

Project Application

- Project Outline
- Preliminary Environmental Assessment

for the Tank 632 Project – Kurnell Refinery

Prepared for

Caltex Refineries (NSW) Pty Ltd

2 Solander Street
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8 May 2006

PROJECT APPLICATION



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Contents

1	Introduction -----	1-1
1.1	Introduction	1-1
1.2	Location	1-2
1.3	Kurnell Refinery	1-2
2	Background -----	2-1
3	Project Description and Justification -----	3-1
3.1	Project Description	3-1
3.2	Justification for the Tank 632 Project	3-1
4	Planning Considerations -----	4-1
4.1	Commonwealth Legislation	4-1
4.2	State Legislation	4-2
4.2.1	Environmental Planning and Assessment Act 1979	4-2
4.2.2	Environmental and Planning Legislation	4-3
4.3	Local Planning Controls	4-5
5	Summary of Environmental Impacts -----	5-1
5.1	Noise Assessment	5-1
5.2	Air Assessment	5-1
5.3	Traffic and Transport	5-1
5.4	Water Traffic	5-2
5.5	Visual Assessment	5-2
5.6	Risk and Hazard Analysis and SEPP33	5-2
5.7	Water	5-2
5.8	Waste	5-2
5.9	Heritage	5-3
5.10	Flora and Fauna	5-3
5.11	Social and Economic	5-3
5.12	Stakeholder Consultation	5-3
6	Conclusions -----	6-1
7	Limitations -----	7-1

FIGURES

- Figure 1** Site Location Plan
- Figure 2** Proposed Project Site Location
- Figure 3** Caltex Kurnell Refinery – Flow Diagram Indicating Proposed Tank 632 Project
- Figure 4** SEPP Major Projects: Kurnell Map

1.1 Introduction

Caltex Refineries (NSW) Pty Ltd (Caltex) is proposing to undertake a program of works to improve the performance of Kurnell refinery and continue to meet market demand for fuels in New South Wales. This program is referred to as the Refining Performance Improvement Program (RPIP). A number of these works involve significant capital expenditure and are referred to by Caltex as RPIP Major Projects.

One of these projects involves the construction of a new crude oil storage tank, referred to as Tank 632.

The construction and operation of Tank 632 is considered to comprise a major project as defined by *State Environmental Planning Policy (Major Projects) 2005* and therefore require approval from the Minister for Planning under Part 3A of the *Environmental Planning and Assessment Act 1979* (EP&A Act). Caltex, therefore, intends to apply for project approval for the construction and operation of Tank 632 in accordance with Part 3A of the EP&A Act.

This Project Application has been prepared by URS Australia Pty Ltd (URS) on behalf of Caltex. The purpose of this document is to provide sufficient information on the proposed project and its potential environmental impacts to allow the NSW Department of Planning (DoP) to issue environmental assessment requirements for a project approval of Tank 632, in accordance with Part 3A of the EP&A Act. This document, therefore, also acts as a formal request for the environmental assessment requirements.

This document has been prepared taking into consideration the requirements of the following:

- Part 3A of the EP&A Act;
- Part 1A of the *Environmental Planning and Assessment Regulation 2000* (the Regulation);
- Draft Guideline *Steps in the Assessment and Approval of Major Projects under Part 3A* (July 2005) published by the DoP; and
- Draft Guideline *Preliminary Assessment for Major Projects* (August 2005) published by the DoP.

In accordance with the Draft Guideline *Steps in the Assessment and Approval of Major Projects under Part 3A*, this Project Application comprises an outline of the project and a preliminary environmental assessment and includes the following:

- a description of the proposed Tank 632 project (**Section 3** and **Figures 2 and 3** of this document);
- the location and a map identifying the site (**Section 3** and **Figures 2 and 3** of this document);
- the capital investment value and other relevant information for determining whether Part 3A applies to the project (**Section 3**);
- the statutory planning provisions applying to the site (**Section 4**);

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- a summary of other approvals including whether an Environment Protection Licence would be required in accordance with the requirements of the *Protection of the Environment Operations Act 1997* (**Section 4**);
 - justification for the Tank 632 Project to be considered a project to which Part 3A of the EP&A Act applies (**Section 4**); and
 - a preliminary assessment identifying the likely environmental issues of the Tank 632 project (**Section 5**).

1.2 Location

Kurnell refinery is located on Kurnell Peninsula on the southern coastal border of the Sydney metropolitan area, approximately 30 kilometres from Sydney CBD (**Figure 1**). Kurnell Peninsula is bounded by Botany Bay to the north, the Tasman Sea to the east, Cronulla to the south-west and Bate Bay to the south.

The Peninsula has national historical (Captain Cook's landing place) and environmental (Towra Point Nature Reserve, located on the Peninsula, is one of only two Ramsar wetland sites in NSW) significance. It also contains Botany Bay National Park, Kurnell village with approximately 2,100 residents and various industrial developments, including Kurnell refinery, that has been in operation for 50 years.

1.3 Kurnell Refinery

The proposed Tank 632 project would be undertaken within the boundaries of Kurnell refinery, on land owned and occupied by Caltex. The site is described as Lot No. 25 of Deposited Plan (DP) 776328 in the Sutherland Shire local government area.

The refinery has a crude oil production capacity of approximately 124,500 barrels¹ per day. The refinery was commissioned in 1956. It is the largest refinery in NSW and the second largest of the eight fuel refineries in Australia, based on crude processing capacity.

The refinery mainly produces petrol (49%), diesel (22%) and jet fuel (15%). Other products include fuel oils (5%), liquid petroleum gas/butane/refinery grade propylene (4%), bitumen (1%) and a mix of lubricating oil base stocks, waxes and other products such as process oils and sulfur (4%). The volumes of the different products vary from year to year depending on the type of crude processed in the refinery and changes in product demand.

¹ A barrel is the traditional measurement unit of oil volume. Each barrel contains approximately 159 litres of oil.

The overall refinery production flow processes are shown in **Figure 2**.

The refinery is continually improving equipment and processes to optimise refining processes, thereby providing more efficient fuels to consumers and reducing the environmental effects of fuel production and consumption. The proposed Tank 632 project represents a progression of such ongoing improvements.

The proposed RPIP Major Projects were developed following a review of supply planning systems and refinery configuration, including the operation of the refinery following the commissioning of the recent Clean Fuels Project. A review of post-Clean Fuels Project operations at the refinery has identified a number of improvements that could be made to the refinery to achieve the following objectives:

- increase the efficiency of the refinery's operations;
- improve the flexibility and longevity of refinery operations;
- reduce the need for imports of finished products; and
- meet the growing fuel demands of Sydney and New South Wales.

The proposed Tank 632 is part of the RPIP Major Projects. Approval may be sought for other RPIP Major Projects as they are developed.

3.1 Project Description

Crude oil is the raw material for all products manufactured at Kurnell refinery. Crude oil is a complex mixture containing various hydrocarbon compounds, which mainly comprise the elements hydrogen, carbon, oxygen and sulfur. The components of crude oil range from light hydrocarbons having low boiling points, such as ethane, propane and butane, to large heavy components with high boiling points such as waxes and heavy oils.

Ships transport crude oil to the Kurnell wharf in Botany Bay, where it is transferred via pipeline to storage tanks located in the western area of the refinery. The crude oil is piped on demand from the storage tanks to the Crude Distillation Units for processing.

The existing crude oil storage tanks have sufficient capacity to provide approximately ten days supply of crude oil to the refinery. Each delivery ship contains approximately four to five days' supply of crude oil. Ships can, therefore, unload only when there is at least five days of spare storage capacity at the refinery. At such times the refinery will have less than five days supply of crude oil in storage. Hence, the timing of shipping deliveries is crucial to maintain supplies of crude oil to the refinery, and ultimately refining production rates.

Shipping delays may be caused by disruptions in other ports or poor weather resulting in closure of the wharf operations in Botany Bay. These delays can affect the supply of crude oil to the distillation units, which in turn reduces the production rate and may interrupt supplies to customers.

The impact of shipping delays on refinery operations can be reduced by increasing the storage capacity of crude oil at the refinery. Therefore, it is proposed to construct an additional crude oil storage tank (Tank 632) (refer to **Figure 3**). The preferred location of Tank 632 is in the existing crude oil storage area, adjacent to Tank 633.

Tank 632 would have an external floating roof with a rim-mounted mechanical seal. The tank would be installed within a bunded area and be connected to the existing crude oil pipelines. The size of Tank 632 would be similar to the existing Tank 633, with a capacity of 70 to 80 megalitres.

The estimated cost for construction of the Tank 632 is \$28 million. The construction period is estimated to be eight months.

3.2 Justification for the Tank 632 Project

The Tank 632 project, as part of the RPIP Major Projects, is aimed at ensuring the continued operation of the refinery and meeting the changing requirements for fuel in New South Wales. In particular the project aims to achieve the following:

- improving the flexibility of the refinery operations;
- increasing the longevity of refinery operations.

These aims are consistent with the objectives of the refinery to supply fuels to New South Wales, providing significant benefits to the State.

This Project Application has been prepared in order to and obtain environmental assessment requirements for the Tank 632 project from the Department of Planning. The environmental assessment for the Tank 632 project will be prepared in accordance with the environmental assessment requirements, as required by Section 75F of the EP&A Act, in order to obtain approval from the Minister for Planning.

Kurnell Peninsula is subject to the legislative controls of Commonwealth, State and local planning and environmental frameworks. The following section discusses the site within the context of these legislative and planning provisions.

4.1 Commonwealth Legislation

Part 3 of the *Environment Protection and Biodiversity Conservation (EPBC) Act 1999* (Commonwealth) states that an action which *has, will have or is likely to have a significant impact on a matter of national environmental significance* may not be undertaken without prior approval of the Commonwealth Minister for Environment and Heritage, as provided for under the provisions of Part 9 of the EPBC Act. The Act provides the following as matters of national environmental significance for which Ministerial approval is required:

- *World heritage properties;*
- *Wetlands of international significance (including Ramsar wetlands);*
- *Listed threatened species and communities;*
- *Listed migratory species protected under international agreements (CAMBA and JAMBA);*
- *Protection of the environment from nuclear actions; and*
- *Marine environment.*

The refinery is located within three kilometres and within the catchment of the Towra Point Nature Reserve, a Ramsar wetland of international significance. A search of the Commonwealth Department of the Environment and Heritage EPBC dataset during the Clean Fuels Project at the refinery in 2004 indicated the potential presence of threatened species, migratory species and marine species within one kilometre of the refinery.

However, the environmental assessment undertaken as part of that Clean Fuels Project indicated that that project would have minimal or no impact on the local area outside of the refinery and, hence, was not a controlled action and did not require the approval of the Commonwealth Minister for Environment and Heritage. The Commonwealth Minister was consulted and concurred with this assessment. It is anticipated that the environmental assessment of the Tank 632 project would reach a similar conclusion and approval would not be required from the Commonwealth Minister.

4.2 State Legislation

4.2.1 Environmental Planning and Assessment Act 1979

The *Environmental Planning and Assessment Act 1979* (EP&A Act) and the *Environmental Planning and Assessment Regulation 2000* (the Regulation) provide the framework for the assessment and approval of proposed developments in NSW.

The proposed Tank 632 project comprises a major project under Part 3A of the EP&A Act to be assessed by the Director General of the Department of Planning and determined by the Minister for Planning. The application of Part 3A of the EP&A Act to the proposed Tank 632 project is discussed in more detail in the following section.

Part 3A Major Projects

The NSW planning system has undergone significant reforms in 2005, involving amendment of the EP&A Act to include a new development assessment and approval mechanism for major projects. This new mechanism is addressed in Part 3A of the EP&A Act.

The *State Environmental Planning Policy (Major Projects) 2005* (Major Projects SEPP) indicates that development known as a major project requires assessment and approval of the Minister for Planning in accordance with Part 3A of the EP&A Act. The Major Projects SEPP defines certain types of development as comprising major projects. The Tank 632 project is considered to fit within the following definition of a major project under the Major Projects SEPP:

Development with a capital investment value of more than \$20 million for the purpose of: (a) bulk liquid storage facilities (Schedule 1, clause 10(2)).

The Tank 632 project also complies with a number of other definitions of a major project under the Schedules of the SEPP. Compliance with these additional definitions does not alter the assessment and approvals process.

As a major project, the Tank 632 project is subject to the provisions of Part 3A of the EPA&A Act.

Section 75E of the EP&A Act provides that a proponent may apply for approval of the Minister to carry out a major project. This document constitutes Caltex's Project Application for the Tank 632 project.

Accordingly, the Tank 632 project will be subject to assessment by the Director General of the Department of Planning and determination by the Minister for Planning in accordance with Part 3A of the EP&A Act.

It is noted that the Minister cannot approve the development if it is prohibited under a Local Environmental Plan, Regional Environmental Plan or State Environmental Planning Policy (Section 75J(3)(b) of the EP&A Act). The site of the proposed development is zoned under *Sydney Regional Environmental Plan 17 – Kurnell Peninsula* as 4(c1) Special Industrial (Oil Refining) where oil refining

activities are permissible with development consent from the relevant authority. Hence, the Tank 632 project is not prohibited under the Plan and the Minister is not prevented from approving the development.

4.2.2 Environmental and Planning Legislation

Protection of the Environment Operations Act 1997

The *Protection of the Environment Operations Act 1997* (POEO Act) relates to pollution management and waste disposal in NSW. The POEO Act also establishes the environmental licensing of certain activities, which are listed in Schedule 1 of the Act. The refinery has an existing Environment Protection Licence (Licence No. 837) issued by the NSW Environment Protection Authority (part of the Department of Environment and Conservation) (DEC) under the provisions of the POEO Act. The activities at the refinery which are scheduled (and, therefore, trigger the requirement for the licence) comprise:

- chemical storage facilities that store or package chemical substances in containers, bulk storage facilities, stockpiles or dumps with a total storage capacity exceeding 2,000 tonnes of any chemical substances;
- petroleum works that refine crude petroleum;
- petroleum works that manufacture more than 100 tonnes per year of petroleum products (including aviation fuel, petrol, kerosene, mineral turpentine, fuel oils, lubricants, wax, bitumen, liquefied gas and the precursors to petrochemicals, such as acetylene, ethylene, toluene and xylene);
- petroleum works that store petroleum with an intended storage capacity in excess of 2,000 tonnes of any petroleum products; and
- waste activities – generating or storing hazardous waste, industrial waste or Group A waste.

Clause A3.1 of the licence states that it applies to all activities carried on at the refinery. Hence, the Tank 632 project would be subject to the provisions of the licence (either in its current form or as may be amended by the DEC to accommodate Tank 632).

During the Part 3A process, this Project Application would be forwarded to the DEC for comment. Caltex would also consult with the DEC in order to ensure that the proposed development is designed and approved in accordance with DEC licensing requirements.

Relevant Environmental Acts, Regulations and Policies

While the EP&A Act provides the framework for the planning and development approvals system within NSW, there may be a number of other Acts and Regulations of relevance to the Tank 632 project. These Acts and Regulations would be identified and considered during the environmental assessment of the

Tank 632 project. It is noted that Part 3A of the EP&A Act removes the need to obtain some approvals under these other Acts and Regulations.

State Environmental Planning Policies

There are several State Environmental Planning Policies (SEPPs) whose provisions relate to the refinery site and the proposed Tank 632 project. These would be addressed in the environmental assessment. These SEPPs include:

- *State Environmental Planning Policy 11 – Traffic Generating Developments;*
- *State Environmental Planning Policy 33 – Hazardous and Offensive Development;*
- *State Environmental Planning Policy 55 – Remediation of Lands.*

Regional Environmental Plans

The provisions of *Sydney Regional Environmental Plan No. 17 – Kurnell Peninsula* (SREP 17) apply to the refinery site and proposed Tank 632 project but for Part 3A. SREP 17 would be addressed in the environmental assessment.

SREP 17 contains the development control provisions for the Kurnell Peninsula, including those for zoning. The SREP zones the site as 4(c1) Special Industrial (Oil Refining). No development is permitted without consent within the 4(c1) Zone. The only development permitted (with consent) within the zone is for the purposes of:

- drainage;
- liquid fuel depots;
- liquefied petroleum gas extraction plants;
- oil refining;
- roads;
- sand mining; and
- utility installations (other than gas holders or generating works).

All other development is prohibited within the zone.

The proposed development would be part of an oil refining operation and, therefore, would be permissible, subject to consent. In this case, the consent authority will be the Department of Planning under the provisions of Part 3A of the EP&A Act.

4.3 Local Planning Controls

Kurnell refinery is located within the Sutherland Shire Council local government area. However, the site is excluded from zoning under *Sutherland Local Environmental Plan*. The provisions relating to development on the Kurnell Peninsula, including zoning and permissibility, are provided in SREP No. 17.

This section provides a preliminary assessment of environmental impacts and matters for further consideration. The matters referred to in this section comprise *a preliminary assessment identifying the likely environmental issues*, in accordance with the Draft Guidelines *Steps in the Assessment and Approval of Major Projects under Part 3A* prepared by the Department of Planning.

5.1 Noise Assessment

The proposed Tank 632 project includes the construction and operation of plant and equipment such as the tank, pipe work, pumps and tank mixer. The plant and equipment would generally be similar to that already at the refinery. The construction and operation of the plant and equipment is likely to generate relatively low levels of noise. Given the industrial nature of the site and distance between the proposed location of Tank 632 and sensitive receiver locations, residential areas approximately 500 metres north of the proposed tank site, it is considered likely that there would be no perceptible increase in the noise level outside of the refinery site associated with the Tank 632 project. The potential noise impacts of the proposed development will be further investigated during the assessment process, however, it appears unnecessary to contemplate detailed noise modelling for this proposal.

5.2 Air Assessment

The Tank 632 project would generate air emissions, although the impacts on local and regional air quality would depend on the final design of the tank.

Volatile Organic Compounds

Volatile organic compounds would be generated from breathing discharges from the tank, which may result in a slight increase in total refinery emissions of volatile organic compounds.

Odour

Odour could be generated depending on the type of crude oil stored in the tank. The nearest residential areas are located in Kurnell Village, approximately 500 metres to the north of the site. Given the distance between these two areas, odours from the operation of the tank are not anticipated to impact on the amenity of these areas. It is not proposed to undertake modelling of potential odour emissions.

5.3 Traffic and Transport

The operation of the tank would not change the existing number of traffic movements to or from the refinery.

There would, however, be a small temporary increase in traffic movements due to construction traffic during the construction stages of the project. These traffic movements are considered likely to be

insignificant in terms of typical traffic movements to the refinery. It is not proposed to undertake detailed modelling of traffic volumes associated with the construction of the tank.

5.4 Water Traffic

While one of the aims of the Tank 632 project is to increase the storage capacity of the refinery the volume of ship movements is not expected to significantly change. This is due to the fact that the additional storage tank provides greater storage capacity, but the refinery is not anticipated to increase its refining rate. Hence, once the tanks are filled, the rate at which they are depleted, and therefore need to be filled, would be similar to the current conditions.

5.5 Visual Assessment

Tank 632 will be visible from neighbouring public land. However, the tank and associated plant and equipment would be of a similar industrial nature, and located adjacent to, existing structures at the refinery.

5.6 Risk and Hazard Analysis and SEPP33

The operation of Tank 632 may result in additional risks and hazards at the refinery. Caltex intends to carry out hazard identification for the Tank 632 project and process hazard analyses will be completed during the design stage. A quantitative risk assessment for the tank is being conducted in accordance with Hazardous Industry Planning Advisory Paper No. 4 (Department of Urban Affairs and Planning 1993).

These risks and hazards would be considered in the assessment of the Tank 632 project in accordance with the provisions of *State Environmental Planning Policy 33 – Hazardous and Offensive Development*.

5.7 Water

Tank 632 would produce wastewater. Crude oil contains some water that separates from the oil in the storage tank. This water is required to be drawn off from the tank and treated in the refinery's wastewater system. The existing wastewater treatment system has sufficient capacity for the small increase in the volumes of wastewater that would be associated with water drawn from Tank 632.

Caltex expects to meet its current environment protection licence conditions in relation to wastewater.

5.8 Waste

Tank 632 would not generate significant quantities of waste. Small quantities of construction wastes would be recycled, wherever practicable, or disposed of at appropriate waste facilities.

5.9 Heritage

The site has been in use as a refinery for 50 years, with substantial and well established infrastructure to support this operation. Tank 632 would be constructed and operated within the boundary of the Kurnell refinery, on land that has been previously cleared and disturbed, where the likelihood for items of Aboriginal heritage significance to be present is considered to be low. It is anticipated that there would not be any impacts on items of Aboriginal or non-Aboriginal heritage significance.

5.10 Flora and Fauna

Tank 632 would be constructed and operated within the boundary of the Kurnell refinery, on land that has previously been cleared and disturbed. It is anticipated that there would not be any significant impacts on flora or fauna. It is not anticipated that additional detailed surveys will be required.

5.11 Social and Economic

Tank 632 would be likely to have positive impacts on the existing social and economic environment of Kurnell and the local area. The construction phase would involve expenditure of approximately \$28 million and generate associated employment. The project would also facilitate the continued operation of the refinery and, therefore, associated ongoing employment of refinery personnel.

5.12 Stakeholder Consultation

Caltex will consult with relevant stakeholders, including government agencies and the community as part of the environmental assessment process for the proposal.

Caltex proposes to construct an additional tank for the storage of crude oil at its Kurnell refinery, as part of a program of works to improve the performance of Kurnell refinery and continue to meet market demand for fuels in New South Wales. The construction and operation of the tank is considered to comprise a major project as defined by *State Environmental Planning Policy (Major Projects) 2005* and, therefore, requires approval from the Minister for Planning under Part 3A of the EP&A Act.

This document acts as a formal request for the DoP to issue environmental assessment requirements for the proposal. A preliminary environmental assessment of the proposal, contained in this document, indicates that the key environmental issues associated with the proposal comprise potential impacts on air quality and risks and hazards. These issues would be assessed in detail as part of the environmental assessment of the proposal. The other environmental issues are not considered likely to be significant and will not require such detailed assessment.

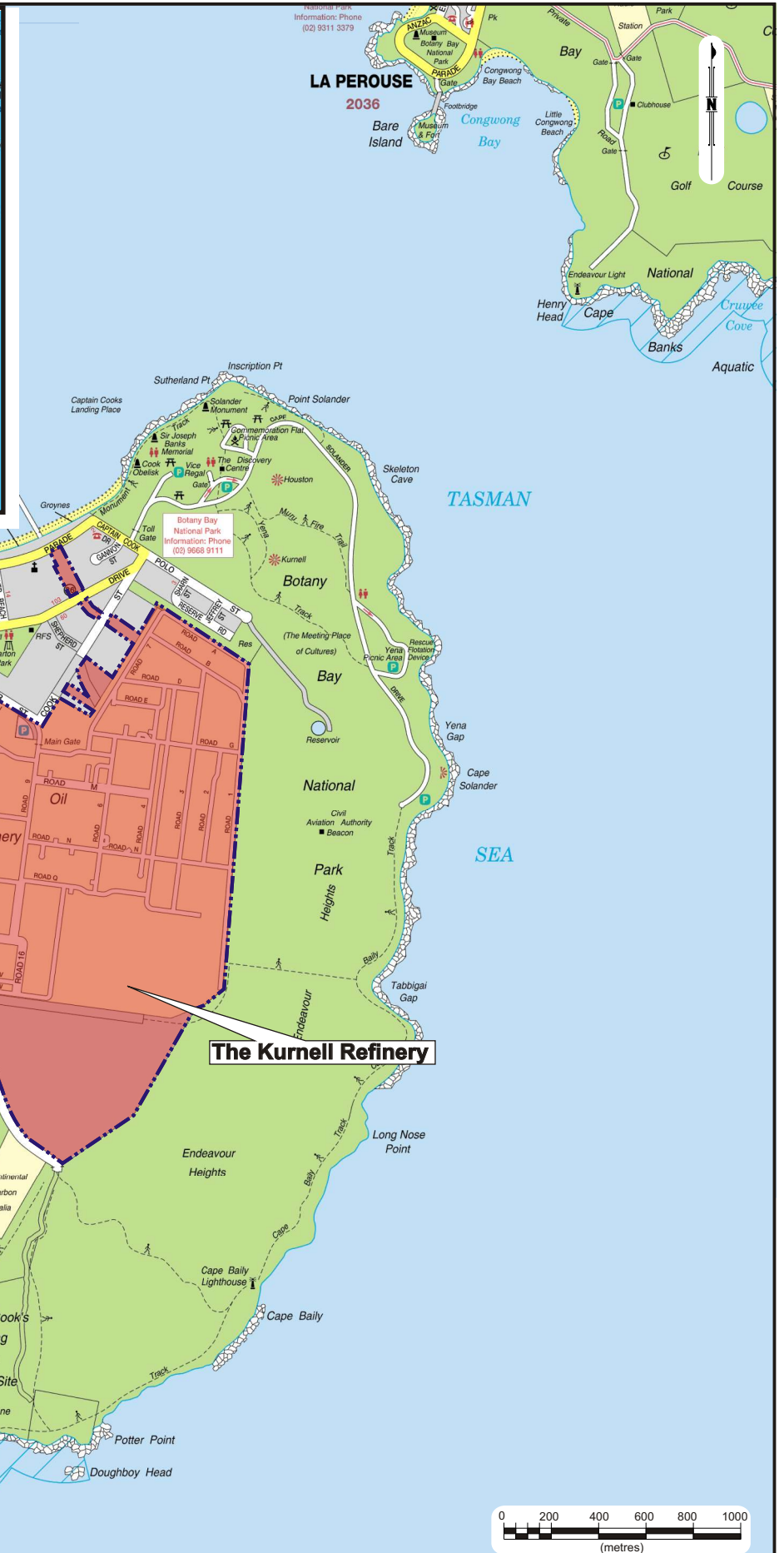
Upon receipt of the DoP's environmental assessment requirements, Caltex will prepare an environmental assessment and submit the assessment as part of the Project Application to the DoP for approval to construct and operate the proposed tank.

URS Australia Pty Ltd (URS) has prepared this report in accordance with the usual care and thoroughness of the consulting profession for the use of Caltex Refineries (NSW) Pty Ltd and only those third parties who have been authorised in writing by URS to rely on the report. It is based on generally accepted practices and standards at the time it was prepared. No other warranty, expressed or implied, is made as to the professional advice included in this report. It is prepared in accordance with the scope of work and for the purpose outlined in the Task Assignment dated 17 August 2005.

The methodology adopted and sources of information used by URS are outlined in this report. URS has made no independent verification of this information beyond the agreed scope of works and URS assumes no responsibility for any inaccuracies or omissions. No indications were found during our investigations that information contained in this report as provided to URS was false.

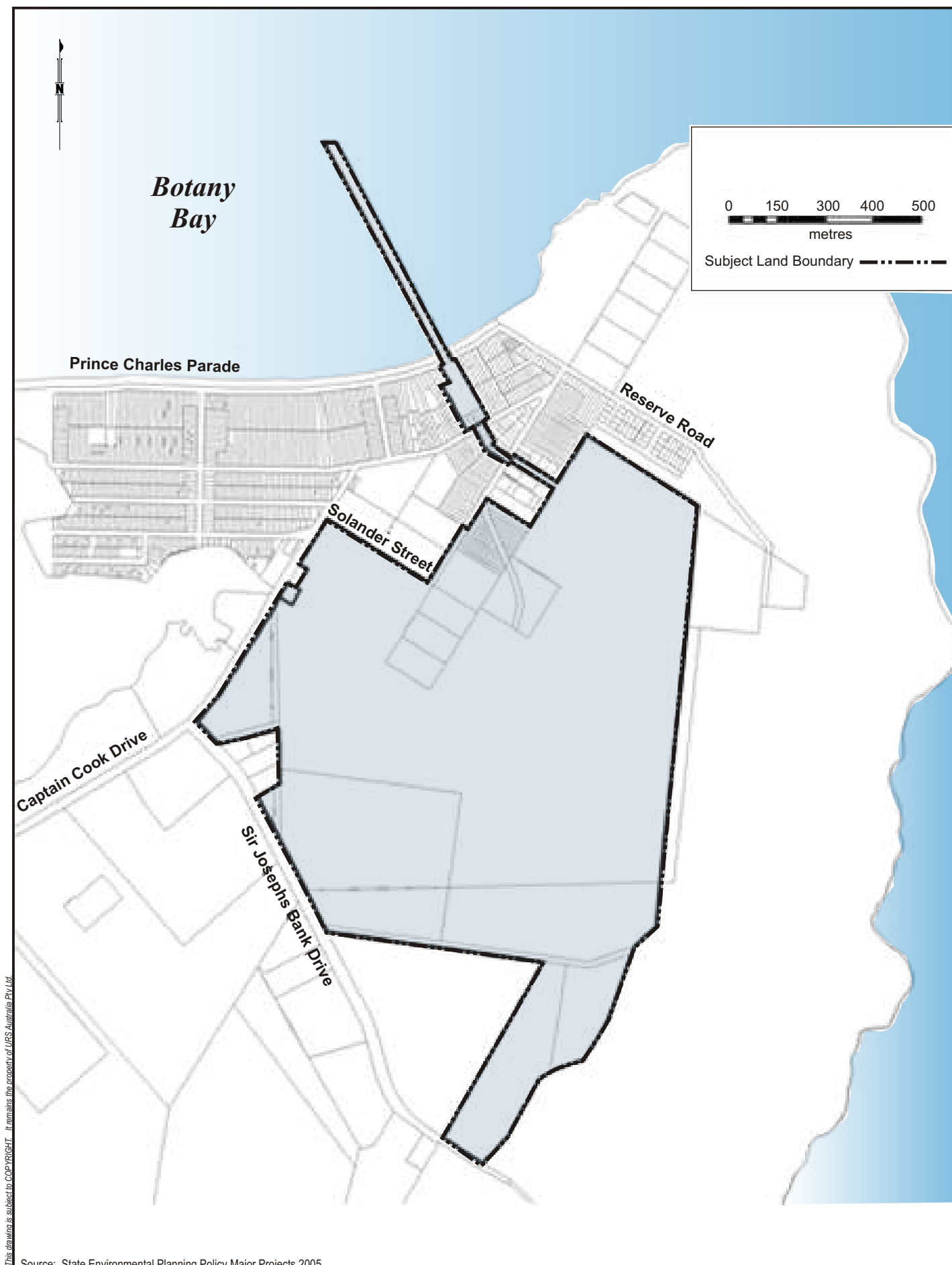
This report was prepared between October 2005 and May 2006 and is based on the information reviewed at the time of preparation. URS disclaims responsibility for any changes that may have occurred after this time.

This report should be read in full. No responsibility is accepted for use of any part of this report in any other context or for any other purpose or by third parties. This report does not purport to give legal advice. Legal advice can only be given by qualified legal practitioners.



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Client CALTEX	Project ENVIRONMENTAL ASSESSMENT CRUDE OIL STORAGE TANK	Title KURNELL REFINERY LOCATION PLAN	
URS	Drawn: HC Approved: TC Date: 04/05/2006 Job No.: 43177376 File No. 43177376-005.cdr	Figure: 1 Rev. A A4	



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Source: State Environmental Planning Policy Major Projects 2005

Client CALTEX		Project ENVIRONMENTAL ASSESSMENT CRUDE OIL STORAGE TANK		Title STATE ENVIRONMENTAL PLANNING POLICY MAJOR PROJECTS MAP 2, SCHEDULE 2, KURNELL	
		Drawn: HC	Approved: TC	Date: 04/05/2006	Figure: 4
		Job No.: 43177376	File No. 008.cdr		