the north until levels return to <10 mg/L - Investigate cause and implement additional measures to prevent recurrence
	Project Site (Monitoring Point 5)	>50 mg/L (above reference point)	EIS (<i>Port Botany and Energy Australia Cable Crossing Environmental Assessments</i>)	- Any exceedence - cease overflow dredging - More than three exceedences within a 24 hour period - cease dredging immediately, report exceedence to EPA Environment Line 131 555, investigate cause and implement additional measures to prevent recurrence



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Parameter	Location	Trigger Value or Range	Source	Action
pH	Seagrass beds (Monitoring Points 3 and 4)	Use the Level at a particular Reference Point as the Benchmark. Trigger Value or Range to be set 1 pH unit above or below the Benchmark	<i>Guidelines for Fresh and Marine Water Quality Table 3.3.2</i>	- Two exceedences within a 24 hour period - reduce rate of overflow dredging - More than three exceedences within a 24 hour period - cease overflow dredging - Continued exceedences over more than 24 hours - relocate dredging activities to the north until levels return to between 7.0 and 8.5 - Investigate cause and implement additional measures to prevent recurrence
	- Aquaculture Site (Monitoring Point 2) - Project Site (Monitoring Point 5)	Use the Level at a particular Reference Point as the Benchmark. Trigger Value or Range to be set 1.5 pH units above or below the Benchmark	<i>Guidelines for Fresh and Marine Water Quality Table 4.4.2</i>	- Two exceedences within a 24 hour period - reduce rate of overflow dredging - More than three exceedences within a 24 hour period - cease overflow dredging - Continued exceedences over more than 24 hours - relocate dredging activities to the north until levels return to between 6.0 and 9.0 - Investigate cause and implement additional measures to prevent recurrence



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Parameter	Location	Trigger Value or Range	Source	Action
Dissolved Oxygen (DO) (% saturation)	- Aquaculture Site (Monitoring Point 2) - Seagrass beds (Monitoring Points 3 and 4) - Project Site (Monitoring Point 5)	<80%	<i>Guidelines for Fresh and Marine Water Quality Table 3.3.2</i>	- Two exceedences within a 24 hour period - reduce rate of overflow dredging - More than three exceedences within a 24 hour period - cease overflow dredging - Continued exceedences over more than 24 hours - relocate dredging activities to the north until levels return to more than 80% saturation - Investigate cause and implement additional measures to prevent recurrence



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9.3 Reporting

Any exceedences will be communicated immediately to the Caltex EMR, along with the corrective actions implemented. Any exceedence will be re[ported to the EPA through the exiting channels within Caltex..

The results of the monitoring and a description of any corrective actions implemented will be reported weekly to the Caltex EMR, including:

- Date of report
- Dates of report period (the reporting week)
- Weather conditions during the reporting week
- External factors occurring during the reporting week that could influence monitoring results
- Issues or concerns in regard to monitoring equipment or results
- Total number of samples for each parameter during the reporting week
- Total number of exceedences for each parameter during the reporting week
- Total number of exceedences for each parameter to date
- Description of corrective actions implemented
- Assessment of the effectiveness of corrective actions implemented
- Download of all data for the reporting week



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10 REFERENCES

Australian and New Zealand Environment and Conservation Council and Agriculture and Resource Management Council of Australia and New Zealand (ANZECC and ARMCANZ) (2000) Australian and New Zealand Guidelines for Fresh and Marine Water Quality

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