Appendix F

Heritage Impact Assessment

Caltex Kurnell Refinery Demolition: Heritage Impact Assessment

Prepared by Australian Museum Consulting
for URS Australia Pty Ltd

Report

October 2014

1400212

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Executive Summary

Overview

Caltex Refineries (NSW) Pty Ltd (Caltex) announced in July 2012 that it would progress with converting its Kurnell Refinery (the Site) to a finished product terminal (the Project).

The Project is divided into two stages:

1 Converting infrastructure to allow the Site to operate as a terminal, including shutdown of the refinery and deinventorisation and cleaning of redundant infrastructure; and
2 Demolition and removal of redundant infrastructure.

Caltex has received development consent for Stage 1 (application number: SSD 5544) ('the conversion works'). Caltex is now seeking a modification to development consent SSD 5544 for Stage 2 ('the demolition works').

The conversion works are currently occurring, although the refinery will continue to operate until the fourth quarter of 2014, at which time the refinery process units will be progressively shut down and the Site will operate soley as a terminal.

Australian Museum Consulting (AM Consulting) was commissioned by URS Australia Pty Ltd (URS) on behalf of Caltex to prepare a Heritage Impact Assessment (HIA) for the conversion works. The Department of Planning and Environment has now issued Secretary's Environmental Assessment Requirements (SEARs) for the modification application. These SEARs requested that the following be considered within the environmental assessment for the modification application:

> ***Heritage*** *– including an assessment of the potential impacts on Aboriginal and non-Aboriginal heritage (including movable cultural heritage) values.*

AM consultuting have been again commissioned by URS on behalf of Caltex to addresss this requirement. This HIA assesses the impacts of the demolition works on the heritage values of the Site, and outlines measures designed to minimise or mitigate potential impacts on Aboriginal and non-Aboriginal (historic) heritage values arising from the demolition works.

Heritage Context

There are four historic heritage items in the immediate vicinity of the Site. The Site itself forms part of a significant industrial heritage place, known as the *Australian Oil Refinery*. The works also intersect with two locally significant items: *Four wheel drive track (Captain Cook Drive*) and *Silver Beach and roadway*. The state and nationally significant *Kamay-Botany Bay National Park* (incorporating the Kurnell Peninsula Headland) adjoins the north east boundary of the Site.

Australian Oil Refinery

A Heritage Management Strategy (HMS) was prepared for the Caltex Kurnell Refinery by AM Consulting in early 2014, in fulfilment of the Minister's Conditions of Approval (MCoA) C31 for the Project. The Site had previously been identified as having local and potential State heritage value, but the nature and extent of heritage significance had been inadequately described and assessed in the existing Heritage Inventory, such that it was difficult to interpret the cumulative impacts of the conversion works. As such, the HMS re-assessed the historic heritage significance of the Site, and confirmed that the refinery Site has heritage significance sufficient to warrant listing on the State Heritage Register (SHR), based on its historic, technical and research values, and for its

rare and representative elements of oil refining technology and associated engineering archives. The Site also retains much of its original layout, and an important grouping of mid-twentieth century modernist architecture in an industrial setting. The HMS outlined strategies aimed at protecting the heritage values of the place during its present industrial use and during future periods of change. These included strategies to mitigate the loss of heritage values arising from the conversion works and from the potential demolition of the refinery plant. As such, this HIA refers to the HMS as the guiding heritage document for the Site.

This report has assessed and determined that the proposed demolition works would have significant adverse impacts on the overall heritage significance of the Site. In particular, the demolition works would diminish the Site's ability to demonstrate the principal characteristics of an operational oil refinery. The overall historic and physical integrity of the Site would also be lost. However, ongoing implementation of the HMS for the Site would mitigate this loss of heritage value. Caltex has committed to fulfilling the recommendations included in the HMS, except where these conflict with the current application (as outlined in this HIA) to demolish plant, equipment and buildings, and has made substantial progress in implementating the strategies outlined in the HMS. Key recommendations for audio-visual and photographic recordings of the refinery while it is still in operation are currently in progress. In addition, work has begun on the task of cataloguing the extensive archive of documents and industrial heritage objects held at the Site. The following strategies have yet to be addressed, but have received in-principle support from Caltex for implementation as part of the HMS:

- Development of a long-term strategy for the storage of, conservation of, and public access to the Site's significant industrial heritage records and moveable heritage collections;
- Considering future opportunities to adaptively reuse redundant buildings on the periphery of the Site, where possible; and
- Considering future opportunities to disseminate information about the heritage significance of the place to a wider audience.

The HMS recommended the retention and conservation of a representative sample of significant refinery infrastructure in use as part of the fuel import terminal, including examples of original tanks, workshops, administrative and amenities buildings. These include residential buildings designed by architect Harry Seidler, and administrative and amenities buildings designed by architects Bunning and Madden. Caltex has confirmed in particular that the group of six houses designed by architect Harry Seidler would be retained and conserved. A few major workshop and storage buildings, and a number of other administrative and amenities buildings designed by Bunning and Madden would also be retained at the Site.

This report notes that the number of early and original tanks, and the functional range of tanks proposed to be demolished is likely have a greater adverse impact on the heritage values of the Site than previously outlined in the HMS. However, the loss of additional significant tanks from the Eastern and Western Tank Areas would be mitigated by the retention of at least six original tanks and four other early tanks in use at the Site. The rarity and representative value of these remaining tanks would increase.

Two Bunning and Madden-designed buildings at the former CLOR sub-precinct, the Cafeteria (PR Room) and Maintenance Services (Change Rooms) buildings, incorporate a complementary pair of high relief sculptural panels by Australian artist Herbert (Bert) Flugelman. The identity of the sculptor of the panels was unknown until recently. The 1962 sculptures represent Flugelman's first sculptural commission and as such have considerable historic importance as early examples of his public work. The HMS had recommended that Caltex consider opportunities for adaptive reuse of these highly significant buildings, incorporating these sculptures, and this recommendation is

reiterated in this report. It is noted that the Maintenance Services (Change Rooms) building has now been identified for demolition. As such, this report further recommends that the sculptural panels should be retained, conserved and preserved, regardless of the future of the associated buildings. Caltex has committed to this recommendation.

The process of demolition has the potential to adversely affect the fabric of the remaining heritage buildings, as a result of increased vibrations during demolition works. It is recommended that the effects of vibration on historic buildings is monitored during the demolition process to ensure that demolition activities do not damage the fabric or structural integrity of the buildings. This report has adopted the guidelines outlined in the *Noise and Vibration Impact Assessment* being undertaken to support the modification application (Appendix E of the Statement of Environmental Effects) regarding tolerances for historic structures.

Four Wheel Drive Track (Captain Cook Drive)

The demolition works would not impact on significant fabric of the former Four wheel drive track or the historic significance of this local heritage item.

Silver Beach and Roadway

This report has confirmed that the removal of redundant pipelines from beneath Silver Beach, Prince Charles Parade, and the neighbouring Right of Ways would have a minor, temporary impact on the aesthetic significance and amenity of Silver Beach, and a minor adverse impact on physical fabric associated with this heritage item. These impacts would be mitigated by restoration of the beach, dunes, and roadway by Caltex using compatible materials following removal of the pipelines. The report recommends that sandstone blocks from the informal sandstone wall along Silver Beach should be set aside in a secure location prior to works, and reinstated in the same location following removal of the cooling water outlet pipeline. Caltex should also consult with Sutherland Shire Council regarding potential damage to an interpretive footpath in front of the driveway entrance to the Kurnell Wharf. A record should be made of the current state of the pavement prior to works, and the present pavement reinstated in the same location following the removal of the pipelines.

Kamay-Botany Bay National Park

The demolition works may have minor, temporary adverse impacts on the landscape setting, social and symbolic values of the state significant Kamay Botany Bay National Park and nationally significant Kurnell Peninsula Headland during demolition works, arising from potential unpleasant sensory impacts of the demolition works on a visitor's experience of the place. The report recommends that Caltex implement measures to limit the potential impacts of the demolition works on visitors to the national park during demolition works. The report also notes that these impacts would not be sufficient to warrant a referral to the Australian Government Department of the Environment for assessment and approval by the Minister under the provisions of the EPBC Act. It further notes that any temporary impacts would be mitigated by the long-term benefit to the landscape setting of the park, arising from the reduced prominence of the refinery Site in significant views of the headland.

Historical Archaeological Relics

Although it is unlikely that excavations associated with the demolition works would impact on significant historical archaeological relics, it is important to have measures in place to address the unexpected discovery of archaeological relics. Relics should be managed in accordance with the relics provisions of the *Heritage Act 1977* and the Heritage Council of NSW notified.

Aboriginal Heritage

Although it is unlikely that excavations associated with the demolition works would impact on Aborignial heritage sites, objects or places, protocols and procedures addressing the unexpected discovery of Aborignal heritage items should be implemented. Should Aboriginal heritage objects or human remains be unexpectedly found during works, they should be managed in accordance with the requirements of the *National Parks and Wildlife Act (1974)*, and the requirements of the Office of Environment and Heritage.

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1 Introduction

1.1 Background

Australian Museum Consulting (AM Consulting) has been commissioned by URS Australia Pty Ltd (URS) on behalf of Caltex Refineries (NSW) Pty Ltd (Caltex) to prepare a supplementary Heritage Impact Assessment (HIA) for the Caltex Kurnell Refinery Conversion (the Project). The Project involves the conversion of the Kurnell Refinery (the Site) to a finished fuel products terminal.

The Project has been divided into two initial stages:

1. Converting existing infrastructure to allow the Site to operate as a terminal and shutdown of the refinery (the conversion works).
2. Demolition, dismantling and/or removal of redundant infrastructure (the demolition works).

The Stage 1 conversion works were assessed as State Significant Development (SSD) under Part 4 Division 4.1 of the *Environmental Planning and Assessment Act 1979* (EP&A Act), and development consent (SSD 5544) has been granted for completing these works. Modification to the existing consent to complete Stage 2 demolition works, under Section 96(2) of the EP&A Act was approved on 23 June 2014. The Secretary's Environmental Assessment Requirements (SEARs) includes a number of issues to be addressed by supporting documentation:

> ***Heritage*** *– including an assessment of the potential impacts on Aboriginal and non-Aboriginal heritage (including movable cultural heritage) values.*

This HIA, together with a Heritage Management Strategy (HMS) previously prepared by AM Consulting for the Site, fulfil this requirement. The HIA supplements the recommendations contained in the HMS, and outlines measures designed to minimise or mitigate potential impacts on Aboriginal and non-Aboriginal (historic) heritage values arising from the demolition works.

1.1.1 The Site

The Caltex Refinery (the Site) is located on the Kurnell Peninsula, within the Sutherland Shire Local Government Area (LGA), approximately 15 km south of Sydney's Central Business District (CBD) (Figure 1.1). The Site is bounded by Kamay Botany Bay National Park to the northeast, east and south, Kurnell township to the north, and Captain Cook Drive to the west.

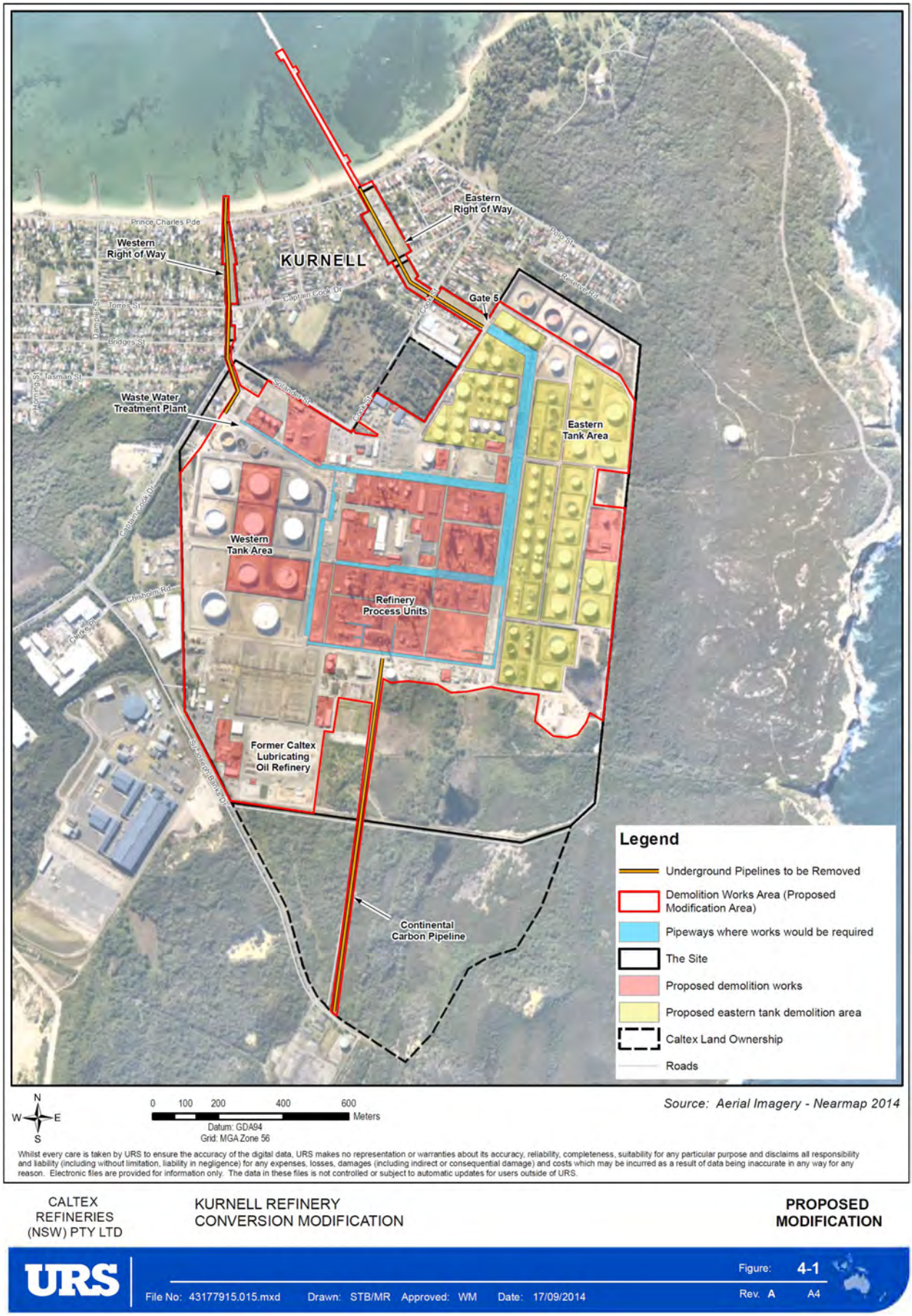


Figure 1.1 The Site (Source: URS, Figure 4.1).

The Site comprises land owned and occupied by Caltex Refineries (NSW) Pty Ltd, and is defined in the EIS for SSD 5544 as:

- Lot 56 DP 908;
- Lot 57 DP 908;
- Lot 62 DP 908;
- Part Lot 11 DP 7632;
- Part Lot 12 DP 7632;
- Lot 189 DP 7632;
- Lot 190 DP 7632;
- Lot 43 DP 8135;
- Lot 44 DP 8135;
- Lot 45 DP 8135;
- Lot 46 DP 8135;
- Part Lot 77 DP 8135;
- Lot 78 DP 8135;
- Lot 79 DP 8135;
- Part Lot 122 DP 8135;
- Part Lot 123 DP 8135;
- Part Lot 124 DP 8135;
- Part Lot 125 DP 8135;
- Lot 48 DP 9564;
- Lot 77 DP 9564;
- Lot 78 DP 9564;
- Lot 81 DP 9564;
- Part Lot 1 DP 215818;
- Part Lot 2 DP 215818;
- Lot 1 DP 215819;
- Lot B DP 338897;
- Lot D DP 361103;
- Part Lot F DP 361103;
- Lot G DP 361103;
- Lot J DP 362655;
- Lot K DP 362655;
- Lot H DP 362655;
- Lot 570 DP 752064;
- Lot 24 DP 776328;
- Lot 1 DP 1044690;
- Lot 25 DP 776328;
- Lot 283 DP 752064; and
- Lot 1 DP 132055.

The majority of the demolition works would be completed within the boundary of the Site as defined in the EIS for the conversion works. The exceptions to this include the removal of:

- The Continental Carbon Pipeline, which is located on land owned by Caltex to the south of the Site (Lot 2/DP 215818);
- Sections of the redundant pipelines that run through the Western and Eastern Right of Ways (ROWs) that are located outside of the Site (i.e. under the roads that cross the ROWs (no Lot and DP available) and under Silver Beach (Lot 3/DP 1165618 from the low tide mark into Botany Bay); and
- The cooling water intake pipelines and associated infrastructure from the Kurnell Wharf (Lot 456/DP 1413279).

1.1.2 Heritage Management Strategy

AM Consulting previously prepared a HIA to address Aboriginal and historic heritage issues associated with the conversion works, particularly focusing on the conversion, cleaning, and modification of existing tank and pipeline infrastructure (Australian Museum Business Services* 2013). The HIA formed a Technical Appendix to the Environmental Impact Statement (EIS) for the conversion works. AM Consulting also prepared an Addendum to the HIA to address the installation of geodesic domes over three tanks (AM Consulting 2013). On 1 July 2013, Australian Museum Business Services (AMBS) changed its business name to Australian Museum Consulting.

In 2014, AM Consulting prepared a Heritage Management Strategy (HMS) for the broader refinery Site. The HMS was prepared in accordance with the Minister's Conditions of Approval (MCoA) C31 for the Project, and included:

- A review of the heritage significance of the Australian Oil Refinery site and a revised summary statement of significance; and
- A strategy to minimise or mitigate the loss of the refinery's heritage value during the Project and to manage the site's heritage during present and future works.

The refinery had previously been identified as an industrial heritage site with local and potential State heritage value. The HMS confirmed that the refinery Site has heritage significance sufficient to warrant listing on the State Heritage Register (SHR). The re-assessment of significance and development of management strategies was undertaken in consultation with the Heritage Division of the Office of Environment and Heritage (OEH), as delegate for the Heritage Council of NSW, and recommendations were developed in accordance with the requirements for listing on the SHR. The HMS has been granted in principle approval by the Heritage Council of NSW.

Caltex has committed to fulfilling the recommendations included in the HMS, except in a small number of of cases where these conflict with the current application to demolish plant, equipment and buildings (the demolition works). The HMS does identify that demolition would be a part of the conversion process (i.e. the Project), in particular acknowledging that industrial machinery and plant deteriorates rapidly when it is no longer in use. However, the HMS also recommends that a representative sample of significant buildings and infrastructure should be retained and conserved in use as part of the fuel import terminal, in particular:

- Examples of significant office and amenities buildings designed by architectural firm Bunning and Madden for the AOR and ALOR complexes;
- The group of six houses designed by architect Harry Seidler;
- Examples of original workshop, storage and control buildings; and
- Examples of original and early storage tanks.

In the event that highly significant buildings cannot be reused as part of the fuel import terminal, the HMS recommends that Caltex consider alternative options for ongoing use wherever possible, including adaptive reuse.

Caltex has made substantial progress in implementing the strategies outlined in the HMS, and has confirmed in particular that the group of six houses designed by architect Harry Seidler would be retained and conserved. Key recommendations for audio-visual and photographic recordings of the refinery while it is still in operation are currently in progress. In addition, work has begun on the significant task of cataloguing the extensive archive of documents and industrial heritage objects held at the refinery site.

The following key strategies have yet to be addressed, but have received in principle support from Caltex for implementation as part of the HMS:

- Development of a long-term strategy for the storage of, conservation of, and public access to the Site's significant industrial heritage records and moveable heritage collections. Potential options include:
    - Establishing a formal, onsite heritage centre or archive, to be managed by a Caltex archivist;
    - Establishing formal onsite displays and interpretation of the refinery collections; and
    - Depositing copies of historic engineering records with the NSW State Library, in association with the archival photographic recording of the Site and a detailed catalogue of the Site's collections.
- Considering future opportunities to adaptively reuse redundant buildings on the periphery of the Site, where possible. Options could include reuse by other divisions of the company, or sale or lease to third parties.
- Considering future opportunities to disseminate information about the heritage significance of the place to a wider audience. Options could include temporary exhibits of photographs, archival material and/or moveable heritage items outside the local area, perhaps at the NSW State Library or the Powerhouse Museum, or an online exhibition on the Caltex website.

1.1.3 Scope of Assessment

This HIA specifically addresses the proposed demolition works, as identified in Figure 1.1. It assesses the direct and indirect impacts to National, State and locally significant historic heritage items and places arising from the proposed demolition and removal of the redundant infrastructure, including impacts on the heritage significance of the refinery itself, and on the heritage significance of items and places in the vicinity of the Site, such as Kamay-Botany Bay National Park. It builds upon the background information and recommendations contained within the previous HIA and HMS, and incorporates a Statement of Heritage Impact (SoHI) for the demolition works. The report documents the expected historic heritage impacts of the demolition works and the measures proposed by Caltex to manage and/or mitigate these impacts. The HIA would form a Technical Appendix to a Statement of Environmental Effects (SEE), to accompany the Section 96(2) application.

The report does not include an Aboriginal Heritage Due Diligence Assessment because:

1. Based on the results of the previous HIA, the proposed demolition works within the Site would not justify additional Aboriginal heritage assessment (AMBS 2013).
2. Caltex has confirmed that the whole of the Continental Carbon Pipeline easement has been previously excavated and that the fill used to bury the pipeline was the spoil from the original trench and did not come from another part of the Site or offsite. Works to remove the pipeline would be wholly within the existing cleared easement.
3. Caltex has confirmed that the works areas on the Silver Beach shoreline and the associated pipeline easements have been previously excavated to install the pipeline that is now proposed to be removed and are unlikely to contain Aboriginal heritage objects, and as such the proposed demolition works would not justify additional Aboriginal heritage assessment.

1.2 The Proposal

The Stage 2 demolition works would involve:

- Demolition, dismantling and/or removal of:
  - Refinery process units, including foundations and redundant slabs;
  - Redundant tanks;
  - Redundant pipelines;
  - Redundant services; and
  - Redundant buildings, including foundations and services.
- Associated minor civil works, including the removal of foundations and underground services.
- Waste management activities.
- Returning the works areas to grade.

The general order of and process for the demolition works would be:

- Demolition of the Refinery Process Units by:
  - Disconnection and removal of pipelines from the process units;
  - Demolition of the Refinery Process Units by lowering tall elements to a level where they can be more easily cut up using heavy machinery;
  - Intermediate storage on the Site as required prior to disposal, recycling or divestment.
- Removal of the foundations for the process units and redundant slabs, which would require excavation work.
- Removal of redundant cabling and certain underground services including the Oily Water Sewer from the area beneath the Refinery Process Units, which would require excavation work.
- Removal of a number of tanks and vessels from both the Eastern and Western Tank Areas. These structures would be cut up and removed using heavy machinery.

- Removal of eight underground pipelines, including:
    - Removal of the two cooling water inlet pipelines and four redundent product pipelines from the Eastern ROW, and from under the road reserves that they cross between the main site and the Kurnell Wharf.
    - Removal of the cooling water outlet pipeline from the Western ROW, and from under the road reserves that it crosses between the main site and Silver Beach.
    - Removal of the Continental Carbon Pipeline from the Site and the land to the south of the Site owned by Caltex (see Figure 1.1).

  This work would involve removing the soil from above the pipeline and stockpiling it close to the trench; removing the pipeline and backfilling the trench to grade. Where these pipelines cross local roads, the roads and associated footpaths would be excavated to remove the pipeline and reinstated following the completion of excavation works.
- Removal of the cooling water outlet pipe from beneath Silver Beach north of Prince Charles Parade, and for up to 20 m seaward from the low tide mark into Botany Bay. This pipe is made of reinforced concrete. The remaining section of the pipe would be left in situ in Botany Bay. The pipe would be excavated, removed, and suitable material and rehabilitation techniques would be required to return the dunes, beach, intertidal and sub tidal areas to grade.
- Removal of two cooling water inlet pipes from alongside the Kurnell Wharf. These pipes are made from cement lined steel. Their removal would involve removing the pipelines from their stands using a barge crane, and cutting and lifting the pipes onto a truck on the Wharf. Pumps would also be removed from within the pumphouse.
- Demolition and removal of a number of buildings on the Site associated with the operation of the refinery. The buildings would be demolished using heavy machinery such as bulldozers and hydraulic excavators. Building foundations and services would also be removed, which may involve minor excavations.

Concrete from the demolition works would be crushed on Site and used as an aggregate to cover the parts of the Site where structures and buildings have been removed.

Section 3 Physical Analysis of this report provides a summary of the individual elements of the Site (plant and buildings) that were assessed for the HMS. It identifies which elements would be included in the scope of demolition works and their relative heritage value. The identification of elements included in the demolition scope is based on Figure 1.1 above.

The demolition works are likely to be completed by the end of 2017. Following completion of the demolition works, the whole Site would operate as a finished products terminal, as documented in the previous EIS.

1.3 Methodology

1.3.1 General Methodology

This report is informed by the principles of *The Burra Charter: The Australia ICOMOS Charter for Places of Cultural Significance* (revised 2013; The Burra Charter).

This HIA has been prepared in accordance with current heritage best-practice guidelines as identified in the *NSW Heritage Manual* (NSW Heritage Office and Department of Urban Affairs & Planning 1996) and relevant supplementary publications, including *Statements of Heritage Impact* (revised 2002). The assessment of impacts of items of National heritage significance also addresses the *Matters*

of National Environmental Significance: Significant impact guidelines 1.1 (Department of the Environment 2013).
This HIA incorporates an updated review of the following statutory and non-statutory heritage lists and registers:

- National Heritage List (NHL);
- Commonwealth Heritage List (CHL);
- State Heritage Register (SHR);
- OEH Heritage and Conservation Register (Section 170 Register)
- *State Environmental Planning Policy (Kurnell Peninsula) 1989*, Schedules 2 and 3 (SEPP Kurnell Peninsula);
- National Trust of Australia (NSW) Register;
- National Trust of Australia (NSW) Industrial Archaeological Sites List (IAS); and
- Australian Institute of Architects (AIA) Register of Significant Architecture in NSW.

The historic background and heritage context of listed heritage items and places discussed in this report are fully documented in the previous HIA and HMS, and reference should be made to those reports for this information. The discussion of the physical context of the heritage items is primarily based on site inspections undertaken on 11 September 2011 by AM Consulting staff for a HIA for the Kurnell Port and Berthing Project (AMBS 2012), on 31 October 2012 for the previous HIA for the conversion works, and on 26 July and 23 August 2013 for the HMS. All photographs used in this report were taken during one of these inspections, unless otherwise indicated.

1.3.2 Magnitude of Heritage Impact

The assessment of heritage impacts considers whether the demolition works are likely to affect the historic, aesthetic, scientific, social or spiritual significance of a heritage item, place, or archaeological site. The heritage significance or values of a place are commonly documented in inventories associated with statutory heritage lists and registers. (Relevant inventories are attached in Appendix A to this report). In the case of the Refinery itself, reference should be made to the updated assessment of heritage significance of the Site as documented in the HMS and summarised in Section 2.5.1 (Australian Oil Refinery) of this report; and the grading of significance of individual elements of the Refinery, tabulated in Section 3.1.6of this report.

Table 1.2 outlines the terminology used in this report to indicate the magnitude or severity of potential impacts. The assessment of magnitude or severity of potential impacts on cultural heritage value has been based on:

- The extent to which the proposed action would have a substantial and/or long-term effect on one or more heritage values of the place, including the complete or partial loss of one or more heritage values;
- The likelihood that the proposed action would involve removal, destruction, damage or substantial alteration of the fabric of a heritage item or place, in a manner inconsistent with its heritage values;
- The extent to which the proposed action would enhance or detract from landscape setting, context, or important views associated with a heritage item or place, where the setting, context or views contribute to the heritage values of the item or place;
- The extent to which the proposed works would diminish one or more heritage values of an item or place by restricting or inhibiting significant uses and associations of the place; and/or
- The extent to which the proposed works would diminish the ability of the place to demonstrate creative or technical achievement.

Table 1.1 Magnitude of Impact – historic heritage items, places and archaeological sites

Rating	Impact Definition
Major positive	• The proposed action would substantially enhance the heritage value or integrity of the item or place, by improved conservation of its important fabric, setting, context, views, uses or associations. • There would be a major improvement in understanding of the heritage value of the item or place.
Minor positive	• The proposed action would have a minor or temporary benefit on the heritage value or integrity of the item or place, through conservation of its important fabric, setting, context, views, uses or associations. • There would be a minor or temporary improvement in understanding of the heritage value of the item or place.
Neutral or No impact	• The proposed action respects the heritage value and integrity of the item or place. • There would be no change or impact as a result of the proposed action.
Minor adverse	• The proposed action would have a temporary adverse effect on, and/or involve minor damage or changes to an item's important fabric, setting, context, views, uses or associations. • There would a minor or temporary reduction in understanding of the item or place. • The impact of the action could be removed or reduced through appropriate mitigation measures.
Major adverse	• The proposed action would involve permanent changes to, or destruction of an item's important fabric, setting, context, views, uses or associations. • There would be a substantial or long-term adverse effect on the heritage value or integrity of the item or place. • There would be a major reduction in understanding of the heritage value of the item or place. • The impact of the action could be reduced through appropriate mitigation measures, but cannot be fully mitigated.

The *Matters of National Environmental Significance: Significant impact guidelines 1.1* state that an action is likely to have a significant impact if there is a real chance or possibility that it would cause one or more of the National Heritage values to be:

- lost;
- degraded or damaged; or
- notably altered, modified, obscured, or diminished.

The action can also have a significant impact if it results in a partial loss of heritage fabric, where the fabric embodies particularly sensitive or important values.

Impacts to a State or local heritage item, place, or archaeological site are considered to be significant if the action results in a substantial loss of heritage value.

Where potential impacts are serious, irreversible, or cannot be fully mitigated, the precautionary principle and the principle of inter-generational equity apply.

1.3.3 Limitations

Due to commercial confidentiality, the specific numbers and functions of individual tanks are not discussed in this or previous reports.

The physical analysis has been based on information collected during previous site visits to the Site, and more recent photos of the Site provided by Caltex. Additional site surveys were not required for this report.

1.4 Authorship and Acknowledgements

This report has been prepared by Libby Percival, AM Consulting Project Manager, Historic Heritage and Jennie Lindbergh, AM Consulting Senior Project Manager. Jennie Lindbergh also reviewed the

report for quality and consistency. Chris Langeluddecke, AM Consulting Project Manager, Aboriginal Heritage provided advice on Aboriginal heritage issues.

The authors acknowledge the assistance of Kylie Gordon - Communications Lead and Dr Jos Kusters - HSE Technical Superintendent for Decommissioning and Demolition at Caltex, and William Miles - Principal Environmental Planner at URS in preparation of the report.

1.5 Terminology and Abbreviations

The following terminology and abbreviations are used throughout this report

Term or abbreviation	Description
ALOR	Australian Lubricating Oil Refinery (later known as the Caltex Lubricating Oil Refinery or CLOR)
AOR	Australian Oil Refining Pty Ltd (later known as the Caltex Oil Refinery or COR)
AM Consulting	Australian Museum Consulting
btw	Between. Approximate date within defined range
Burra Charter	*The Burra Charter: The Australia ICOMOS charter for the conservation of places of cultural significance 2013*
c	*Circa*. Approximate date
Caltex	Caltex Refineries (NSW) Pty Ltd
CHL	Commonwealth Heritage List
CLOR	Caltex Lubricating Oil Refinery (previously known as Australian Lubricating Oil Refinery or ALOR)
Conservation	All the processes of looking after a place so as to retain its cultural significance (Burra Charter Article 1.4). Conservation could include the following processes: retention or reintroduction of a use, maintenance, preservation, restoration, reconstruction, adaptation, and interpretation, and will commonly include a combination of more than one of these (Burra Charter Article 14)
COR	Caltex Oil Refinery (previously known as Australian Oil Refinery or AOR)
EP&A Act	*Environmental Planning and Assessment Act 1979*
EPBC Act	*Environment Protection and Biodiversity Conservation Act 1999*
Heritage Act	*Heritage Act 1977*
HMS	Caltex Kurnell Refinery Heritage Management Strategy (AM Consulting 2014)
LGA	Local Government Area
Maintenance	The continuous protective care of the fabric and setting of a place, to be distinguished from repair. Repair involves restoration or reconstruction (Burra Charter Article 1.5)
Heritage Division	Heritage Division of the Office of Environment and Heritage (OEH), Department of Planning and Environment. A NSW government agency responsible for the administration and protection of items listed under the *Heritage Act 1977*
NHL	National Heritage List. A register of items or places that are of national heritage significance and protected under the EPBC Act
Preservation	*Maintaining the* fabric *of a* place *in its existing state and retarding deterioration* (Burra Charter Article 1.6).
OEH	Office of Environment and Heritage
SEPP Kurnell Peninsula	*State Environmental Planning Policy (Kurnell Peninsula) 1989*
SHR	State Heritage Register. A register of items or places that are of State heritage significance and protected under the Heritage Act 1977
WHS	Work Health & Safety Act 2011
WWII	World War II

2 Statutory Context

2.1 Summary

A review of the statutory and non-heritage lists and registers has confirmed that there are a number of historic heritage items or places within, or in close proximity to the Site. Table 2.1 provides a summary of these items.

Table 2.1 Summary of listed heritage items within, or in close proximity to the Site.

Name	Address	Heritage Register	Significance	Statutory Requirements
Kamay Botany Bay National Park (North and South) and Towra Point Nature Reserve	Cape Solander Dve, Kurnell, NSW 2231	• SHR (01918) • NHL Nomination (106162)	State / National*	• Heritage Act – Sections 57-60, • Section 170A
Kurnell Peninsula Headland	Cape Solander Dr, Kurnell, NSW, Australia	• NHL (105812) • CHL (105571) • OEH Section 170 Register (Items: 1377, 1401, 1402, 3355, 3357, 3358, 3359, 3360, 3361, 3362, 3363, 3364, 3365, 3366, 3367, 3368, 3373, 10646, 10984, 11028, 11029) • SEPP Kurnell Peninsula (Items: L015, L016, A081, A082, A084, A085, A086, A087, A088, A089, A090, A091, A092, A093, A094, A095, A096) • RNE (Items: 3335, 102930)	National	• EPBC Act • Heritage Act – Sections 57-60, • Section 170A • SEPP Kurnell Peninsula Part 3 Clauses 23A-23D
Australian Oil Refinery	Sir Joseph Banks Drive, Kurnell	• SEPP Kurnell Peninsula (A038) • AIA Register of Significant Architecture in NSW (4703431)	Local	• SEPP Kurnell Peninsula Part 3 Clauses 23A-23D
Four wheel drive track	Captain Cook Drive, Kurnell	SEPP Kurnell Peninsula (A028)	Local	• SEPP Kurnell Peninsula Part 3 Clauses 23A-23D
Silver Beach and roadway	Prince Charles Parade, Kurnell	SEPP Kurnell Peninsula (L012)	Local	• SEPP Kurnell Peninsula Part 3 Clauses 23A-23D

*This item is partially within the NHL listed Kurnell Peninsula Headland (see Section 2.2.1 below).

The conservation and management of heritage items takes place in accordance with relevant Commonwealth, State and Local Government legislation. Caltex's obligations arising from the heritage listings are summarised below.

2.2 Environment Protection and Biodiversity Conservation Act 1999

The *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) provides a legal framework for the protection and management of places of national environmental significance. The heritage lists addressed by the EPBC Act include the NHL and the CHL. The NHL protects places that have outstanding value to the nation. The CHL protects items and places owned or managed by Commonwealth Government agencies. The Australian Government Department of Environment is responsible for the implementation of national policy, programs and legislation to protect and conserve Australia's environment and heritage and to promote Australian arts and culture. Approval

from the Minister is required for controlled actions which would have a significant impact on heritage items and places included on the NHL or CHL.

2.2.1 National Heritage List

The following place is listed on the NHL:

Place ID	Name	Address	Property Description	Significance
105812	Kurnell Peninsula Headland	Cape Solander Dr, Kurnell, NSW, Australia	About 400ha, at Kurnell, comprising Botany Bay National Park, Lot 1 DP91704, the road reserve extending from Cape Baily Lighthouse in the east to the Park boundary in the west and the area between the seaward boundaries of the National Park and Lot 1 DP91704 and the Low Water Mark.	National

Kamay Botany Bay National Park is owned and managed by the NSW National Parks and Wildlife Service (NPWS). The boundary of the NHL listing is illustrated in Figure 2.1.

The following place has also been nominated for inclusion of the NHL:

Ref	Name	Address	Property Description	Significance
106162	Kamay Botany Bay	Captain Cook Dr, Kurnell, NSW, Australia	About 900ha, Kurnell, comprising the whole of Botany Bay National Park at Kurnell Peninsula and La Perouse, and the whole of Towra Point Nature Reserve.	N/A

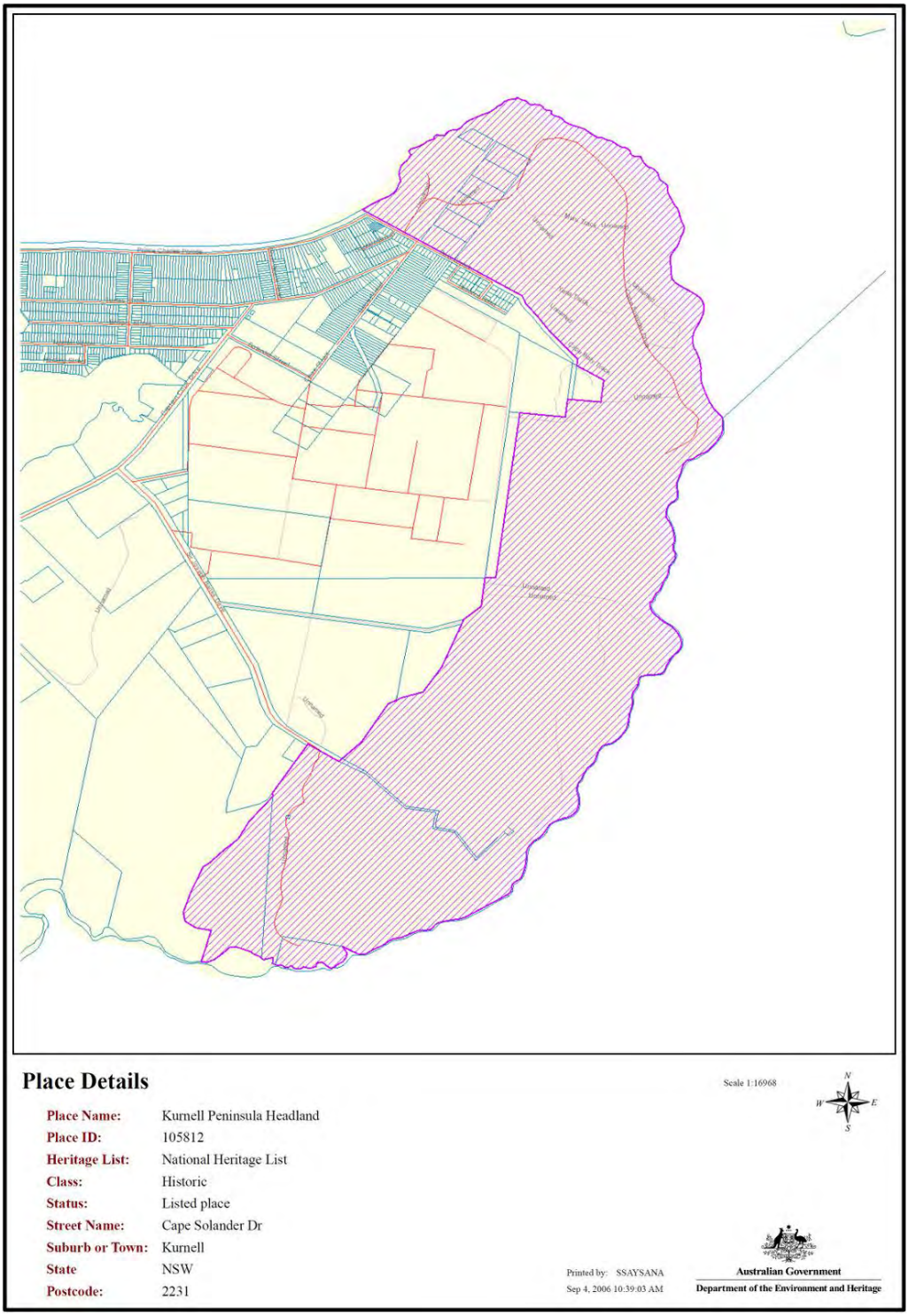


Figure 2.1 Boundary map of the NHL Kurnell Peninsula Headland (Source: Department of Environment, http://www.environment.gov.au/system/files/pages/b79bf717-c33f-407e-9701-2e8fa889d804/files/10581201.pdf).

The Australian Heritage Database includes the following Summary Statement of Significance for the Kurnell Peninsula Headland:

> *Kurnell Headland (comprising Botany Bay National Park and the Sydney Water land at Potter Point), Kurnell Peninsula, is of outstanding heritage value to the nation as the site of first recorded contact between Indigenous people and Britain in eastern Australia. The place symbolically represents the birthplace of a nation, and the dispossession of Indigenous people. The first landing at Kurnell Peninsula in April 1770 by Lt James Cook has been commemorated since 1822. The Meeting Place Precinct, including Captain Cook's Landing Place, features memorials and landscape plantings celebrating the events. Attributes specifically associated with its Indigenous values include the watering point and immediate surrounds, and the physical evidence of Indigenous occupation in the area broadly encompassed by the watering place and the landing stage. The story of Cook's first landing on the east coast of Australia is nationally important and an integral part of Australian recorded history and folklore.*
>
> *Cooks' running-survey of the east coast of Australia in 1770 and his survey of Botany Bay as a safe harbour, was an outstanding technical achievement, enabling the continental characteristics of Terra Australis to be defined for the first time, with the exception of Bass Strait, building on the work of earlier maritime explorers. Cook's first landfall in Australia at Botany Bay in 1770 informed the subsequent British declaration of terra nullius and began the process which led to British possession of the Australian continent by 1830. The headland area of Kurnell Peninsula, comprising most of Botany Bay National Park, and described by Cook in his Journal as a significant coastal landmark at the entrance to Botany Bay, is significant to the nation as the destination of the First Fleet under Captain Arthur Phillip in 1787.*
>
> *On this, Cook's first of three voyages to the Pacific, Joseph Banks was botanist, assisted by Daniel Solander and the artists Sydney Parkinson, Alexander Buchan and Herman Spöring, were to produce botanical, zoological and ethnographic drawings. Banks and Solander collected 83 specimens whilst at Botany Bay, many of which are now the type specimens of species and genera, including Banksia, named after Joseph Banks. Kurnell Headland, was the first site on the eastern coast of the Australian continent to be explored by scientist from Britain, with many of the first type-specimens of flora collected at the Kurnell Peninsula landing site by both Banks and Solander. Cape Banks and Point Solander have defined the entrance to Botany Bay since 1770. Cook's naming of 'Botany Bay' in 1770 would result in its adoption as an emotive term for a distant destination, which came to be associated with convictism for much of the nineteenth century.*

The Kurnell Peninsula Headland satisfies the following NHL criteria: (a) Events and processes; (b) Rarity; (g) Social value; (h) Significant people.

The nomination of Kamay Botany Bay seeks to include all the values encompassed in the current NHL Kurnell Peninsula Headland within a broader boundary, and recognise additional associative values that:

> *- reflect the significance of the first meeting place between the traditional Aboriginal owners of the Botany Bay area and British explorer James Cook in 1770, ahead of the establishment of the colony by the First Fleet at Sydney Cove in 1788;*
> *- recognise the international significance of Botany Bay, as the place where Joseph Banks and Daniel Solander first collected botanical specimens from the Australian continent, as part of the further development of Linnaean systematic biology;*
> *- encompass the waters into which explorer James Cook's HM Bark Endeavour, the ships of the Governor Phillip's First Fleet, and French explorer the Comte de Laperouse sailed and anchored in 1770 and 1788 respectively; and*
> *- more fully recognise the association of Botany Bay with convict transportation in sentencing and the popular imagination, notwithstanding the fact that no convicts were landed at Botany Bay.*

2.2.2 Commonwealth Heritage List

The CHL lists the following item in the vicinity of the Site:

Ref	Name	Address	Property Description	Significance
105571	Cape Baily Lighthouse	Sir Joseph Banks Dr, Kurnell, NSW, Australia	Off Sir Joseph Banks Drive, Botany Bay National Park, Kurnell.	National

The lighthouse is within the boundary of the NHL Kurnell Peninsula Headland, but is more than 1 km southeast of the Site. The lighthouse is leased from the NPWS by the Australian Maritime Safety Authority.

Figure 2.2 CHL Cape Baily Lighthouse is indicated with pink arrow; NHL Kurnell Peninsula Headland is indicated by red shading. (Source of background imagery: Google Earth; © 2012 Whereis® Sensis Pty Ltd; © 2012 Sinclair Knight Merz; © 2012 DigitalGlobe; © 2012 TerraMetrics; Data: SIO, NOAA, US Navy, NGA, GEBCO).

Figure 2.3 Boundary map of the CHL Cape Baily Lighthouse (Source: Department of Environment).

The Australian Heritage Database includes the following Summary Statement of Significance for the Cape Baily Lighthouse:

> *Cape Baily Lighthouse, constructed during 1950-51, is significant for reflecting the ongoing development of navigational aids along the Australian coast during the twentieth century, and for its association with the post-war development of Botany Bay as a major port for Sydney. (Criterion A.4) (Themes: 3.8.1 Shipping to and from Australian ports, 3.16.1 Dealing with hazards and disasters)*

The lighthouse is unusual in that it is comprised of a 1950s concrete tower and a late nineteenth century lantern. (Criterion B.2)

The tower, located on a rise behind dramatic cliffs, and rising above coastal vegetation and wetlands, is a landmark feature of the local area. (Criterion E.1)

2.3 Heritage Act 1977

The *Heritage Act 1977* (Heritage Act) provides protection for heritage places, buildings, works, relics, moveable objects, precincts and archaeological sites that are important to the people of NSW. Where these items have particular importance to the people of NSW, they are listed on the SHR.

The following place is listed on the SHR:

Ref	Name	Address	Property Description	Significance
01918	Kamay Botany Bay National Park (North and South) and Towra Point Nature Reserve	Cape Solander Dve, Kurnell, NSW 2231	LOT 1 DP 1014443, LOT 1 DP 1030269, LOT 5 DP 1110408, PART LOT 456 DP 1137279, LOT 7334 DP 1162374, LOT 31 DP 217907, LOT 3 DP 232077, LOT 101 DP 555205, LOT 1 DP 556396, LOT 1 DP 706164, LOT 4 DP 732257, LOT 119 DP 752064, LOT 145 DP 752064, LOT 101 DP 777967, LOT 102 DP 777967, LOT 103 DP 777967, LOT 104 DP 777967, LOT 105 DP 777967, LOT 106 DP 777967, LOT 107 DP 777967, LOT 108 DP 777967, LOT 109 DP 777967, LOT 114 DP 777967, PART LOT 2 DP 856868, LOT 71 DP 908, LOT 72 DP 908, LOT 73 DP 908, LOT 74 DP 908, LOT 75 DP 908, LOT 76 DP 908, LOT 85 DP 908, LOT 1 DP 90998	State / National*

*These items are partially within the NHL listed Kurnell Peninsula Headland (see Section 2.2.1 above).

The listing boundary is illustrated in Figure 2.4–Figure 2.6, and comprises Kamay Botany Bay National Park, an area of about 492 ha on the north and south sandstone headlands to Botany Bay, and Towra Point Nature Reserve, a 386.4 ha peninsula located to the south west of Kurnell village in Botany Bay.

Figure 2.4 Boundary map of the north part of Kamay Botany Bay National Park (North and South) and Towra Point Nature Reserve (Source: State Heritage Inventory, http://www.environment.nsw.gov.au/maritimeheritageapp/resources/Heritage/shi/506/5061543b100.jpg).

Figure 2.5 Boundary map of the south east part of Kamay Botany Bay National Park (North and South) and Towra Point Nature Reserve (Source: http://www.environment.nsw.gov.au/maritimeheritageapp/resources/Heritage/shi/506/5061543b101.jpg).

Figure 2.6 Boundary map of the south west part of Kamay Botany Bay National Park (North and South) and Towra Point Nature Reserve (Source: http://www.environment.nsw.gov.au/maritimeheritageapp/resources/Heritage/shi/506/5061543b102.jpg).

The SHR includes the following Summary Statement of Significance for the place:

> *Kamay Botany Bay National Park and Towra Point Nature Reserve are of outstanding state heritage significance as a rare place demonstrating the continuous history of occupation of the east coast of Australia. The place holds clear and valuable evidence of Indigenous occupation prior to European settlement and the natural history of the state. It is also the place where the shared history of Indigenous and non-Indigenous Australia began. It was the place where Lieutenant James Cook first stepped ashore to claim the country for Britain and plays a central role in the European history of arrival, the history of Indigenous resistance, dispossession and devastation through illness, land grants, cultivation and development.*
>
> *Traditional Aboriginal custodians of the land and the current Aboriginal community have strong historical association with Kamay Botany Bay National Park and Towra Point Nature Reserve. Gweagal warriors resisted the arrival of Cook and continue to be important symbols of Aboriginal resilience. There are two important burial repatriation sites within the curtilage which are designated Aboriginal Places and have high social significance for the Aboriginal community.*
>
> *The place is also significant for its historical association with important European explorers and scientists and their life's work. These include James Cook, Joseph Banks, Daniel Solander, Compte de Laperouse, Pere Receveur and Joseph Lepaute Dagelet. It is also associated with the First Fleet and the first Governor of NSW, Arthur Phillip.*
>
> *The place is of state significance for the technical achievement of Banks and Solander who during their visit in 1770 made the first important collection of fauna and flora from Australia which included some items that had never before been described and classified. Previous archaeological excavations indicate that Kamay Botany Bay National Park and Towra Point Nature Reserve have significance for their high level of archaeological potential.*
>
> *Kamay Botany Bay National Park and Towra Point Nature Reserve have aesthetic value as landmark headlands and natural areas with a collection of historic monuments that, combined, have important symbolism to the state of NSW. Both northern and southern parts of the national park, together with the nature reserve, contain a valuable research resource relating to Indigenous occupation, the natural history of the State and the early settlement of the colony.*
>
> *Kamay Botany Bay National Park and Towra Point Nature Reserve are of state heritage significance as they* [contain] *rare remnant vegetation and flora communities and* [are] *a critical link in the network of parks and reserves that conserve the biodiversity of NSW.*
>
> *The La Perouse part the national park provides evidence of the history of French exploration in the Pacific in the late 19th century and continues to have ongoing cultural associations with the French community today.*

Part 4 Sections 57 to 69 of the Heritage Act address the statutory requirements for items and places listed on the SHR, or which are the subject of an Interim Heritage Order (IHO). Works which include demolition, damage or alteration of a heritage item or place require the approval of the Heritage Council or its delegates.

Part 6 Sections 139 to 145 of the Act provides statutory protection to relics, archaeological artefacts, features or deposits. Excavation or disturbance of land that is likely to contain, or is believed may contain archaeological relics must be undertaken in accordance with an excavation permit issued by the Heritage Council or its delegates (or in accordance with a gazetted exception under Section 139(4) of the Act).

The Heritage Act defines an archaeological relic as:

> *any deposit, artefact, object or material evidence that:*
> *(a) relates to the settlement of the area that comprises New South Wales, not being Aboriginal settlement, and*
> *(b) is of State or local heritage significance.*

Under Section 89J(1)(c) of the EP&A Act, Caltex was not required to apply for an approval under Part 4 or an excavation permit under Section 139 the Heritage Act for State Significant Development (see Section 2.5 below). However, under Schedule 2 of the *Environmental Planning and Assessment Regulation 2000* the Director General was required to consult with the Heritage Division in the preparation of environmental assessment requirements, and to assess key issues raised by the Heritage Division with respect to the Project. Under Section 96(2)(b) of the EP&A Act regarding 'modifications of consent generally' (the demolition works), the approval body is required to consult with relevant public authorities, including the Heritage Division, regarding the terms of the approval.

The Heritage Act also provides for the unintentional disturbance of archaeological relics. Under Section 146, the Heritage Council must be notified immediately if relics are unintentionally located or disturbed. Works may be required to cease pending consultation and further research.

2.3.1 Heritage and Conservation Registers

Part 8 Section 170 of the Heritage Act requires government departments and agencies to maintain a Heritage and Conservation Register, commonly known as a Section 170 Register. Part 4 Clause 21 of Heritage Regulation 2012 describes the assets that must be included on a Section 170 Register:

> *(a) items that are listed as heritage items under an environmental planning instrument made under the Environmental Planning and Assessment Act 1979,*
> *(b) items that are subject to an interim heritage order,*
> *(c) items that are listed on the State Heritage Register,*
> *(d) items identified by the government instrumentality concerned as having State heritage significance.*

Section 170A of the Act requires that a government department or agency must give the NSW Heritage Council not less than 14 days written notice before it:

> *(a) removes any item from its register under section 170, or*
> *(b) transfers ownership of any item entered in its register, or*
> *(c) ceases to occupy or demolishes any place, building or work entered in its register.*

The government department or agency is also responsible for ensuring that the items listed on its Section 170 Register are maintained with due diligence in accordance with *State Owned Heritage Management Principles*.

2.3.2 Office of Environment and Heritage Section 170 Register

OEH maintains a database of known and potential historic heritage items that have been identified on OEH managed estate, known as the Historic Heritage Information Management System (HHIMS). The OEH Section 170 Register is a subset of the HHIMS database. The HHIMS database lists 58 known or potential heritage items and complexes (collections of items) in the southern section of Kamay Botany Bay National Park, within Sutherland LGA. The OEH Section 170 Register lists the following items and places within the same area:

Ref	Name	Address	Significance
1402	Alpha Farm Site and Kurnell Accommodation House (Complex)	Botany Bay National Park, Sutherland	National*
3366	Banks Monument	Botany Bay National Park, Sutherland	National*
1377	Captain Cook's Landing Place Monuments (Complex)	Botany Bay National Park, Sutherland	National*
10646	Commemorative Tree Plantings (Complex)	Botany Bay National Park, Sutherland	National*
3361	Cook's Landing Rock Memorial		National*
3364	Cook's Monument	Botany Bay National Park, Sutherland	National*
3357	Cook's Well	Botany Bay National Park, Sutherland	National*
1401	Discovery Centre	Botany Bay National Park, Sutherland	National*
3365	Forby Sutherland Monument	Botany Bay National Park, Sutherland	National*
3360	Foreshore Pines near flagstaff	Botany Bay National Park, Sutherland	National*
3373	Foreshore sea wall- coursed stone	Botany Bay National Park, Sutherland	National*
11029	Freshwater Stream Plaque	Botany Bay National Park, Sutherland	National*
3367	Inscription Point Plaque	Botany Bay National Park, Sutherland	National*
11028	Isaac Smith Memorial	Botany Bay National Park, Sutherland	National*
10984	Kurnell Peninsula Meeting Place Precinct (Complex)	Botany Bay National Park, Sutherland	National*
3362	Landing Place Memorial	Botany Bay National Park, Sutherland	National*
3358	Main Flagstaff	Botany Bay National Park, Sutherland	National*
3368	Prince's Tree Memorial	Botany Bay National Park, Sutherland	National*
3355	Queen Elizabeth II Tree	Botany Bay National Park, Sutherland	National*
3363	Solander Memorial	Botany Bay National Park, Sutherland	National*
3359	Trust wharf abutment	Botany Bay National Park, Sutherland	National*

*These items are within or partially within the NHL listed Kurnell Peninsula Headland (see Section 2.2.1 above).

2.4 National Parks and Wildlife Act 1974

Under the provisions of the *National Parks & Wildlife Act 1974* (amended 2010; NPW Act), the Director-General of the NPWS (now part of OEH) is responsible for the care, control and management of all national parks, historic sites, nature reserves, state conservation areas, karst conservation reserves and regional parks. The Director-General is also responsible, under this legislation, for the protection and care of native fauna and flora, and Aboriginal places and objects throughout NSW.

All Aboriginal Objects are protected regardless of their significance or land tenure under the NPW Act. Aboriginal Objects can include pre-contact features such as scarred trees, middens and open camp sites, as well as physical evidence of post-contact use of the area such as Aboriginal built fencing and fringe camps. The NPW Act also protects Aboriginal Places, which are defined as a place that '*in the opinion of the Minister, is or was of special significance with respect to Aboriginal culture*'. Aboriginal Places can only be declared by the Minister administering the NPW Act.

Under Section 90 of the Act, it is an offence for a person to harm an Aboriginal Object or Aboriginal Place without the prior issue of an Aboriginal Heritage Impact Permit (AHIP). The definition of harm includes any act or omission that destroys, defaces or damages an object or place, or in relation to an object - moves the object from the land on which it had been situated. Any loss of value to an Aboriginal site or area of archaeological potential would require the relevant approvals to allow such an impact. The Act requires a person to take reasonable precautions and due diligence to avoid impacts on Aboriginal Objects. AHIPs may only be obtained from the Environmental Protection and Regulation Division (EPRD) of OEH.

Under Section 89J(1)(c) of the EP&A Act, Caltex was not required to apply for an AHIP for SSD 5544 (the conversion works) (see Section 2.5 below).

2.5 Environmental Planning and Assessment Act 1979

The EP&A Act is the main act regulating land use planning and development in NSW. Stage 1 of the Project was assessed as SSD under Part 4 Division 4.1 of EP&A Act, and development consent (SSD 5544) has been granted for completing these works. Modification to the existing consent to complete Stage 2 demolition works, under Section 96(2) of the EP&A Act was approved on 23 June 2014.

The EP&A Act controls the making of environmental planning instruments (EPIs). Two types of EPIs can now be made: Local Environmental Plans (LEPs), covering Local Government Areas; and State Environment Planning Policies (SEPPs), covering areas of State or regional planning significance. LEPs commonly identify and have provisions for the protection of local heritage items, archaeological sites, and heritage conservation areas. In the case of the Kurnell Peninsula, local heritage items and archaeological sites are protected by the *State Environmental Planning Policy (Kurnell Peninsula) 1989* (SEPP Kurnell Peninsula).

2.5.1 State Environmental Planning Policy (Kurnell Peninsula) 1989

Part 3 Clauses 23A-23D of the SEPP Kurnell Peninsula includes provisions for the protection of local heritage items, relics, and archaeological sites. Schedule 2 'Archaeological sites' and Schedule 3 'Heritage items' lists the following heritage items or places within, or in the vicinity of the Site:

Ref	Name	Address	Significance
L012	Silver Beach and roadway	Prince Charles Parade, Kurnell	Local
L015—S	Botany Bay National Park (Kurnell Historic Site)	Botany Bay National Park	National*
L016—S	Kurnell monuments (in National Park)	Botany Bay National Park	National*
A081	Captain Cook's landing place	Cape Solander Drive, Kurnell	National*
A082	Captain Cook's landing site	Cape Solander Drive, Kurnell	National*
A084	Banks Memorial	Cape Solander Drive, Kurnell	National*
A085	Solander monument	Cape Solander Drive, Kurnell	National*
A086	Captain Cook monument	Cape Solander Drive, Kurnell	National*
A087	Forby Sutherland monument	Cape Solander Drive, Kurnell	National*
A088	Landing place wharf abutment	Cape Solander Drive, Kurnell	National*
A089	Alpha Farm Site	Cape Solander Drive, Kurnell	National*
A090	Captain Cook Watering hole	Cape Solander Drive, Kurnell	National*
A091	Captain Cook Watering well	Cape Solander Drive, Kurnell	National*
A092	Flagpole	Cape Solander Drive, Kurnell	National*
A093	Yena track	Cape Solander Drive, Kurnell	National*
A094	Muru track	Cape Solander Drive, Kurnell	National*
A095	Tabbagai Gap cliff site	Tabbagai Gap	National*
A096	Tabbagai Gap house site	Tabbagai Gap	National*
A038	Australian Oil Refinery	Sir Joseph Banks Drive, Kurnell	Local
A028	Four wheel drive track	Captain Cook Drive, Kurnell	Local

*These items are within or partially within the NHL listed Kurnell Peninsula Headland (see Section 2.2.1 above).

The majority of these items are incorporated within, or partially within the SHR and NHL listed Kamay Botany Bay National Park and Kurnell Peninsula Headland, and their heritage significance is addressed in the summary statements of significance for those listings.

Silver Beach and Roadway

The Sutherland Shire Heritage Study Inventory for this item includes the following Summary Statement of Significance for the place:

> *Beach with remnant native vegetation in important setting on Botany Bay, affording dramatic views over Botany Bay. Combined with a series of rare stone groynes, set along beach to protect sandy beach from storms. Local significance.*

The beach and roadway has aesthetic and scientific significance and rarity value for the local area.

Four Wheel Drive Track (Captain Cook Drive)

The Sutherland Shire Heritage Study Inventory includes the following Summary Statement of Significance for the Four wheel drive track:

> *The site represents the theme of transport and its difficulties, and the isolation of some areas within Sutherland Shire until very recently.*

The former four wheel drive track has historic and scientific significance, and representative value for the local area.

Australian Oil Refinery

The Sutherland Shire Heritage Study Inventory includes the following Summary Statement of Significance for the place:

> *Australian Oil Refinery is significant as being one of only two refineries in the Sydney area.*

It further indicates that the refinery has historic, aesthetic/technical and scientific significance, rarity and representative value at a State level. It does not define a heritage curtilage for the site.

The HMS provides an updated summary statement of significance for the Australian Oil Refinery:

> *The Caltex Kurnell Refinery began operating in 1956 as the Australian Oil Refinery, the largest industrial facility then built by a private enterprise in the State, and the first major industrial facility on the Kurnell Peninsula. It is historically associated with the expansion of the oil refining industry in Australia in the mid-twentieth century, and more broadly with the rapid expansion of motorised transport and associated industry in the post-WWII era. It is one of only three crude oil refineries to have operated historically in NSW, the others being the Shell refinery at Clyde (originally John Fell and Company) and the BORAL refinery at Matraville, and is the only refinery still operating in the State. Throughout its history, the Caltex Kurnell Refinery has made an important contribution to the economic development of NSW, providing a significant proportion of all transport fuels used within the State. However, following closure of the Refinery in 2014, and conversion of the site to a finished fuel products terminal, there will be no operational crude oil refineries in NSW and only five oil refineries in other States across Australia.*
>
> *The Kurnell Refinery is important in demonstrating the principal characteristics of an Australian oil refinery. The site contains a rare and a representative collection of oil refining technology of the mid-twentieth century in NSW, as well as supporting infrastructure associated with the original operation*

of the refinery. It continues to operate using a combination of original and updated plant and equipment, including three elements of plant from the original process line (Crude Distillation Unit No. 1, Fluid Catalytic Cracking Unit No. 1, and the Polymerisation Unit) and the original power plant. While operational, the physical evidence of the Kurnell Refinery plant and the knowledge and experience of the staff have the potential to yield information about this technology which is not available from other source. Other plant also illustrate key periods of change within the oil refining industry, including the inception of locally produced crude from new oil fields in Bass Strait in the 1970s, and the more recent introduction of environmental standards to the industry, such as requirements to reduce lead and benzene levels in petrol and sulphur content in diesel. Following closure of the plant, some elements of machinery, equipment, signage or other ephemera may provide an important industrial heritage reference collection, which would contribute to future interpretation and/or understanding of the refining technology used at the site.

The refinery site also retains its original layout and various elements of original supporting infrastructure, including the Kurnell wharf, tank farm, workshop, stores, cafeteria, laboratory, administrative and amenities buildings, and on-site staff housing. Each of these elements have been incrementally modified, upgraded, and in some cases adapted to new uses as part of the ongoing operation of the refinery, and exhibit various levels of integrity. However, the overall plant and supporting infrastructure retains a distinctly modernist character, representative of the technological expertise and optimistic social outlook of the 1950s and the post-WWII era.

Administrative and amenities buildings within the original AOR complex and the later Australian Lubricating Oil Refinery were designed by notable post-WWII architectural firm Bunning and Madden, while a group of six staff houses within the original AOR complex were designed by renowned post-WWII architect Harry Seidler. Together these buildings have aesthetic significance as important examples of mid-twentieth century modernist architectural design and construction in an industrial setting in NSW, and are illustrative of the progressive nature of the Caltex company when the refinery was established. The ALOR cafeteria and amenities buildings also incorporate sculptural panels [by Herbert 'Bert' Flugelman] *with significant aesthetic value, representative of a desire to introduce a human element to the otherwise austere, machine-age character of the modernist buildings. The group of six staff houses provide a rare early example of a Seidler group housing project, designed to ensure modern economies through mass-production.*

The Kurnell Refinery contains a rare collection of technical drawings, photographs, and memorabilia, which document the original design and construction of the refinery; later upgrades, maintenance and repairs to the refinery; products of the refinery; Caltex's social and philanthropic initiatives associated with staff of the refinery and the local community.

The Kurnell Refinery site, and individual work areas within the site, has strong or special associations for current and former employees of the company, and has important social value for the local community. The refinery complex is a prominent industrial landmark within the local area, with tall elements of plant and much of the tank farm clearly visible from the waters of Botany Bay and beyond. These elements, however, detract from the State and National heritage values of the neighbouring Kamay Botany Bay National Park.

The Caltex Kurnell Refinery has State heritage significance and should be considered for inclusion on the State Heritage Register.

The HMS confirms that the Australian Oil Refinery satisfies the criteria for listing on the State Heritage Register, based on is historic, technical and research values, and for its rare and representative elements of oil refining technology and associated engineering archives. However, it should be noted that the place is not currently listed on the SHR, and therefore is not afforded statutory protection as a

State significant heritage item. The HMS also identifies the heritage curtilage of the refinery Site (see Figure 3.1 below).

2.6 Non-Statutory Heritage Registers

2.6.1 National Trust of Australia (NSW)

The National Trust of Australia is a private, not-for-profit organisation committed to conserving Australia's heritage. Listing with the National Trust of Australia does not have statutory authority; however, it does have a role in raising public awareness of heritage issues.

The following place is on the National Trust of Australia (NSW) Register:

Ref	Name	Property Description
681	Botany Bay Entrance Landscape Conservation Area	Comprising on the South Side the extremity of Kurnell Peninsula north of Cape Bailey and on the North side La Perouse Peninsula southward of the general line of Anzac Parade and the southern limit of the residential area near the reservoir and a line through the golf courses to the coast south of Little Bay.

2.6.2 Register of the National Estate

The Register of the National Estate (RNE) was originally established under Section 22 of the Australian Heritage Commission Act 1975 (AHC Act). The RNE is now maintained on a non-statutory basis as a publicly archive.

The following places in the vicinity of the Site are listed on the RNE:

Ref	Name	Address	Significance
3335	Captain Cooks Landing Place Historic Site	Cape Solander Dr, Kurnell, NSW, Australia	Historic
102930	Cape Baily Lighthouse	Sir Joseph Banks Dr, Kurnell, NSW, Australia	Historic

2.6.3 Australian Institute of Architects Register of Significant Architecture in NSW

The NSW Chapter of the Australian Institute of Architects (AIA) has maintained a register of significant architecture in the state since October 1949. From the early 1970s, the focus of listings has been buildings from post 1900.

The following buildings on the Site are listed on the AIA Register of Significant Architecture in NSW:

Ref	Name	Address
4703431	Group Housing (6 houses) now Refinery Offices, designed by Harry Seidler	Solander Street, Kurnell

3 Physical Analysis and Assessment of Impacts

There are four identified historic heritage items or places in the immediate vicinity of the Site. The Site forms part of the locally significant Australian Oil Refinery. The locally significant four wheel drive track (Captain Cook Drive) is closely associated with the north west and south west boundaries of the Site. The locally significant Silver Beach and roadway borders the northern boundary of the Site. The state significant Kamay-Botany Bay National Park and nationally significant Kurnell Peninsula Headland adjoin the eastern boundary of the Site. Other heritage items on the Kurnell Peninsula are at a distance of at least 150 m or more from the Site and would not be affected by the demolition works.

3.1 Australian Oil Refinery

The HMS identifies the heritage curtilage of the Australian Oil Refinery as the property owned and/or managed by Caltex on the Kurnell Peninsula for the operation of the Caltex Oil Refinery (COR), and the former Caltex Lubricating Oil Refinery (CLOR) (Figure 3.1). It includes the Kurnell Wharf and pipeline easements between the wharf and the main refinery site. It includes all the above ground and subsurface elements of the refinery plant and associated infrastructure, including industrial, administrative and amenities buildings across the site. It excludes areas of natural bushland in the southern part of the site and part of the Continental Carbon Pipeline route.

Figure 3.1 Heritage curtilage for the Kurnell Refinery (Source: AM Consulting 2014, Figure 4.1; Aerial imagery: © Esri and its licensors June2013, GeoEye IKONOS 2005).

Prior to development of the Caltex Kurnell Refinery, the local landscape was characterised by freshwater wetlands and sand dunes. The Site today is a relatively flat and open industrial landscape, primarily characterised by:

- Tall columns and chimneys of the Refinery Process Units, concentrated at the centre of the Site;
- Long rows of large, cylindrical, white painted storage tanks, clustered within the Eastern and Western Tank Areas, each surrounded by low bund walls;
- Rectilinear grid of sealed roads, largely as laid out in the 1950s;
- Linear alignment of the Main Pipeway and subsidiary pipeways through the Site;
- Eastern Right of Way (ROW) and Western ROW through Kurnell Village to the north;
- Linear alignment of the Kurnell Wharf, projecting from the Kurnell shoreline into Botany Bay;
- Mid-twentieth century administrative and amenities buildings, constructed in a modernist architectural style, clustered in various locations across the Site;
- Mid-twentieth century industrial workshop and storage buildings; primarily clustered in the centre of the Site;
- Levelled site of the former CLOR plant and tank farm, on the south west side of the Site, and
- Natural bushland, bordering the eastern and southern edges of the Site.

Altogether, the refinery retains much of its original layout and infrastructure, including the Kurnell Wharf, tank farm, workshops, stores, cafeteria, laboratory, administrative and amenities buildings, and on-site staff housing. Each of these elements has been incrementally modified, upgraded, and in some cases adapted to new uses, as part of the ongoing operation of the refinery. However, the overall plant and supporting infrastructure retains a distinctive modernist character, representative of the technological expertise and optimistic social outlook of the 1950s and post-WWII era.

The land surface in general has been extensively disturbed, by the initial land clearance and reclamation works, construction of the refinery and associated sewerage, pipelines, roads and other infrastructure, such that there is unlikely to be any subsurface archaeology extant on the site which pre-dates the history of the refinery. It is therefore unlikely that excavations associated with the demolition works would impact on significant archaeological relics.

3.1.1 Refinery Process Units

The Refinery Process Units are the dominant physical feature of the Site, and have considerable technological value as a rare and representative collection of operational oil refining technology in NSW. Some elements of plant and the main Powerhouse were first installed during the original construction of the refinery in the mid-1950s. Other elements were installed during later periods of expansion and/or in response to changes within the oil refining industry at large, including the inception of locally produced crude oil from new fields in Bass Strait in the 1970s, and more recent environmental and industry standards, including requirements to reduce lead and benzene levels in petrol and sulphur content in diesel. Closure and removal of the plant and the associated Powerhouse would represent a major, irreversible loss of physical fabric and technical information associated with the development of this industry in NSW, and would severely diminish the spatial integrity, representative value, scientific/research value, and overall industrial heritage of the Australian Oil Refinery site. That being said, ongoing maintenance and conservation of the plant in a 'mothballed' state would be prohibitively costly, and may present unacceptable work health and safety (WHS) and environmental hazards. As such retention of the redundant process units on the Site is not a viable option (Refer to Section 3.1.6 Summary, Table 3.2 below, for an outline of the principal elements of plant and equipment across the Site).

The scale and bulk of the Refinery Process Units are such that they tower over other elements of the refinery infrastructure, and are largely responsible for making the refinery complex a prominent industrial landmark within the local area. Many of the tallest elements of plant, including the original Crude Distillation Unit (CDU) No. 1, the Fluid Catalytic Cracking Units (FCCUs), and the present power plant stack are readily identifiable at distance, and can be seen from as far afield as the north side of Botany Bay (See Figure 3.39 below). The flare is particularly prominent during the night hours. All original process units and almost all later process units and associated infrastructure would be removed as part of the demolition works, and the landmark value of the Site would be considerably diminished.

Many Caltex employees have enjoyed extensive on-the-job training, and have been employed at the Kurnell Refinery for their whole working life. For many individuals and the workforce as a whole, the Refinery Process Units are associated with the development of specialist work skills and life histories, and a common understanding of the Caltex brand. Demolition of the Refinery Process Units would have a minor adverse effect on the social values of the Australian Oil Refinery site for current and former refinery employees.

Figure 3.2 View of the Refinery Process Units, from Road 4 towards the southwest, 2012.

Figure 3.3 View of the Refinery Process Units, from Road N towards the northwest, 2013. The plant would be demolished.

Figure 3.4 The Power Plant, 2012. The building and plant would be demolished.

3.1.2 Eastern and Western Tank Areas

The refinery's various storage tanks are concentrated in two main areas:

- Eastern Tank Area, which currently contains intermediate and finished petroleum product tanks; and
- Western Tank Area, which previously contained the crude oil tanks, as well as wastewater, slops, and biotreatment tanks, and is now used to store finished petroleum products. This part of the Site also includes the Waste Water Treatment Plant.

The majority of tanks slated for demolition were installed in the 1950s and early 1960s, during the earliest phases of development of the Site. A smaller number of tanks were installed during later decades. Most tanks have the same basic cylindrical form, constructed of welded steel panels, although some have different floor structures, roof structures, and/or insulation, depending on current use

(Figure 3.5-Figure 3.6). The tanks have been regularly maintained and/or upgraded over the life of the refinery, including the replacement of steel panels as required and conversion to new uses. The tanks are all surrounded by bund walls, designed to contain spillage from the tanks. In some cases, the interior of the bunded area is also lined to prevent leakage.

There are currently 82 cylindrical tanks and six special purpose (Refinery Grade Propylene [RGP] and Butane) tanks in the Eastern Tank Area. Based on the current proposal, up to 64 out of a possible 77 tanks identified on Figure 1.1 in the Eastern Tank Area would be demolished or removed from the Site: these would be primarily the small and medium sized tanks. Three additional special purpose tanks would also be demolished. Eight tanks would definitely be excluded from the works as shown on Figure 1.1. Based on historic aerial photographs of the Site, this means that a minimum of six extant original tanks would be retained in the Eastern Tank Area. These include three of the four large floating roof tanks along the northern boundary of the Site, and three small cone roof tanks to the west of the Oil Movements Centre (OMC), all built on the site by 1955 and original to the first development of the refinery. One large floating roof tank between Road B and the Main Pipeway, constructed between 1955 and 1961, would also be retained. It is likely that a small number of other early or original tanks would also be retained in the Eastern Tank Area, although it is not possible to specify which tanks these would be at this stage.

Figure 3.5 View of the Eastern Tank Farm, along Road 3 towards the south, 2012.

Figure 3.6 View of four large floating roof tanks along the northern boundary of the Site (right), in the Eastern Tank Area, 2012. Three of these tanks were constructed in approximately 1955 and are original to the Site; the tank indicated with a red arrow has since been replaced with a similar tank in the same location. These tanks would be retained. One large floating roof tank on the south side of Road B (left, yellow arrow), constructed between 1955 and 1961, would also be retained.

Approximately 15 out of 25 tanks in the Western Tank Area would also be demolished or removed from the Site: this includes the majority of early or original tanks in this area, including all small tanks and four large tanks (Figure 3.7-Figure 3.9). Ten tanks would definitely be excluded from the demolition works (refer to Figure 1.1). Based on historic aerial photographs of the Site, this means that a minimum of three extant early tanks would be retained in the Western Tank Area. These three large cone roof tanks are located between Road O and Road P and were constructed between 1955 and 1961. The other tanks to be retained in the Western Tank Area date to later periods of the Site's development, between 1970 and 2010.

Figure 3.7 View of the Western Tank Area from Road D, 2012. The former Yard Office South is in front.

Figure 3.8 View of six small tanks in the Western Tank Area, 2012. These tanks, installed in the mid-1950s and early 1960s, would be demolished.

Figure 3.9 View of three LPG tanks on the north side of Road L, 2012. These tanks, installed in the 1960s, would be demolished.

The number of early and original tanks, and the functional range of tanks proposed to be demolished is likely have a greater adverse impact on the physical fabric, technical significance and representative value of the Australian Oil Refinery site than previously assessed in the original HIA for SSD 5544. The tank layout in the Eastern Tank Area would likely be substantially different from the layout originally designed for the refinery. However, retention and ongoing use of at least three large c1955 (6,300,000 gallon) tanks in the Eastern Tank Area along the northern boundary of the Site, which feature in early photographs of the refinery by Max Dupain and Kerry Dundas, three c1955 tanks to the west of the OMC, one pre-1961 tank between Road B and the Main Pipeway, and three large pre-1961 tanks between Road O and Road P in the Western Tank Area are consistent with the industrial history of the Site and would mean that the tank farms would continue to have some representative value. The individual rarity and representative value of the remaining original / early tanks would also increase.

3.1.3 Pipeways/Pipelines

The long linear pipeline easements act as spatial dividers within the Site, creating a series of discrete precincts with distinct functions and appearances (Figure 3.10). The pipeways themselves contain a complex array of pipelines, designed to transfer crude oil, cooling water, and finished products to, from, and around the Site. The Site is connected to the Kurnell Wharf, Banksmeadow Terminal and Sydney Airport by underground and underwater pipelines, which initially pass below the grassed areas of the Eastern ROWs through Kurnell Village to the north (Figure 3.11-Figure 3.12). A cooling water outlet pipeline passes from the Site through the Western ROW to Botany Bay. Movement of oil and water through the pipelines is controlled by various pumps and valves. The fuel pipelines are regulated from the Oil Movements Centre on the west side of the Main Pipeway.

Figure 3.10 View along the Main Pipeway (Pipeline Easement 1), towards the south, dividing the Eastern Tank Area from the Refinery Process Units, 2012.

Figure 3.11 View of Eastern ROW from Prince Charles Parade, 2011.

Figure 3.12 View of Western ROW from Prince Charles Parade, 2011.

A number of pre-existing pipelines would become redundant as a result of the conversion, and would be removed from the Site as part of the demolition works. This includes eight underground pipelines:

- The cooling water outlet running through the Site and the Western ROW, into Botany Bay (it would be removed up to 20 m into Botany Bay with the remainder left in situ);
- Two cooling water intakes within the Eastern ROW, connecting to the Kurnell Wharf;
- Four product lines within the Eastern ROW, connecting to the Kurnell Wharf; and

- Continental Carbon Pipeline, running south from the main Site.

The two cooling water intake pipelines would also be removed from the west side of the Kurnell Wharf, between Prince Charles Parade and the cooling water pumphouse mid-way along the wharf (Figure 3.13). These concrete pipes are supported by round steel brackets attached to cantilever concrete beams along the wharf. The steel brackets, which are feature in historic photographs of the construction of the wharf, would also be removed (Figure 3.14). In addition, five pumps would be removed from the interior of the pumphouse (Figure 3.15-Figure 3.16). Pumps 13G-1, 2 and 3 were installed in the pumphouse between 1953 and 1955 as part of the original construction of the wharf, along with the No. 1 saltwater header. Provision was also made for two future pumps and the No. 2 salt water header, which were installed in 1959 (13G-4) and in 1961 (13G-5). The pumps and valves housed on the wharf would likely deteriorate quickly after they stop being used, particularly given the salt water environment of the pumphouse and existing evidence of corrosion on steel components of the pumphouse infrastructure.

Figure 3.13 Cooling water intake pipes along the west side of the Kurnell Wharf, 2012.

Figure 3.14 AOR wharf pipeline construction, showing steel pipe brackets, 1954; photo by Jack Hickson (Source: NSW State Library, Australian Photographic Agency – 42955).

Figure 3.15 Cooling water pumphouse on the Kurnell Wharf, 2014 (Photo supplied by Caltex).

Figure 3.16 Interior of the cooling water pumphouse, 2014 (Photo supplied by Caltex).

Removal of various original pipelines and associated pumps and valves, including excavation and re-covering of existing pipeline trenches within the Eastern and Western ROWs, Silver Beach and associated road reserves, and removal of original pipelines and pumps from the Kurnell Wharf would have an irreversible adverse impact on the physical fabric, technical significance and representative value of the Australian Oil Refinery site. However, retention and ongoing use of the original Pipeways

within the Site and existing pipelines that run through the Eastern ROW, as previously documented for the conversion works, would be consistent with the industrial history of the place and would mean that the remaining Pipeways / Pipelines would continue to have some representative value. Retention of the original cooling water pumphouse would also provide some physical evidence of the original design and function of the wharf and as such supports its representative value. The Continental Carbon Pipeline is partially outside the heritage curtilage of the Australian Oil Refinery site and removal of this pipeline is unlikely to impact on the heritage values of the Site.

3.1.4 Buildings

There are approximately 60 industrial and administrative buildings scattered across the Site, although office workers are now concentrated in a small administrative precinct at the northern boundary of the Site. The administrative precinct would be maintained in use following the conversion. However, more than half of the remaining building stock across the Site would be removed, including the majority of high and moderately significant original and early buildings associated with the operation of the Refinery Process Units. Many of the extant buildings associated with the administration and operation of the former CLOR site, at the south east corner of the Site, would also be demolished. Caltex have indicated that fewer buildings would be required to accommodate the reduction in staff numbers and operational requirements of the terminal, and that demolition of redundant buildings is preferred to facilitate safe operation of the terminal. Some buildings would be adapted to new uses within the terminal. (Refer to Section 3.1.6 Summary, Table 3.3, for an outline of the principal buildings across the Site.)

Several original and early administrative buildings/spaces are extant at the centre of the Site, largely between the Refinery Process Units and the Western Tank Area, alongside original amenities, workshop and storage buildings. Former office buildings within the Site have generally been abandoned within the past decade and are in various stages of dereliction, and would be removed as part of the demolition works (Figure 3.17). These include the original Yard Office North and early Yard Office South (Figure 3.18). Original and early control rooms associated with the operation of individual plant across the Site are also commonly abandoned, or used only for their amenities, with control room functions now largely concentrated in a single modern blast-proof building (Figure 3.19). All but two of the older control rooms would be demolished. Demolition of original and early administrative and control room buildings would have a major, irreversible impact on the physical fabric, historic integrity, spatial integrity and representative value of the Australian Oil Refinery site. However, as long as these buildings have no use, their condition and structural integrity would continue to deteriorate and they may present a WHS risk to the Caltex workforce. Key issues associated with ongoing maintenance of the derelict buildings, and some older buildings and structures across the Site, is the ongoing degradation of asbestos in various forms and fabrics, and structural cracking of early masonry buildings, possibly associated with inadequate foundations.

The retention and ongoing use of the OMC and adaptive reuse of the Plant 1/Plant 33 Control Room building, which were likely constructed in the 1950s as part of the original refinery complex, would help to preserve some authentic physical evidence of the industrial history of the refinery on the Site, and as such would have some ongoing technical and representative value. Retention and adaptive reuse of the c1989 Central Control Building (CCB/Bunker) would also preserve evidence of more recent technological change on the Site.

Figure 3.17 View of abandoned workshop and administrative buildings in the centre of the Site, 2012, including the Old Training Centre (Old Garage, right), Technical Building (centre) and Yard Office North (left), 2012. These buildings would be demolished.

Figure 3.18 View of Yard Office South, constructed in c1970 to the west side of the Refinery Process Units, 2012. This building is currently abandoned and would be demolished.

Figure 3.19 Plant 36 Control Room and associated Motor Control Centre, 2012. This building was constructed in c1961 in association with the Alkylation Plant. All but one early control room on the Site would be demolished.

Some original and early workshop, storage, and amenities buildings within the Site are maintained in use, and would continue to be used in the terminal. The Main Workshop is a very large, imposing industrial building with a clerestory roof at the centre of the Site (Figure 3.20). It was originally built in the early 1950s by EB Badger & Sons (Great Britain) Ltd to support the construction of the refinery, incorporating areas for boilermakers, welding & fabricating, sheet metal shop, valve repairs, machine shop, instrument making shop, electrical shop, tool room and foreman's offices. This building continues to be used as the refinery's main workshop. It houses a large interior overhead 15 ton travelling crane, and numerous other items of original machinery, signage, and equipment, as well as original technical drawings of the plant and equipment (Figure 3.21). The neighbouring Storehouse is another very large 1950s industrial building which remains in use, and although modified, still provides good physical evidence of the supporting infrastructure of the original refinery complex. The proposed retention and adaptation of the Main Workshop and Storehouse to new uses within the terminal would help to preserve some authentic physical evidence of the industrial history of the site, and as such would have some ongoing technical and representative value. The potential retention and display of some items of equipment, machinery or signage from the Main Workshop would also help to interpret the history of the Site to present and future generations. That being said, many of the significant neighbouring workshop and amenities buildings, including the original Cafeteria, Old Laboratory, the Training Centre (Old Garage), and Reliability (Old Inspection) Building are to be demolished, which will have a major, irreversible adverse impact on the physical fabric, historic integrity, spatial integrity and representative value of the Australian Oil Refinery site (Figure 3.22-Figure 3.23).

Figure 3.20 The Main Workshop building, with the Storehouse beyond (right), 2012. These buildings would be retained and adapted to new uses.

Figure 3.21 Interior of the Main Workshop, 2012.

Figure 3.22 View of the original Cafeteria, 2012, designed by Bunning and Madden. Caltex has been unable to find a new use for this building and it would be demolished.

Figure 3.23 View of the Reliability (Old Inspection) Building (centre) and J Store (right), 2012. These buildings would be demolished.

The majority of original and early administrative, laboratory, and amenities buildings across the Site are characterised by the post-WWII modernist style of architecture, sometimes described as the International Style, with predominantly plain, rectilinear shapes, flat roofs, face brick walls, extensive use of glass, and open-plan interior layouts. Decorative relief is provided by cantilever awnings at entrance ways, patterned brickwork screen walls, and limited use of colour accents. Overall, the refinery buildings have important aesthetic significance as a major grouping of mid-twentieth century modernist architecture in an industrial context, with most designed by the noted Australian architectural firm Bunning and Madden. Together, the modernist buildings are also illustrative of the progressive nature of the Caltex company when the refinery was established.

The Bunning and Madden firm worked with various well-known Australian sculptors of the mid-twentieth century on their architectural projects, including Tom Bass, Douglas Annand and Herbert

(Bert) Flugelman. At the former CLOR site, the Cafeteria (PR Room) and Maintenance Services (Change Rooms) buildings incorporate a complementary pair of high relief sculptural panels by Bert Flugelman, with significant aesthetic and social value, representative of a desire to introduce a human element to the otherwise austere, machine-age character of the modernist buildings (Figure 3.24). The identity of the sculptor of the panels was unknown until recently, and as such the contribution of the panels to these two buildings was noted in the HMS as being the work of an unknown sculptor. The high relief sand panels cast in concrete, executed in 1962, represent Flugelman's first sculptural commission and as such have considerable historic importance as early examples of his public work (University of Wollongong 2009). These panels should be retained.

Figure 3.24 Former CLOR Maintenance Services building (Change Rooms), 2012; designed by Bunning and Madden and built c1961-1963 for ALOR. The sculptural panel (right) by Herbert (Bert) Flugelman is an important original element of the architectural design. This building is to be demolished.

The proposed demolition of the original AOR Cafeteria, Old Training Centre (Old Garage), Yard Office North, Area 2 Maintenance, Old Laboratory, and the former CLOR Maintenance Services building (Change Rooms) would represent a major loss of significant physical evidence of Bunning and Madden's architectural design work at the refinery, and would have a major adverse impact on the historic integrity and aesthetic value of the Site's overall grouping of modernist architecture. The proposed retention and ongoing use of four relatively well-preserved Bunning and Madden buildings outside or at the periphery of the industrialised areas of the Site would mean that the Site continues to have some aesthetic and representative value with respect to this firm's design work, namely the Main Office, Main Change Rooms, and the Firehouse in the north central part of the Site, and the former CLOR Cafeteria (PR Room) at the south east corner of the Site. The rarity and representative value of these individual buildings would also likely increase as a result of the demolition of other modernist and original / early Bunning and Madden designed buildings across the site. The CLOR Laboratory building would also be preserved; however, this building has been highly modified by previous refurbishments and is considered to have less overall integrity and representative value than some of the other Bunning and Madden buildings across the Site.

Figure 3.25 The Main Change Rooms (Amenities Building), 2012; designed by Bunning and Madden and built in 1954 for AOR. This building would be retained in use as part of the terminal.

The modernist style is also evident in an original group of six workers houses near the northern periphery of the Site. These houses were designed by Harry Seidler, an early and well-known proponent of modernist architectural theory and design in Australia. They are now located at the heart of the northern administrative precinct and the interiors have been converted to office uses, but overall the buildings retain much of their original form and detailing. These buildings have aesthetic significance as a local representative example of Seidler's early work in Australia, and more broadly as a rare early example of a Seidler group housing project. These houses are excluded from the demolition works and their retention in close proximity to the original Main Office and Main Change rooms would mean that a small cluster of modernist buildings from the original 1950s refinery complex would be preserved on the Site as a cohesive grouping, which would provide good evidence of the early aesthetic character of the Site. The representative value of the houses would also likely increase as a result of the demolition of other original modernist buildings across the Site.

Figure 3.26 View of Group of 6 Houses, 2012; designed by Harry Seidler and built in 1955 as staff housing; now used as offices and Credit Union. These buildings would be retained and adapted to new uses.

The modernist style of the original buildings has been reproduced in many of the later twentieth century buildings across the Site. However, a scattering of twenty-first century demountable office buildings within the northern administrative precinct is an exception to the rule. Although the overall functionalist styling of the recent buildings is not out-of-character with the primary industrial function of the Site, the close proximity of these buildings to the Main Office and the group of six original houses, detracts from the clean modernist aesthetic of the original administrative and domestic structures. The bulk and overall massing of the new buildings at the northern edge of the administrative precinct in particular detracts from the modest scale and domestic character of the houses. The proposed removal of some of the demountable buildings from this precinct would help to reduce these visual impacts and otherwise enhance the landscape setting of the precinct and conserve its original aesthetic character.

There is some potential that the demolition of the Refinery Process Units and other major structures across the Site could indirectly affect the structural integrity of significant heritage buildings that are to be retained across the Site through the effects of vibrations during demolition works. In particular older masonry buildings may be at risk of damage through increased vibrations. As noted above, there is already some evidence of structural cracking of masonry buildings in the central part of the Site. Care should therefore be taken to monitor the effects of vibrations on the remaining buildings, and implement measures to protect these buildings from adverse impacts during demolition works (See Section 5.1.3 below).

3.1.5 Former CLOR Site

As the former CLOR plant and tank farm at the southwest corner of the Site had already been demolished, it was not addressed in the previous HIA for the conversion works. The area is now a large levelled open space devoid of vegetation or other features (Figure 3.27). As noted in Section 3.1.4 Buildings above, some early or original administrative, amenities and workshop buildings are extant around the western periphery of the CLOR precinct, and form a small discrete sub-precinct publicly accessible from Sir Joseph Banks Drive (Figure 3.28, and see Figure 3.25 above). Demolition of the remaining CLOR workshop buildings, including the Bunning and Madden designed Maintenance Services building (Change Rooms) would have a major adverse impact on the remaining physical fabric, historic integrity and aesthetic value of this sub-precinct.

The Maintenance Services Building (Change Rooms) is one of the most intact Bunning and Madden buildings extant on the site, with a high level of design integrity, and along with the neighbouring PR Room retains one of the high relief cast concrete sculptural panels created by Flugelman along its street-facing façade, which is part of the original building design.

The CLOR buildings would be located far from the active industrialised area, have good opportunities for public access, and have good potential for adaptive reuse. As noted in the HMS, although the former CLOR Maintenance Services building (Change Rooms) has been identified for demolition, options to retain and adaptively re-use this highly significant representative example of a Bunning and Madden designed building should be considered. Should it not be possible to retain the building, the sculptural panel should be retained and conserved as an example of the early work of the famous Australian sculptor, Bert Flugelman.

Figure 3.27 Area of former CLOR plant, 2012. View from Road 17 towards the northeast.

Figure 3.28 Former CLOR Workshop, 2012. This workshop was constructed c1961-1963 for ALOR; it would now be demolished.

3.1.6 Summary of Individual Elements

Table 3.2 and Table 3.3 summarise the principal elements of plant and buildings extant on the Site, including approximate dates of construction and change, their relative heritage significance, and the proposed scope of demolition works. The likely impact of the demolition works on the heritage significance of individual buildings is also identified. It is noted that, in a few cases, the scope of works is different to that provided by Caltex during preparation of the previous HIA for the conversion works (AMBS 2013) or the HMS (AM Consulting 2014).

The grading of relative heritage significance is based on the assessment of significance undertaken for the HMS. Table 3.1 describes the terminology used to assess the relative contribution of individual elements to the overall significance of a heritage place (NSW Heritage Office 2001).

Table 3.1 Terminology used for grading of significance

Grading	Justification	Status
Exceptional	Rare or outstanding element directly contributing to an item's local and State significance	Fulfils criteria for local or State listing
High	High degree of original fabric. Demonstrates a key element of the item's significance. Alterations do not detract from significance	Fulfils criteria for local or State listing
Moderate	Altered or modified elements. Elements with little heritage value, but which contribute to the overall significance of the item	Fulfils criteria for local or State listing
Little	Alterations detract from significance. Difficult to interpret	Does not fulfil criteria for local or State listing
Intrusive	Damaging to the item's heritage significance	Does not fulfil criteria for local or State listing

Plant and Equipment

Table 3.2 Principal elements of plant and equipment extant on the Kurnell Refinery Site in 2014, their relative heritage significance grading, proposed action, and potential impacts. It should be noted that the heritage significance grading of elements to be retained may change following completion of the demolition works. (In a few cases, indicated by **, the scope of works is different to that provided by Caltex for preparation of the previous HIA or HMS). Most elements of plant can be cross-referenced against a 2012 Plan of the refinery, which forms Appendix A to the HMS.

Element	Approximate Dates of Construction / Modification	Key Function / Process	Significance Grading & Integrity	Proposed Action	Potential Impacts
Crude Distillation Unit (CDU) No. 1 (Area 1: Plant 2) / Vacuum Distillation Unit (VDU) (Area 1: Plant 2) 	• c 1954-1955 – CDU No. 1 constructed • btw 1970-1978 – various modifications	• CDU separates various components or fractions of oil as defined by their boiling range. LPG, petrol, jet fuel and diesel have different boiling points • Top product/final output is generally jet fuel and diesel • Bottom product may be further processed or used to make road paving bitumen	• High significance / Moderate significance • CDU original plant. Alterations do not detract	• To be demolished	• Major adverse impact on physical fabric, historic, technical, scientific/research, rarity and representative values of the Australian Oil Refinery • Major adverse impact on the spatial integrity and of the Australian Oil Refinery site, including original refinery layout, and its landmark values • Minor adverse impact on social value of the Australian Oil Refinery

Element	Approximate Dates of Construction / Modification	Key Function / Process	Significance Grading & Integrity	Proposed Action	Potential Impacts
Mercaptan Oxidation Unit (Merox) (Area 1: Plant 49) 	• btw 1970-1978 – constructed	• Extracts mercaptans from jet fuel. Utilises a catalyst to convert mercaptans to liquid hydrocarbon disulfides	• Moderate significance	• Not included in demolition works**	• Neutral
Power Plant (Area 1: Plant 11) 	• c 1954-1955 – constructed with 2 boilers in boiler house + 2 chimney stacks • btw 1956-1961 – boiler house extended to west, third boiler & stack added • btw 1961-1970 – boiler house extended, fourth boiler & stack added • btw 1978-1984 – 4 stacks removed, replaced with single large chimney • btw 1998-2000 – control panels replaced	• Produces steam, compressed air, and electricity, for use in oil processing and for operating plant and equipment	• High significance • Original plant. Alterations do not detract	• To be demolished	• Major adverse impact on physical fabric, historic, technical, scientific/research, rarity and representative values of the Australian Oil Refinery • Major adverse impact on the spatial integrity and of the Australian Oil Refinery site, including original refinery layout, and its landmark values • Minor adverse impact on social value of the Australian Oil Refinery

Element	Approximate Dates of Construction / Modification	Key Function / Process	Significance Grading & Integrity	Proposed Action	Potential Impacts
Fluid Catalytic Cracking Unit (FCCU) No. 1 (Area 2: Plant 4) 	• c 1954-1955 – FCCU No. 1 constructed • Shutdown at end 2013, mothballed until plant closure in 2014	• Processes heavy weight crude oil from atmospheric residence at base of CDU • Output is primarily petrol. Other products are a diesel blendstock, which is fed to the DHTU, and LPG, which is fed to the Polymerisation and Alkylation units	• High significance • Original plant. Alterations do not detract	• To be demolished	• Major adverse impact on physical fabric, historic, technical, scientific/research, rarity and representative values of the Australian Oil Refinery • Major adverse impact on the spatial integrity and of the Australian Oil Refinery site, including original refinery layout, and its landmark values • Minor adverse impact on social value of the Australian Oil Refinery
FCCU No. 2 (Area 2: Plant 34) 	• c 1961 – FCCU No. 2 constructed	• As per FCCU No. 1	• High significance • Early plant. Alterations do not detract	• To be demolished	• Major adverse impact on physical fabric, historic, technical, scientific/research, rarity and representative values of the Australian Oil Refinery • Major adverse impact on the spatial integrity and landmark values of the Australian Oil Refinery site • Minor adverse impact on social value of the Australian Oil Refinery

Element	Approximate Dates of Construction / Modification	Key Function / Process	Significance Grading & Integrity	Proposed Action	Potential Impacts
Polymerisation (Area 2: Plant 5) 	• c 1954-1955 – constructed	• Processes LPG components from the FCCU • Output is mainly C8 and C12 olefinic hydrocarbons, which are high octane petrol blendstocks • Operates in conjunction with Alkylation (Plant 36)	• High significance • Original plant. Alterations do not detract	• To be demolished	• Major adverse impact on physical fabric, historic, technical, scientific/research, rarity and representative values of the Australian Oil Refinery • Major adverse impact on the spatial integrity and of the Australian Oil Refinery site, including original refinery layout • Minor adverse impact on social value of the Australian Oil Refinery
Alkylation (Area 2: Plant 36) 	• c 1961 – constructed	• Processes LPG components from the FCCU, converting the light gas into heavier, more valuable liquid fuels • Output is blend of iso-octane isomers, a high octane petrol blendstock • Sulphuric acid is recycled. • Operates in conjunction with Polymerisation (Plant 5)	• Moderate significance	• To be demolished	• Major adverse impact on physical fabric, historic, technical, scientific/research, rarity and representative values of the Australian Oil Refinery • Major adverse impact on the spatial integrity and landmark values of the Australian Oil Refinery site • Minor adverse impact on social value of the Australian Oil Refinery

Element	Approximate Dates of Construction / Modification	Key Function / Process	Significance Grading & Integrity	Proposed Action	Potential Impacts
Flare (Area 2: Plant 9) 	• btw 1961-1970 – 2 flares constructed • btw 2010-2011 – 1 flare demolished	• Used to burn off excess gas from refinery processes	• Moderate significance	• To be demolished	• Major adverse impact on physical fabric, historic, technical, scientific/research and representative values of the Australian Oil Refinery • Major adverse impact on the landmark values of the Australian Oil Refinery site
Catalytic Reforming Unit (Platformer) (Area 3: Plant 35) 	• btw 1961-1964 – constructed • btw 1984-1994 – furnace modified/replaced	• Takes heavy-straight-run naptha from the CDU and utilises a catalyst containing rhenium and platinum to reform it into a high octane petrol blendstock • By-product is hydrogen, used in hydrotreaters or burnt in refinery furnaces	• High significance • Early plant. Alterations do not detract	• To be demolished	• Major adverse impact on physical fabric, historic, technical, scientific/research, rarity and representative values of the Australian Oil Refinery • Major adverse impact on the spatial integrity and landmark values of the Australian Oil Refinery site • Minor adverse impact on social value of the Australian Oil Refinery

Element	Approximate Dates of Construction / Modification	Key Function / Process	Significance Grading & Integrity	Proposed Action	Potential Impacts
CDU No. 3 (Area 3: Plant 45.1) 	• btw 1970-1973 – constructed • btw 2001-2006 – modifications	• Designed to process light crude oils from Bass Strait. (See also CDU No. 1 above) • Output is primarily jet fuel, diesel and heating oil	• Moderate significance	• To be demolished	• Major adverse impact on physical fabric, historic, technical, scientific/research, rarity and representative values of the Australian Oil Refinery • Major adverse impact on the spatial integrity and landmark values of the Australian Oil Refinery site • Minor adverse impact on social value of the Australian Oil Refinery
Hydrotreating Unit (HTU) / Rheniforming (Area 3: Unit 45.2/3) 	• btw 1970-1973 – constructed	• Stabilises and desulphurises distillates from the VDU and waxes from the SDU • Ensures that finished lubricants and waxes have good colour and thermal stability	• Moderate significance	• To be demolished	• Major adverse impact on physical fabric, historic, technical, scientific/research, rarity and representative values of the Australian Oil Refinery • Major adverse impact on the spatial integrity and landmark values of the Australian Oil Refinery site • Minor adverse impact on social value of the Australian Oil Refinery

Element	Approximate Dates of Construction / Modification	Key Function / Process	Significance Grading & Integrity	Proposed Action	Potential Impacts
No. 1 and No. 2 Sulphur Recovery Units (SRU) / Amine (Area 3: Plant 45.4 and 45.8) 	• btw 1970-1973 constructed • btw 1994-2001 – No. 1 SRU was shutdown and partially demolished	• Converts hydrogen sulphide (H_2S) produced in cracking and hydrotreating processes into elemental sulphur • Sulphur is collected as molten liquid and sold as a product	• Moderate significance	• To be demolished	• Major adverse impact on physical fabric, historic, technical, scientific/research, rarity and representative values of the Australian Oil Refinery • Major adverse impact on the spatial integrity of the Australian Oil Refinery site • Minor adverse impact on social value of the Australian Oil Refinery
Diesel Hydrotreating Unit (DHTU) (Area 3: Plant 45.6) 	• btw 1970-1973 – constructed • btw 2004-2006 – upgraded	• Stabilises and desulphurises diesel from the CDU and light cycle gas oil from the FCC to meet Australian diesel specifications	• Moderate significance	• To be demolished	• Major adverse impact on physical fabric, historic, technical, scientific/research, rarity and representative values of the Australian Oil Refinery • Major adverse impact on the spatial integrity of the Australian Oil Refinery site • Minor adverse impact on social value of the Australian Oil Refinery

Element	Approximate Dates of Construction / Modification	Key Function / Process	Significance Grading & Integrity	Proposed Action	Potential Impacts
Treating and Splitting Unit (TSU) (Area 3: Plant 45.7) 	• btw 1970-1973 – constructed	• Desulphurises and separates the propane and butane streams obtained from the CDUs and other units in the refinery. • Products sold as LPG or blended into petrol	• Moderate significance	• To be demolished	• Major adverse impact on physical fabric, historic, technical, scientific/research, rarity and representative values of the Australian Oil Refinery • Major adverse impact on the spatial integrity and landmark values of the Australian Oil Refinery site • Minor adverse impact on social value of the Australian Oil Refinery
IsoSiv (Area 3: 45.9) 	• btw 1978-1981 – constructed	• Takes light-straight-run naptha from the CDU and separates the branched chain isomers from the normal straight chain hydrocarbons by means of adsorption. • The branched chain isomers are a high octane product, which is blended into petrol. • The straight chain hydrocarbon product is low octane product, which can be used as a petrochemical feedstock.	• Moderate significance	• To be demolished	• Major adverse impact on physical fabric, historic, technical, scientific/research, rarity and representative values of the Australian Oil Refinery • Major adverse impact on the spatial integrity and landmark values of the Australian Oil Refinery site • Minor adverse impact on social value of the Australian Oil Refinery

Element	Approximate Dates of Construction / Modification	Key Function / Process	Significance Grading & Integrity	Proposed Action	Potential Impacts
Benzene Saturation Unit (BENSAT) (Area 3: Plant 61) 	• btw 2004-2006 – constructed	• Reduces bezene levels in high octane petrol feedstock from the CRUs to meet Australian specifications. Hydrogenates any benzene present and converts it to cyclohexane.	• Moderate significance	• To be demolished	• Major adverse impact on physical fabric, historic, technical, scientific/research, rarity and representative values of the Australian Oil Refinery • Major adverse impact on the spatial integrity and landmark values of the Australian Oil Refinery site • Minor adverse impact on social value of the Australian Oil Refinery
Fire Fighting Training Area (Area 4: Road Q) 	• c 1994 – constructed	• Structures and tanks used for fire fighting simulation and training.	• Moderate significance	• Not included in demolition works	• Neutral

Element	Approximate Dates of Construction / Modification	Key Function / Process	Significance Grading & Integrity	Proposed Action	Potential Impacts
Eastern Tank Area 	• c 1954-1955 – 56 tanks constructed, including 4 tanks along north boundary • btw 1956-1961– Eastern Tank Area expanded to east • btw 1961-1963 – Eastern Tank Area expanded to south • btw 1970-1978 – Eastern Tank Area expanded to south	• Tank storage for intermediate and finished petroleum products, including butane, Refinery Grade Propylene, CAT naphtha, ISO naptha, sweet reduced crude oil, petrol, diesel, and jet fuel. • Approximately 82 cylindrical tanks in a range of sizes; fixed or floating roofs, up- or down-cone floors, additional insulation or not, depending on use. • Four spherical butane tanks. • Two bullet shaped RGP tanks.	• High significance • Original tank area. Alterations do not detract	• 64 tanks, including majority of small and medium sized tanks, to be demolished** • Butane and RGP tanks to be demolished** • 8 tanks not included in demolition works	• Major adverse impact on physical fabric, historic, technical, and scientific / research, and representative values of the Australian Oil Refinery. • Major adverse impact on the spatial integrity of the Australian Oil Refinery site, including original tanks layout • Retention of at least 6 original and 1 other early pre-1961 tank would mitigate impacts on representative value • Rarity and representative value of remaining individual original / early tanks would increase as result of demolition of other similar tanks across the Site

Element	Approximate Dates of Construction / Modification	Key Function / Process	Significance Grading & Integrity	Proposed Action	Potential Impacts
Western Tank Area 	• c 1961 – 5 large crude oil tanks constructed, along western boundary • btw 1961-1970 – Western Tank Area expanded to south • btw 1970-1978– Western Tank Area expanded to south • c 2006 – Western Tank Area expanded	• Tank storage. Large tanks originally used for crude oil, now for finished fuel products. Also slops, waste water and LPG. • 10 large cylindrical tanks, 12 small-medium cylindrical tanks, welded steel panels, painted white; fixed or floating roofs, up- or down-cone floors, additional insulation or not, depending on use. • Three bullet shaped LPG tanks.	• High significance • Early tank area. Alterations do not detract	• Approximately 15 tanks to be demolished • 10 tanks not included in demolition works	• Major adverse impact on physical fabric, historic, technical, and scientific / research, rarity and representative values of the Australian Oil Refinery • Minor adverse impact on the spatial integrity of the Australian Oil Refinery site, including early tank layout • Retention of 3 early pre-1961 tanks would mitigate impact on representative value • Rarity and representative value of remaining individual original / early tanks would increase as result of demolition of other similar tanks across the site
Wastewater Treatment Plant (WWTP) 	• c 1954-1955 – separating tanks constructed • c 1956-1961 – expanded • c 1984-1994 – modified	• Contaminated stormwater and water from tank bunds and refinery process units is captured and treated before discharge into the ocean via an ocean outfall at Yena Gap. The oily water treatment incorporates physical, chemical, and biological processes. • (Domestic wastewater is discharged in the Sydney Water sewerage system).	• High significance • Original. Alterations do not detract	• Not included in demolition works	• Neutral

Element	Approximate Dates of Construction / Modification	Key Function / Process	Significance Grading & Integrity	Proposed Action	Potential Impacts
Pipeways / Pipelines 	• c 1954-1955 – Easements for Main Pipeway, Pipeway A and Pipe Track A established, and associated pipelines constructed • c 1961-1963 – Pipeway B, and Pipe Tracks 1,2 and 3 constructed	• Transfer crude oil and cooling water from the Kurnell Wharf to storage tanks on the site, between storage tanks and process units within the site, and finished products from storage tanks to the wharf, and off-Site to the Banksmeadow Terminal and Sydney Airport. Movement of oil through pipelines controlled by various pumps and valves. • The original pipeways consist of concrete lined channels, set below the surface of the roadways. These are susceptible to flooding in high rainfall events. New pipelines are now installed above the ground surface, along pipe racks in line with the existing pipeways. • Product transfer pumps in various locations, including Oil Movements Centre (OMC – see below).	• High significance • Original and early pipe tracks. Alterations do not detract	• Majority of pre-existing line systems, including 8 underground pipelines, to be demolished • Some line systems not included in demolition works	• Major adverse impact on physical fabric, historic, technical, scientific/research, rarity and representative values of the Australian Oil Refinery • Neutral impact on the spatial integrity of the Australian Oil Refinery site • Retention of some of the original Pipeways within the Site and some product pipelines within the Eastern ROW would mitigate impacts on representative value

Element	Approximate Dates of Construction / Modification	Key Function / Process	Significance Grading & Integrity	Proposed Action	Potential Impacts
Loading Racks (Off Solander Street)	• Unknown	• (Not inspected)	• Moderate significance	• To be demolished	• Major adverse impact on physical fabric, historic, technical, scientific/research, rarity and representative values of the Australian Oil Refinery • Major adverse impact on the spatial integrity of the Australian Oil Refinery site
Kurnell Wharf (Off Prince Charles Parade) 	• c1954-1955 – wharf constructed, including cooling water pumphouse, shipping office, breasting island capable of berthing two large tankers, and a mooring and turning dolphin; designed by Christiani & Nielson, London • 1959 & 1961 – 2 pumps added to pumphouse • mid-1960s – loading arms introduced to the fixed berths, reducing the need for manual handling • 1994 – fenders on fixed berths upgraded • 2000 –office building extended • 2005 – loading arms on Fixed Berth 2 replaced • 2009-2010 – timber launch jetty replaced	• Large ships deliver crude oil and other petroleum products to the wharf, where they are transferred by pipeline to the main refinery Site. • Pumphouse with 5 electric pumps supports transfer of salt water to the main Site for cooling water for the refinery process units.	• High significance • Original wharf structure. Alterations do not detract.	• Two cooling water inlet pipes running alongside wharf and the steel brackets holding them to the concrete pylons to be demolished** • Three original pumps and two early pumps to be removed from the cooling water pumphouse**	• Major adverse impact on physical fabric, historic, technical, scientific/research, rarity and representative values of the Australian Oil Refinery • Retention of the cooling water pumphouse structure beside the wharf would mitigate impacts on representative value

Buildings

Table 3.3 Principal buildings on the Kurnell Refinery Site in 2014, their relative heritage significance grading, proposed action, and potential impacts. It should be noted that the heritage significance grading of elements to be retained may change following completion of the demolition works. (In a few cases, indicated by **, the scope works is different to that provided by Caltex for preparation of the previous HIA or HMS). Most buildings can be cross-referenced against a 2012 Plan of the refinery, which forms Appendix A to the HMS.

Element	Approximate Dates of Construction / Modification	Key Features/Elements	Significance Grading & Integrity	Proposed Action	Potential Impacts
Main Office Building (Road H) 	• c 1954-55 – constructed as main administrative offices for Site, architects Bunning & Madden, consulting civil engineers R Crooks McNeil & Peacock • btw 1956-1961 – new wing added to southeast, new covered entrances added to sides of original building, architects Bunning & Madden • unknown – windows replaced, interior refurbished	• L-shaped, two storey, red face brick office building, flat roof. • Front entrance at centre of west façade shaded by original concrete cantilever awning with blue trim and 4 slender red painted columns. • Steel frame windows and doors, non-original. • Side entrance porticos feature v-shaped red brick screening walls, non-original but early addition. • Interior offices off central corridor, substantially refurbished. • Pine trees planted along front, west façade likely original, but overgrown and patchy in appearance.	• Moderate – High significance • Original building. Poor-fair integrity: alterations detract from significance, but some key original features extant, including concrete cantilever awning at front entrance • Continues to be used for purposes same as or similar to original purpose	• Not included in demolition works	• Neutral impact on historic and aesthetic values • Rarity and representative value of the building as part of the Australian Oil Refinery site would increase as result of demolition of other modernist and original / early Bunning and Madden designed buildings across the site

Element	Approximate Dates of Construction / Modification	Key Features/Elements	Significance Grading & Integrity	Proposed Action	Potential Impacts
Hut 3 (Adjacent to Main Office Building) 	• btw 2001-2006 – constructed	• Demountable • (Not inspected)	• Intrusive • Detracts from setting of Main Office Building	• To be demolished	• Major positive impact on the landscape setting of the Main Office Building
Group of 6 houses (Off Cook Street) 	• 1955 – constructed as on-site housing for refinery employees, architect Harry Seidler • unknown – 1 building converted from house to Kurnell Oil Refineries Employees' Credit Union • btw 2001-2006 – 5 buildings converted from houses to offices, roofs replaced	• 6 single storey, pale yellow face brick houses, flat roofs, encircling a cul-de-sac • Steel frame multi-pane windows, incorporating hopper windows • Full glass walls along the north side of living areas, connecting with courtyards • Careful, asymmetrical placement of garages and solid and pierced brick screen walls creates variety and privacy for each building • Interiors all now converted to offices. • Garden plantings include cypress pines and frangipanis	• High significance • Original buildings. Fair-good integrity: various ad-hoc modifications but overall design and key original features extant • Adapted from residential to administrative uses	• Not included in demolition works	• Neutral impact on historic and associative, and architectural / aesthetic values • Minor positive impact on landscape setting • Rarity and representative value of the buildings as part of the Australian Oil Refinery site would increase as result of demolition of other original / early modernist buildings across the site

Element	Approximate Dates of Construction / Modification	Key Features/Elements	Significance Grading & Integrity	Proposed Action	Potential Impacts
Central Operations Building (COB) (Off Cook Street) 	• btw 2006-2010 – constructed	• Two storey, steel frame, corrugated steel clad office building, low pitched gable roof • Narrow steel frame windows • Terracotta tile panels provide decorative relief and frame front door • Stairs and access ramp to front door • (Interior not inspected)	• Intrusive • Detracts from setting of Group of 6 houses	• Not included in demolition works	• Neutral
IT/Inspection Records building (adjacent COB) (Off Cook Street) 	• btw 2006-2010 – constructed	• Single storey, steel frame, corrugated steel office building, low pitched gable roof • (Not inspected)	• Intrusive • Detracts from setting of Group of 6 houses	• To be demolished**	• Minor positive impact on the landscape setting of the Group of 6 houses

Element	Approximate Dates of Construction / Modification	Key Features/Elements	Significance Grading & Integrity	Proposed Action	Potential Impacts
TAJ (Off Cook Street) 	• btw 2006-2010 – relocated to current site from CLOR	• Demountable • (Not inspected)	• Intrusive • Detracts from setting of Group of 6 houses	• To be demolished**	• Minor positive impact on the landscape setting of the Group of 6 houses
Supply Operations Building (SOB) (Off Cook Street) 	• btw 2010-2012 – constructed	• Two storey, steel frame, corrugated steel clad office building, low pitched gable roof • Narrow steel frame windows • Terracotta tile panels provide decorative relief and frame front door • Stairs and access ramp to front door • (Interior not inspected)	• Intrusive • Detracts from setting of Group of 6 houses	• Not included in demolition works	• Neutral

Element	Approximate Dates of Construction / Modification	Key Features/Elements	Significance Grading & Integrity	Proposed Action	Potential Impacts
Main Change Rooms (Amenities) (Road 9) 	• 1954 – constructed as guard house, paymaster's office, doctor's office, locker and change rooms, architects Bunning and Madden • btw 1978-84 – extended to west	• Asymmetrical, single storey, red face brick, flat roof, concrete cantilever awning and blue trim • Long concrete awning with slender red painted pipe columns along north side • Steel frame multi-pane windows, some original • Pierced brick screen wall at southeast corner provides visual relief and privacy for change room area • Secure turnstile entrance to site for employees, previously location of bundy clock • Interior includes medical centre and meeting room along east side, with metal lockers, amenities, and large open plan change room to the west • Some original blue wall tiles and bathroom fixtures extant • Some early signage extant, including painted signage	• High significance • Original building. Fair-good integrity: various modifications but key elements of design and original features extant • Continues to be used for purposes same as or similar to original purpose	• Not included in demolition works	• Neutral impact on historic, social, and aesthetic values • Rarity and representative value of the building as part of the Australian Oil Refinery site would increase as result of demolition of other modernist and original / early Bunning and Madden designed buildings across the site

Element	Approximate Dates of Construction / Modification	Key Features/Elements	Significance Grading & Integrity	Proposed Action	Potential Impacts
Guard House – main gate (Road 9) 	• btw 1984-1994 – constructed at main entrance to Site	• Small rectangular building, red face brick lower wall and glazing above, flat roof with wide eaves, blue metal fascia • Low curving concrete barrier with central steps on north side, and yellow painted pipe railing • (Interior not inspected)	• Little significance	• To be demolished	• Neutral

Element	Approximate Dates of Construction / Modification	Key Features/Elements	Significance Grading & Integrity	Proposed Action	Potential Impacts
Firehouse (Area 1: Road 9) 	• c 1954 – constructed as firehouse, architects Bunning and Madden, • btw 1956-1961 – extended to south • btw 2001-2006 – corrugated AC roof replaced with metal • 2013 – extended to north and shed added in front of main pedestrian entrance, west side	• Rectilinear, tall single storey, brown face brick (substantially painted grey), corrugated metal gable roof with steel trussing • Three brick truck bays, original, with steel roller shutters • Offices, change rooms, and equipment storage at south end • Fourth steel frame truck bay with corrugated metal walls at north end, non-original recent addition • Small multi-pane steel frame awning windows, trim painted red • Some broken windows and cracking of brick walls • Corrugated metal shed with skillion roof in front of building detracts	• High significance • Original building. Fair-good integrity: various modifications but key elements of design and original features extant • Continues to be used for purposes same as or similar to original purpose • Corrugated metal shed with skillion roof in front of building detracts	• Not included in demolition works	• Neutral impact on historic, technical and aesthetic values • Rarity and representative value of the building as part of the Australian Oil Refinery site would increase as result of demolition of other modernist and original/early Bunning and Madden designed buildings across the site

Element	Approximate Dates of Construction / Modification	Key Features/Elements	Significance Grading & Integrity	Proposed Action	Potential Impacts
Old Laboratory (Area 1: Road 9) 	• 1954 – constructed as laboratory, architects Crane & Scott • btw 1958-1960 – extended to north and main entrance relocated, architects Bunning and Madden • c 2007/8 – converted from laboratory to offices	• U-shaped, single storey, red face brick, flat roof, precast concrete parapet • Small, horizontal steel frame windows • Main entrance portico features v-shaped red brick screening wall, with raised bricks creating decorative geometric pattern, terrazzo flooring, and a flat roof, non-original but early addition • Concrete loading dock with awning along east side • Some early signage and valves extant along exterior east wall • Interior entirely refitted as offices • Visible vertical cracking in brick walls	• Moderate significance • Original building. Poor integrity: alterations detract from significance, but some early or original features extant • Adapted from laboratory to administrative uses	• To be demolished	• Major adverse impact on physical fabric, historic, technical, scientific/research, rarity and representative values of the Australian Oil Refinery • Major adverse impact on the aesthetic values of the Australian Oil Refinery, arising from loss of early modernist building and Bunning and Madden design elements • Major adverse impact on the spatial integrity of the Australian Oil Refinery site, including original refinery layout

Element	Approximate Dates of Construction / Modification	Key Features/Elements	Significance Grading & Integrity	Proposed Action	Potential Impacts
Reliability (Old Inspection Building) (Area 1: Road M) 	• btw 1955-1961 – constructed • c 2009 – engineering staff moved out of site and building abandoned	• Long rectilinear, single storey building, low pitched gable roof, red brick gable ends, long sides rendered and painted white with narrow eaves supported by downward tapering buttresses • Small steel frame multi-pane windows, incorporating hopper windows, likely original • Steel frame doors, non-original • Entrances screened by corrugated metal or AC walls and awnings • Interior south end primarily offices refurbished with vinyl tile floor, partition walls, drop panel ceilings • Interior north end houses electrical equipment	• High significance • Early building. Good integrity: some modifications but overall design and key original features extant • Not in use/derelict	• To be demolished	• Major adverse impact on physical fabric, historic, technical, rarity and representative values of the Australian Oil Refinery • Major adverse impact on the aesthetic values of the Australian Oil Refinery, arising from loss of early modernist building

Element	Approximate Dates of Construction / Modification	Key Features/Elements	Significance Grading & Integrity	Proposed Action	Potential Impacts
J Store (Area 1: Road M) 	• btw 1955-1961 – constructed	• Long rectilinear, single storey warehouse, double gable (M-shape) roof, corrugated AC roof, corrugated metal walls • Original corrugated metal sliding doors • (Interior not inspected)	• Moderate significance • Early building. Integrity unknown	• To be demolished	• Major adverse impact on physical fabric, historic, technical, and representative values of the Australian Oil Refinery
Plant 32 Control Room (Area 1: Road M) 	• btw 1956-1961 – constructed as control room for CDU No. 2 • btw 2001-2006 – associated plant demolished	• Single storey, red face brick building, flat roof • Poor condition • (Not inspected)	• Moderate significance • Early building. Integrity unknown • Not in use/derelict	• To be demolished	• Major adverse impact on physical fabric, historic, technical, rarity and representative values of the Australian Oil Refinery • Minor adverse impact on the aesthetic value of the site, arising from loss of early modernist building
Substation K (Area 1: Road 4)	• btw 1970-1978 constructed as electricity substation	• (Not inspected)	• Little significance	• To be demolished	• Neutral

Element	Approximate Dates of Construction / Modification	Key Features/Elements	Significance Grading & Integrity	Proposed Action	Potential Impacts
Toilet Block (Area 1: Road M) 	• btw 1956-1961 – constructed as toilet block • btw 1984-1994 – original AC roof replaced	• Small single storey rectilinear building, corrugated metal clad walls and gable roof • (Not inspected)	• Moderate significance • Early building. Integrity unknown	• To be demolished	• Major adverse impact on physical fabric, historic, technical, and representative values of the Australian Oil Refinery
Satellite Equipment Room (Area 1: Road M)	• btw 1984-1994 – constructed	• Cast concrete slab building, flat roof • (Not inspected)	• Little significance	• To be demolished	• Neutral
Plant 1/Plant 33 Control Room (Area 1: Road G) 	• c 1955 – constructed in associated with PDU No. 1 • btw 1961-1970 – extended to south and west, in association with construction of PDU No. 2 • btw 1984-1994 and 2013 – associated plant demolished	• Single storey, red face brick building, flat roof • Various additions / modifications • (Not inspected)	• Moderate significance • Original building. Integrity unknown • Not in use	• Not included in demolition works	• Neutral impact on historic, technical, and aesthetic values • Rarity and representative value of the building as part of the Australian Oil Refinery site would increase as result of demolition of other original / early control rooms across the site

Element	Approximate Dates of Construction / Modification	Key Features/Elements	Significance Grading & Integrity	Proposed Action	Potential Impacts
Toilet Block (Area 1: Road G) 	• btw 1961-1970 – constructed as toilet block	• Single storey, red face brick building, flat roof • (Interior not inspected	• Moderate significance • Early building. Integrity unknown	• Not included in demolition works	• Neutral impact on historic and aesthetic values • Rarity and representative value of the building as part of the Australian Oil Refinery site would increase as result of demolition of other small-scale amenities buildings across the site
Dangerous Goods Store (Area 1: Road 5) 	• c 1955 – constructed as warehouse • btw 2001-2006 – original warehouse demolished and new structure rebuilt on same site	• Asymmetrical, single storey warehouse, double gable (M-shape) roof, corrugated metal roof walls • Original c1955 red brick office with flat roof extant at east end of building	• Little significance • Poor integrity: largely rebuilt	• To be demolished	• Neutral

Element	Approximate Dates of Construction / Modification	Key Features/Elements	Significance Grading & Integrity	Proposed Action	Potential Impacts
Area 1 Shift Manager's Office (Area 1: Road 5) 	• btw 1970-1978 – constructed	• Single storey, red face brick building, flat roof with narrow eaves • Steel frame windows shaded by light-weight awnings • (Interior not inspected)	• Little significance	• Not included in demolition works	• Neutral
Oil Movements Centre (OMC) (Area 1: Road 5) 	• c 1955 – constructed • btw 1978-1984 – extended to south • btw 2010-2011 – extended to north	• Single storey, red face brick building, flat roof with narrow concrete cantilever awning along original central and later south sections, later north section raised on concrete piers • Steel frame windows and doors in original central section replaced • Window openings on south side filled in with brick • Original light fixtures on exterior of central section • (Interior not inspected)	Moderate – High significance • Original building. Poor-fair integrity: alterations detract from significance, but some key original features extant • Continues to be used for purposes same as or similar to original purpose	• Not included in demolition works	• Neutral impact on historic, technical, and aesthetic values • Rarity and representative value of the building as part of the Australian Oil Refinery site would increase as result of demolition of other original/early control rooms across the site

Element	Approximate Dates of Construction / Modification	Key Features/Elements	Significance Grading & Integrity	Proposed Action	Potential Impacts
Area 1 Maintenance (Area 1: Road 6) 	• btw 1970-1978 – series of buildings constructed between Roads 6 and 7 • btw 1984-1994 – buildings and west end of site demolished, new buildings erect at east end, along Road 6	• Collection of corrugation metal sheds, various forms • (Interiors not inspected)	• Little significance	• To be demolished	• Neutral

Element	Approximate Dates of Construction / Modification	Key Features/Elements	Significance Grading & Integrity	Proposed Action	Potential Impacts
Cafeteria (Area 2, Road 9) 	• 1954 – constructed as cafeteria with kitchen, main and private dining rooms, architects Bunning and Madden • 1961 – extended to south, including new kitchen areas, architects Bunning and Madden • btw 1961-70 – extended at southeast corner • btw 2010-11 – awnings added to east and west sides	• Rectilinear, single storey, red face brick, flat roof • Steel frame multi-pane windows, incorporating awning windows • Large, open plan dining area, primarily glass walls along the north and east sides • Cast concrete coping and rectilinear/geometric concrete frame around doorways • Original or early tile floor throughout • Modern kitchen fixtures and fittings • Native garden along front of building • Visible vertical cracking in exterior brick walls • Unsympathetic awning additions to exterior • AC wall panels and roofing	• High significance • Original building. Good integrity: various modifications but key elements of design and original features extant • Continues to be used for purposes same as or similar to original purpose. Important social value	• To be demolished	• Major adverse impact on physical fabric, historic, social, rarity and representative values of the Australian Oil Refinery • Major adverse impact on the aesthetic values of the Australian Oil Refinery, arising from loss of early modernist building and Bunning and Madden design • Major adverse impact on the spatial integrity of the Australian Oil Refinery site, including original refinery layout

Element	Approximate Dates of Construction / Modification	Key Features/Elements	Significance Grading & Integrity	Proposed Action	Potential Impacts
Oil Spill Equipment Shed (Area 2: Road 9) 	• btw 1978-1984 – constructed • btw 1984-1994 – open storage shed attached to east, associated with Storehouse	• Long rectilinear, single storey warehouse, low pitched gable roof, corrugated iron walls and roof • 14 bays roller doors along west side • (Interior not inspected)	• Little significance	• Not included in demolition works	• Neutral
Gas Cylinder Store (Area 2: Road M) 	• btw 1984-1994 – constructed	• Concrete shed, low pitched gable roof, open bays	• Little significance	• To be demolished	• Neutral

Element	Approximate Dates of Construction / Modification	Key Features/Elements	Significance Grading & Integrity	Proposed Action	Potential Impacts
Storehouse (Area 2: Road M) 	• c 1954 – constructed as storehouse • btw 1956-1961 – extended to south • btw 1994-2001 – extended to south • btw 2000-2006 – new gable roof constructed	• Long rectilinear, tall single storey warehouse, steel frame, corrugated metal walls and roof • Open-plan warehouse with modern offices inserted at northern end • Original steel beams at north end of warehouse have diamond shaped cut outs • Central low-pitched gable roof, non-original, with flat roofs along long sides. Gable roof built over top of original 3-bay roof structure – original clerestory window openings and trussing visible from interior • Interior fixtures and fittings substantially replaced • Large external yard with miscellaneous sheds on west side of building	• High significance • Original building. Fair integrity: various modifications but key elements of design and some original features extant • Continues to be used for purposes same as or similar to original purpose	• Not included in demolition works	• Neutral impact on historic, technical, and aesthetic values • Rarity and representative value of the building as part of the Australian Oil Refinery site would increase as result of demolition of other original/early warehouse and industrial buildings across the site

Element	Approximate Dates of Construction / Modification	Key Features/Elements	Significance Grading & Integrity	Proposed Action	Potential Impacts
Main Workshop (beside Storehouse) (Area 2: Road M) 	• c 1953 – constructed as main workshop, by EB Badger & Sons (Great Britain) Ltd • c 1958 – extended to south • btw 1961-1970 – additions to east side (Central Tool Room/CTR) and addition to west side (foremen's offices) • c 1973 – additions to east side (Electrical & Instrument/E&I Workshop) and west side (Rigger's Loft) • btw 1984-1994 – corrugated AC roof replaced with metal	• Long rectilinear, tall single storey building, gable clerestory roof, red brick plinth with steel frame and corrugated metal walls and roof • Clerestory windows covered over, transparent roof panels providing natural light • Various additions to long sides of building, with large areas of glazing, including E&I Workshop and CTR along east side, offices along west side • Large interior overhead 15 ton travelling crane (TA Borthwick, Sydney) and various smaller interior and exterior hoists • Various items of moveable heritage, including original machinery, equipment, signage, and benches, and original technical drawings of plant. Original 1950s machinery includes industrial lathes, presses, borers and shapers etc. • Fair integrity: building continues to be used for purposes the same as or similar to its original purpose • Some AC wall panels	• High significance • Original building. Good integrity: various modifications but key elements of design and original features extant • Continues to be used for purposes same as or similar to original purpose	• Not included in demolition works	• Neutral impact on historic, technical, and aesthetic values • Rarity and representative value of the building as part of the Australian Oil Refinery site would increase as result of demolition of other original/early workshop and industrial buildings across the site

Element	Approximate Dates of Construction / Modification	Key Features/Elements	Significance Grading & Integrity	Proposed Action	Potential Impacts
Old Training Centre (Old Garage) (Area 2: Road M) 	• c 1954 – constructed as on-site garage, architects Bunning and Madden • btw 1984-1994 – extended to west and south, AC roof replaced with metal, converted to offices and training centre • c 2010 training staff relocated out of blast zone and building abandoned • btw 2011-2012 – south extension demolished	• Rectilinear 1 ½ storey, red face brick, corrugated metal gable roof • Steel frame multi-pane windows, largely original • Original entrance at centre north side filled in with brick • Red brick addition to west side, skillion roof • Interior refurbished as offices and meeting rooms, modern vinyl floor tiles and drop panel ceilings	• Moderate – High significance • Original building. Poor-fair integrity: alterations detract from significance, but some key original features extant • Adapted from use as garage to offices • Not in use / derelict	• To be demolished	• Major adverse impact on physical fabric, historic, rarity and representative values of the Australian Oil Refinery • Major adverse impact on the aesthetic values of the Australian Oil Refinery, arising from loss of early modernist building and Bunning and Madden design • Major adverse impact on the spatial integrity of the Australian Oil Refinery site, including original refinery layout
Technical building (Area 2: Road M) 	• c 1988 – constructed as annexe to Yard Office North, offices for technical staff, architects Lightfoot Stanton Hanlon and Ritchie • c 2009 – technical services staff moved out of blast zone and building abandoned	• Long rectilinear, single storey, red face brick building, flat roof • Aluminium frame double glazed windows and doors • Entrance screened by corrugated metal wall and awning • Ladder access to roof • Pipe rail fence around roof • Interior offices off central corridor • Modern vinyl floor tiles along corridor, carpet in offices, drop panel ceilings	• Moderate significance • Recent building. Design is sympathetic to neighbouring original buildings • Not in use	• To be demolished	• Major adverse impact on physical fabric, historic and representative values of the Australian Oil Refinery • Major adverse impact on the spatial integrity of the Australian Oil Refinery site

Element	Approximate Dates of Construction / Modification	Key Features/Elements	Significance Grading & Integrity	Proposed Action	Potential Impacts
Central Control Building (CCB / Bunker) (Area 2: Road 6) 	• c 1989-1990 – constructed to house technicians in blast-proof building	• Square, single storey, concrete building with corrugated finish, flat roof • Blast-proof • Steel double-doors on north side • Doors and window frames painted red • (Interior not inspected)	• Moderate significance • Recent building. Good integrity • Provides important evidence of technical change in refinery processes	• Not included in demolition works	• Neutral impact on historic and technical values • Rarity and representative value of the building as part of the Australian Oil Refinery site would increase as result of demolition of other control rooms across the site
Yard Office North (Area 2: Road M) 	• c 1954 – constructed as yard offices and training room, architects Bunning & Madden • btw 1956-1961 – extended to south • 1980 and 1990 – interior refurbished, original windows and doors replaced • c 2009 – Refinery Manager, technical and environmental staff moved out of blast zone and building abandoned	• Long rectilinear, single storey, red face brick building, flat roof • Cantilever awnings over entrances on north and east sides • Aluminium frame windows and doors, non-original • Low terracotta wall vents • Ladder access to roof • Interior offices off central corridor • Modern vinyl floor tiles along corridor, carpet in offices, partition walls, drop panel ceilings • Good condition, but deteriorating from lack of use, some windows boarded	• Moderate – High significance • Original building. Poor-fair integrity: alterations detract from significance, but key elements of overall design extant • Not in use/derelict	• To be demolished	• Major adverse impact on physical fabric, historic, rarity and representative values of the Australian Oil Refinery • Major adverse impact on the aesthetic values of the Australian Oil Refinery, arising from loss of early modernist building and Bunning and Madden design • Major adverse impact on the spatial integrity of the Australian Oil Refinery site, including original refinery layout

Element	Approximate Dates of Construction / Modification	Key Features/Elements	Significance Grading & Integrity	Proposed Action	Potential Impacts
Area 2 Maintenance (Area 2: Road 6) 	• c 1954 – constructed, architects Bunning and Madden • btw 1961-1970 – additions to west side • c 1989-1990 – northern section of building demolished to make room for CCB	• Single storey, red face brick building, gable corrugated metal roof with steel trussing • Steel frame multi-pane windows at top of walls • Fenced yard on west side • (Interior not inspected)	• Moderate significance • Original building. Poor integrity: alterations detract from significance, but some original features extant • Not in use	• To be demolished	• Major adverse impact on physical fabric, historic, rarity and representative values of the Australian Oil Refinery • Major adverse impact on the aesthetic values of the Australian Oil Refinery, arising from loss of early modernist building and Bunning and Madden design • Major adverse impact on the spatial integrity of the Australian Oil Refinery site, including original refinery layout
E&I Workshop (Area 2: near main hydroblast slab) 	• btw 1984-1994 – constructed	• Rectilinear, single storey warehouse, low pitched gable roof, corrugated metal walls and roof • 2 bays roller doors along east side, 1 bay north side • Small windows along north side with glass louvres • (Interior not inspected)	• Little significance	• To be demolished	• Neutral
Substation J (Area 2: Road 6)	• btw 1994-2001 – constructed as electricity substation	• Single storey, red face brick, flat roof • (Not inspected)	• Little significance	• To be demolished	• Neutral

Element	Approximate Dates of Construction / Modification	Key Features/Elements	Significance Grading & Integrity	Proposed Action	Potential Impacts
Plant 4/Plant 34 Satellite Control Room (Area 2: Road M)	• c 1961 constructed in association with FCCU No. 2 • btw 1984-1994 extended to south	• Two storey, red face brick building • (Not inspected)	• Moderate significance • Early building. Integrity unknown	• To be demolished	• Major adverse impact on physical fabric, historic, technical, rarity and representative values of the Australian Oil Refinery • Minor adverse impact on the aesthetic value of the site, arising from loss of early modernist building
Substation C and Motor Control Room (Area 2: Road 4)	• c 1954-1955 – constructed • btw 1984-1994 – modified	• (Not inspected)	• Moderate significance • Possible original building. Integrity unknown	• To be demolished	• Major adverse impact on physical fabric, historic, technical, rarity and representative values of the Australian Oil Refinery • Minor adverse impact on the aesthetic value of the site, arising from loss of early modernist building

Element	Approximate Dates of Construction / Modification	Key Features/Elements	Significance Grading & Integrity	Proposed Action	Potential Impacts
Plant 36 Control Room (Area 2: Road 6) 	• c 1961 – constructed in association with Alkylation Plant	• Pair of single storey, red face brick buildings, flat roofs • (Not inspected)	• Moderate significance • Early building. Integrity unknown	• To be demolished	• Major adverse impact on physical fabric, historic, technical, rarity and representative values of the Australian Oil Refinery • Minor adverse impact on the aesthetic value of the site, arising from loss of early modernist building
Plant 5 Control Room (Area 2: Road N) 	• c 1961 – constructed in association with Polymerisation Plant	• Single storey, red face brick building, flat roof • (Not inspected)	• Moderate significance • Early building. Integrity unknown	• To be demolished	• Major adverse impact on physical fabric, historic, technical, rarity and representative values of the Australian Oil Refinery • Minor adverse impact on the aesthetic value of the site, arising from loss of early modernist building

Element	Approximate Dates of Construction / Modification	Key Features/Elements	Significance Grading & Integrity	Proposed Action	Potential Impacts
Yard Office South (Area 3: Road 9) 	Yard Office South (Area 3: Road 9) • c 1970 –constructed as combined yard office, training, and amenities building • btw 1970-1978 – addition to west side • c 1980s – offices refurbished • c 2009 – staff moved out of blast zone and building abandoned	• Long rectilinear, single storey building, white painted brick, low pitched gable roof • Steel frame windows at south end, non-original • Multi-pane steel frame windows at north end, original, some broken • Some original signage • Interior south end offices refurbished with modern carpet, partition walls, drop panel ceilings	• Moderate – High significance • Early building. Poor-fair integrity: alterations detract from significance, but some key original features extant • Not in use / derelict	• To be demolished	• Major adverse impact on physical fabric, historic, technical, and representative values of the Australian Oil Refinery
RIM Store (Beside Yard Office South) (Area 3: Road 9) 	• btw 1970-1978 – constructed • btw 1978-1984 – addition along east side	• Rectilinear, single storey warehouse, low pitched gable roof, corrugated metal walls and roof • (Interior not inspected)	• Little significance	• To be demolished	• Neutral
Substation U (Area 3: Road 9)	• btw 1970-1973 – constructed	• (Not inspected)	• Little significance	• To be demolished	• Neutral

Element	Approximate Dates of Construction / Modification	Key Features/Elements	Significance Grading & Integrity	Proposed Action	Potential Impacts
Plant 45.1 West Satellite Control Room (Area 3: Road N) 	• btw 1984-1994 – constructed in association with CDU No. 3	• Single storey, red face brick building, flat roof • Interior has control desk room, bathroom and meal room	• Moderate significance	• To be demolished	• Major adverse impact on physical fabric, historic, technical, and representative values of the Australian Oil Refinery • The impact is mitigated by the moderate significance of the item
Substation R (Area 3: Road N) 	• btw 1970-1978 – constructed as single storey electricity substation in association with CDU No. 3 • btw 2001-2006 – second storey added and adjacent building constructed	• Two storey, red face brick building, flat roof • (Not inspected)	• Little significance	• To be demolished	• Neutral

Element	Approximate Dates of Construction / Modification	Key Features/Elements	Significance Grading & Integrity	Proposed Action	Potential Impacts
Plant 35 East Satellite Control Room (Area 3: Road N) 	• btw 1961-1964 – constructed in association with Catalytic Reforming Unit (Platformer) • btw 1970-1978 – workshop building added to west side • btw 1984-1994 – modifications	• Single storey, red face brick building complex, flat roof • (Not inspected)	• Moderate significance • Early building. Integrity unknown	• To be demolished	• Major adverse impact on physical fabric, historic, technical, rarity and representative values of the Australian Oil Refinery • Minor adverse impact on the aesthetic value of the site, arising from loss of early modernist building
Substation O (Area 3: Road N) 	• btw 1994-2001 – constructed as electrical substation	• Single storey, red face brick building on brick piers, flat roof • (Not inspected)	• Little significance	• To be demolished	• Neutral

Element	Approximate Dates of Construction / Modification	Key Features/Elements	Significance Grading & Integrity	Proposed Action	Potential Impacts
Substation T (Area 3: Road 6) 	• c 1978 – constructed as electricity substation	• Single storey, face brick flat roof • (Not inspected)	• Little significance	• To be demolished**	• Neutral
Substation E (Area 3: Road Q)	• btw 2001-2006 – constructed as electricity substation	• Single storey, face brick, flat roof • (Not inspected)	• Little significance	• To be demolished	• Neutral
Foam Store (Area 3, Road Q) 	• btw-1994-2001 – constructed	• (Not inspected)	• Little significance	• Not included in demolition works	• Neutral

Element	Approximate Dates of Construction / Modification	Key Features/Elements	Significance Grading & Integrity	Proposed Action	Potential Impacts
Substation Y (Area 3, Road Q) 	• btw-1994-2001 – constructed	• Single storey, face brick, flat roof, on concrete piers • (Not inspected)	• Little significance	• Not included in demolition works	• Neutral
Laboratory (Sydney Technology Centre) (Off Sir Joseph Banks Drive) 	• btw 1961-1963 – constructed as main office for ALOR, architects Bunning and Madden • btw 1984-1994 – extended and extensively refurbished	• Long rectilinear, two storey building, flat roof, cement rendered walls • Steel frame windows and external steel mesh shade panels, non-original • Portico entrance on west side, with flat roof, columns, and glazed walls, non-original • Interior entirely refurbished: offices on lower floor, laboratories on upper floor	• Moderate significance • Early building. Poor integrity: alterations detract from significance, but elements of overall design extant	• Not included in demolition works	• Neutral impact on historic and aesthetic values • Rarity value of the building as part of the Australian Oil Refinery site would increase as result of demolition of other modernist and original / early Bunning and Madden designed buildings across the site

Element	Approximate Dates of Construction / Modification	Key Features/Elements	Significance Grading & Integrity	Proposed Action	Potential Impacts
Laboratory Workshop (Road T) 	• btw 1984-1994 – constructed	• Rectilinear concrete block building with skillion roof • Steel frame windows • Houses 3 octane engines of different vintages, used for testing fuel products • (Interior not inspected)	• Little significance	• Not included in demolition works	• Neutral

Element	Approximate Dates of Construction / Modification	Key Features/Elements	Significance Grading & Integrity	Proposed Action	Potential Impacts
PR Room (Caltex Information Centre / Training Centre) (Road U) 	• btw 1961-1963 – constructed as ALOR cafeteria, architects Bunning and Madden; sculptural panels by Bert Flugelman • c 1980s – following 1981 buy-out of Golden Fleece, converted to information/training centre	• Rectilinear, single storey brick building, painted light grey, flat roof with and cantilever awning • Portico of squared columns on south side with crazy paving floor • Large multi pane steel frame windows, with floor-to-ceiling glazing along the south side, tall narrow windows on west side • Large exterior sculptural panel by Herbert Flugelman at southwest corner, concrete with coloured mosaic detailing • Example machinery & equipment on display inside and outside, including historic • Interior entirely refurbished, carpet, drop-panel ceilings	• Moderate – High significance • Early building. Poor-fair integrity: alterations detract from significance, but key elements of design and some original features extant • Sculptural panel has aesthetic value	• Not included in demolition works	• Neutral impact on historic and aesthetic values • Rarity and representative value of the building as part of the Australian Oil Refinery site would increase as result of demolition of other modernist and original/early Bunning and Madden designed buildings across the site

Element	Approximate Dates of Construction / Modification	Key Features/Elements	Significance Grading & Integrity	Proposed Action	Potential Impacts
CLOR Maintenance Services (Change Rooms) (Area 4: Road U) 	• btw 1961-1963 – constructed as ALOR change rooms and amenities, architects Bunning and Madden; sculptural panels by Bert Flugelman	• Long rectilinear, single storey grey brick building, reinforced concrete pilasters, flat roof, blue trim • Flat roof concrete awning on slender steel supports wraps around north end of the building, and cantilever awning over east entrance • Large exterior sculptural panel by Herbert Flugelman, below awning on west side, concrete with coloured mosaic detailing, provides decorative relief • Steel frame horizontal strip windows along upper section of walls • Evidence of deterioration and repair to external reinforced concrete elements • Interior includes 2 large open plan lunch rooms, change rooms with metal lockers, amenities • Corrugated metal ceiling panels, likely original • Some original green wall tiles and bathroom fixtures extant	• High significance • Early building. Good integrity: various modifications and repairs but key elements of design and original features extant • Continues to be used for purposes same as or similar to original purpose • Sculptural panel has aesthetic value	• To be demolished**	• Major adverse impact on physical fabric, historic, social, rarity and representative values of the Australian Oil Refinery • Major adverse impact on the aesthetic values of the Australian Oil Refinery, arising from loss of early modernist building with good integrity and Bunning and Madden design • Major adverse impact on aesthetic values of the Australian Oil Refinery, arising from loss of original physical context and design integriy of Bert Flugelman sculptures • Major adverse impact on the spatial integrity of the Australian Oil Refinery site, including loss of original ALOR layout and visual association with PR Room

Element	Approximate Dates of Construction / Modification	Key Features/Elements	Significance Grading & Integrity	Proposed Action	Potential Impacts
CLOR Central Control Building (CLOR CCB / Bunker) (Area 4: Road U) 	• btw 1984-1994 – constructed to house technicians in blast-proof building	• Square, single storey, concrete building with corrugated finish, flat roof • Blue trim • Blast-proof	• Moderate significance • Recent building. Good integrity • Provides important evidence of technical change in refinery processes	• Not included in demolition works	• Neutral impact on historic and technical values • Rarity and representative value of the building as part of the Australian Oil Refinery site would increase as result of demolition of other control rooms across the site
Substation 8 (Area 4: Road R) 	• btw 1994-2001 – constructed as electricity substation	• Single storey, red face brick building on brick piers, flat roof • (Not inspected)	• Little significance	• Not included in demolition works	• Neutral

Element	Approximate Dates of Construction / Modification	Key Features/Elements	Significance Grading & Integrity	Proposed Action	Potential Impacts
CLOR Workshop (Area 4: Road 17) 	• btw 1961-1963 constructed • unknown – modifications	• Asymmetrical, tall single storey workshop with lower single storey to west, flat clerestory roof to workshop, steel frame, corrugated metal walls and roof • Multi-pane steel frame clerestory windows and along upper section of west wall providing natural light to workshop • Windows along east wall removed and cladding replaced • Sliding corrugated metal doors on south side, likely original • Flat roof extension on west side • Interior/exterior overhead travelling crane • (Interior not inspected)	• High significance • Original building. Fair integrity: various modifications but key elements of design and original features extant	• To be demolished	• Major adverse impact on physical fabric, historic, technical, rarity and representative values of the Australian Oil Refinery • Major adverse impact on the spatial integrity of the Australian Oil Refinery site, including original ALOR layout
Zone E Workshop (CLOR Reliability Workshop) (Area 4: Road 17) 	• btw 1984-1994 – constructed	• Long rectilinear, tall single storey warehouse, low pitched gable roof, corrugated metal roof and walls • Small steel frame windows along south side • Along north side • Metal roller doors • (Interior not inspected)	• Little significance	• To be demolished	• Major adverse impact on physical fabric, historic, technical, and representative values of the Australian Oil Refinery

Element	Approximate Dates of Construction / Modification	Key Features/Elements	Significance Grading & Integrity	Proposed Action	Potential Impacts
Sieve Shed and Insulators Workshop (Area 4: Road 9) 	• btw 1961-1970 – 2 sheds constructed • btw 1994-2001 – reclad and reroofed	• 2 x long rectilinear, single storey warehouses, low pitched gable roofs, corrugated metal roofs and walls • Metal roller doors	• Moderate significance • Early buildings. Fair integrity: various modifications and repairs but key elements of design extant	• To be demolished	• Major adverse impact on physical fabric, historic, technical, and representative values of the Australian Oil Refinery

3.2 Four Wheel Drive Track (Captain Cook Drive)

The four wheel drive track, which originally connected Kurnell Village with Cronulla to the southwest, was largely overlaid in 1953-56 by the construction of Captain Cook Drive, which in turn facilitated construction of the Caltex refinery. As such, much of the alignment of Captain Cook Drive reflects that of the original track. However, a short section of Captain Cook Drive along the western boundary of the Site by-passes the original route of the track where it intersected the refinery property. Construction of the refinery plant and infrastructure in the 1950s effectively erased this section of the track from the landscape, and there is no physical evidence of the original track alignment extant within the boundary of the Site today (Figure 3.29). The demolition works would not therefore have any impacts on extant physical remains or understanding of the significance of the original track.

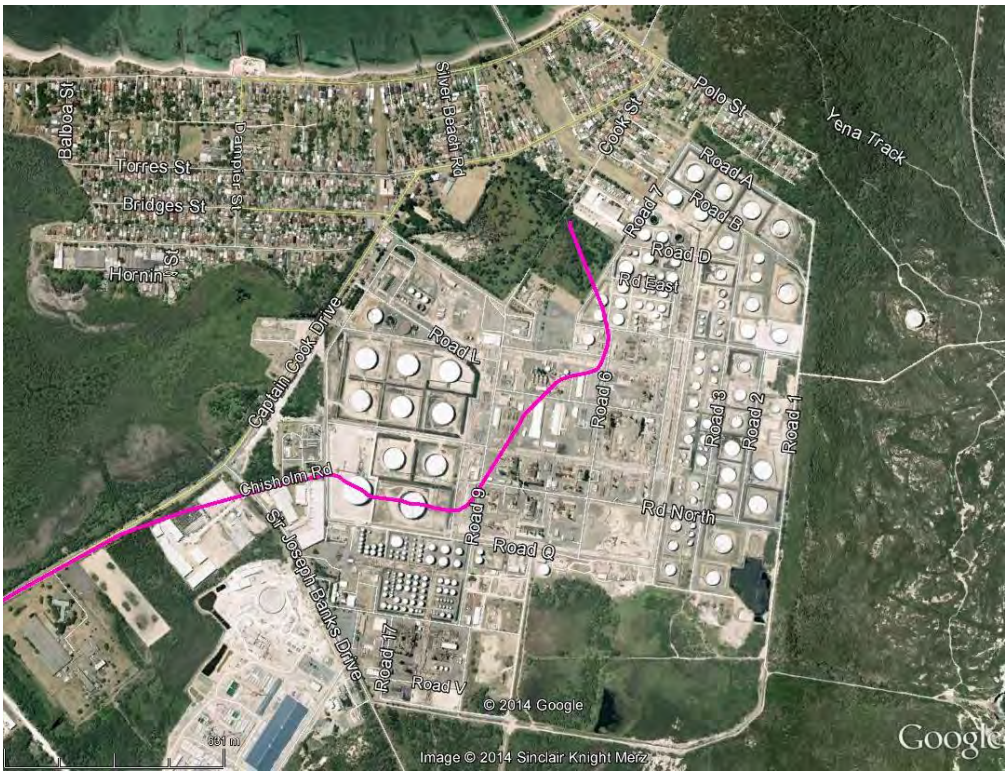


Figure 3.29 The approximate alignment of the former four wheel drive track through the refinery is indicated by the pink line. (Date of background aerial: 2009; Source: © 2014 Google; Image © 2014 Sinclair Knight Merz.)

3.3 Silver Beach and Roadway

Silver Beach is a long, picturesque white sand beach along the northern side of the Kurnell Peninsula (Figure 3.30). Prince Charles Parade runs the length of the beach, and forms the northern boundary of Kurnell Village. One and two storey houses line the south side of the road, most dating to the post-WWII era. The north side of the road is separated from the beach sand by a narrow verge, which in some areas has been stabilised with native vegetation. Much of the verge is supported by a tipped sandstone retaining wall. Beach erosion is controlled by a series of 14 long groynes, also constructed of sandstone rubble, which are identified as contributing to the aesthetic and rarity value of the beach. Two groynes to the west of the Western ROW are joined by a line of netting to form a protected bathing area (Figure 3.31-Figure 3.32). Pipelines within the Eastern and Western ROWs on the south side of Prince Charles Parade are laid subsurface and currently have little if any visual impact on the landscape setting of the beach and roadway (see Figure 3.11-Figure 3.12 above). The Kurnell Wharf adjoins the north side of Prince Charles Parade, and intersects the alignment of the beach

(Figure 3.33). The wharf disrupts and detracts from the natural landscape setting of the beach, but has some landmark value in its own right.

Figure 3.30 Silver Beach and Prince Charles Parade; view to the west, 2011.

Figure 3.31 View of protected bathing area at Silver Beach, 2011.

Figure 3.32 Entrance to protected bathing area from Prince Charles Parade, 2011.

Removal of the subsurface cooling water outlet pipe from beneath the Western ROW, Prince Charles Parade and Silver Beach would have a minor, temporary impact on the aesthetic significance and amenity of the beach and roadway. Based on an analysis of aerial photographs of the Site, the removal of the cooling water outlet pipe would not affect the physical integrity of the extant sandstone groynes, which were constructed along the beach between 1961 and 1970, after the pipeline was originally installed. It would not affect the physical integrity of the protected bathing area, which was established between 1970 and 1978, although it would likely reduce the amenity of the bathing area during the demolition works. It would, however, require the temporary removal of a short section of the informal sandstone retaining wall between the roadway and the dune area of the beach. The impacts of the works would be mitigated by Caltex restoring and rehabilitating the beach, dune, sandstone wall, and roadway using original or appropriate materials following removal of the pipeline.

At the east end of the beach, a concrete footpath runs for approximately 350 m along the north side of Prince Charles Parade, crossing the driveway entrance to the Kurnell Wharf and connecting to a

pedestrian entrance to Kamay Botany Bay National Park. The surface of the footpath is impressed with images and designs interpreting the history of local area, and in particular its historical association with Captain Cook's 1770 expedition to Australia, the First Fleet, and Sydney's convict heritage (Figure 3.34-Figure 3.35). These images provide a simple visual narrative, which demonstrates the importance of this history to the local community of Sutherland Shire. Removal of subsurface pipelines as outlined in the scope, including excavation and re-covering of existing pipeline trenches from the Eastern ROW across Prince Charles Parade to the wharf. This work would require the removal of a short section of this interpretive pathway, which would adversely affect the visual continuity of the design. It would also have a minor, temporary impact on the aesthetic significance and amenity of the broader beach and roadway. These impacts would be mitigated by restoration of the roadway and footpath by Caltex following removal of the pipeline, including re-installation of the interpretative footpath (or recreation of the design in the footpath) following the completion of the works.

Figure 3.33 View of Kurnell Wharf from Silver Beach, 2011.

Figure 3.34 Interpretative pavement designs along footpath between Prince Charles Parade and Silver Beach, 2011.

Figure 3.35 Detail of pavement designed beside the Kurnell Wharf, 2011.

As with the refinery itself, the land surface along Silver Beach has been extensively disturbed, by previous land clearance and shore reclamation works, construction of the Kurnell Wharf, and the original laying of the subsurface pipelines, such that there is unlikely to be any subsurface archaeology

extant along the alignments of the pipelines which pre-dates the history of the refinery. It is therefore unlikely that excavations associated with the pipeline removal works would impact on significant archaeological deposits, objects or relics.

3.4 Kamay-Botany Bay National Park and Kurnell Peninsula Headland

The National Heritage listed Kurnell Peninsula Headland forms the southern part of Kamay Botany Bay National Park. Kamay Botany Bay National Park forms part of the State heritage listed Kamay Botany Bay National Park (North and South) and Towra Point Nature Reserve. The Kurnell Peninsula Headland covers approximately 325ha, extending from the southern headland of Botany Bay to Doughboy head in the south, and adjoins part of the eastern boundary of the Site (Figure 3.36).

Figure 3.36 The NHL Kurnell Peninsula Headland is indicated by red shading. (Date of background aerial: 2009; Source: © 2014 Google; Image © 2014 Sinclair Knight Merz.)

The northern foreshore of the headland has been developed as a recreational park, now known as the Meeting Place Precinct. This precinct contains a large number of items of pre-contact Aboriginal heritage, including shell middens, burial sites, a bora ring, birthing tree and other items of Aboriginal cultural heritage significance. This precinct also has various historic monuments and plantings, which commemorate Captain Cook's 1770 expedition to Australia, the first recorded contact between Indigenous and British people in eastern Australia, and the subsequent consequences of this meeting, including the colonisation of Australia and dispossession of Aboriginal people from the land. A

foreshore walking path connects the various monuments and plantings, and explanatory signage interprets these elements as well as the broader symbolic significance of the site (Figure 3.37).

Views between the Meeting Place Precinct, Botany Bay, and La Perouse beyond, and the orientation of the precinct to the bay, make an important contribution to the historic, aesthetic, and social values of the place. The visual and physical relationships between the Precinct and the bay enable visitors to experience or make a connection with the landscape setting of Cook's first landing on the east coast of Australia, of Banks and Solander's collection of specimens, and of a place that was lived in by the original Aboriginal inhabitants of the land. However, this experience can be diminished by the twentieth century industrial history and visual landscape of the bay, which detracts from the historic and aesthetic integrity of the place.

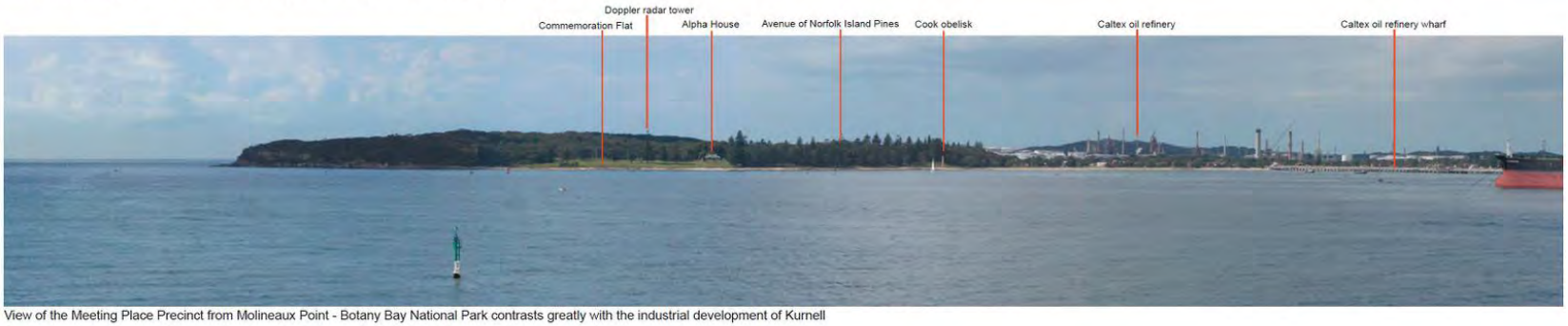
The Kurnell Wharf is a prominent, albeit distant, element in views from the Meeting Place Precinct, across the bay to the east (Figure 3.38). Similarly, taller and bulkier elements of the main refinery Site are discordant features of views towards the Meeting Place Precinct from the headlands on the north side of the bay, and on approach to the Meeting Place Precinct from the bay, although the refinery itself becomes less visible closer to the shore (Figure 3.39). Demolition and removal of the Refinery Process Units would likely have a major positive long-term impact on the landscape setting of the Meeting Place Precinct, by reducing the vertical scale and prominence of the Site in significant views of the headland, thereby enhancing the natural beauty of the headland and its symbolic importance to the State of NSW and to the Nation. However, based on the photo collages of views of the Meeting Place Precinct made in 2006, the larger tanks would likely still be visible in distant views of the precinct from and across the bay, and would continue to detract from the experience of significant views associated with the national and state heritage values of the place. It is possible that there would also be an indirect minor, short-term adverse impact on a visitor's experience of the Kurnell Peninsula Headland and the general amenity of the place during the demolitions works, while they are in progress, which could temporarily diminish the landscape setting, social and symbolic value of the place.

Figure 3.37 View from Kamay Botany Bay National Park towards Kurnell Village. A foreshore walking path connects the various monuments and commemorative plantings in the park. The Cook Monument (left) is one of the most prominent monuments, and was designed to be highly visible from the water.

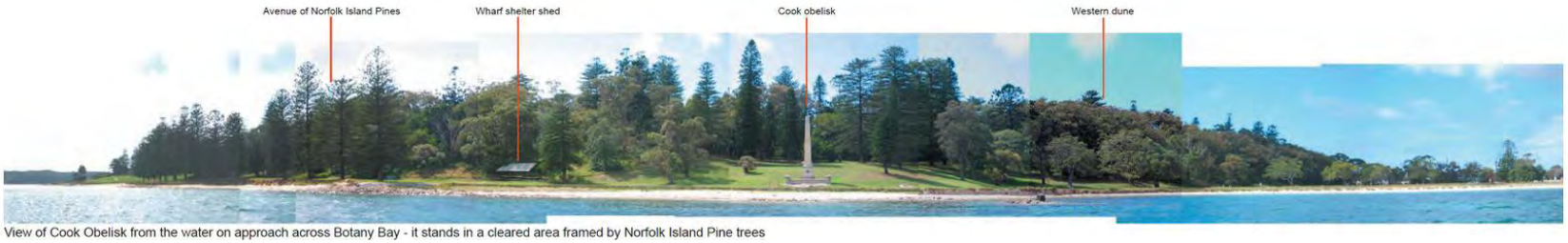
Figure 3.38 View of the Isaac Smith Memorial (Landing Rock Monument), with Kurnell Wharf behind.

View of Cape Solander and the Meeting Place Precinct from La Perouse

View of the Meeting Place Precinct from Yarra Bay - the chimneys of the oil refinery project above the study area



View of the Meeting Place Precinct from Molineaux Point - Botany Bay National Park contrasts greatly with the industrial development of Kurnell



View of Cook Obelisk from the water on approach across Botany Bay - it stands in a cleared area framed by Norfolk Island Pine trees

Figure 3.39 Views of the Meeting Place Precinct from headlands to the north, and from the water on approach (Source: Design 5 2006:75).

The section of the National park closest to the fenced boundary of the Site is primarily native scrub, criss-crossed by various walking paths and tracks. Along much of this boundary fence, the refinery infrastructure is set into a depression below the level of the surrounding parkland, and as such there are no views to the Meeting Place Precinct from the Site (Figure 3.40). A distant view of Cape Bailey Lighthouse can be had from the south-east part of the Site, where the parkland slopes down toward the south, (Figure 3.41). Similarly, the taller elements of the refinery infrastructure can be seen from the coastal walking path through the National Park in the vicinity of the lighthouse. Demolition and removal of the Refinery Process Units would likely improve the aesthetic significance and natural landscape setting of the lighthouse and the coastal walking track.

Figure 3.40 North-east corner of the Kurnell Refinery site, with scrubland above the boundary fence, 2012.

Figure 3.41 View from the south-eastern part of the Site towards the south, overlooking Kamay Botany Bay National Park, 2012. Cape Bailey Lighthouse can be seen in the distance (red arrow).

4 Summary Assessment of Heritage Impacts

The responses to the following questions summarise the potential impacts of the demolition works on the heritage significance or values of the historic heritage items and places within or in the vicinity of the works, and current measures to minimise or otherwise mitigate these impacts. High level mitigation measures have been outlined in the HMS, and Caltex is progressively implementing these measures during the conversion works.

The following aspects of the proposal respect or enhance the heritage significance of the item or conservation area for the following reasons:

- The proposed removal of the demountable Hut 3, TAJ, and IT/Inspection buildings from the northern administrative precinct of the Site would have a minor positive impact on the landscape setting of significant heritage buildings within this area, including the Main Office and the Group of six houses, and would thereby help to conserve their original, modernist aesthetic character, and the aesthetic significance of the overall Australian Oil Refinery site.

- Considering that there is no physical evidence of the former Four wheel drive track extant within the boundary of the Site today, and that the proposed demolition works are limited to the footprint of the Site, the demolition works would not impact on significant fabric of the track or the historic significance of the local heritage item.

- The proposed demolition and removal of the Refinery Process Units would likely have a major positive long-term impact on the landscape setting of the Kamay Botany Bay National Park and Kurnell Peninsula Headland, by reducing the vertical scale and prominence of the Site in significant views of the headland, thereby enhancing the natural beauty of the headland and its symbolic importance to the State of NSW and the Nation. There would be no change to the historic values of the place.

- Demolition and removal of the Refinery Process Units would likely improve the aesthetic significance and natural landscape setting of the Cape Bailey Lighthouse, which is a local landmark along the coast, and views from the coastal walking track within Kamay Botany Bay National Park.

The following aspects of the proposal could detrimentally impact on heritage significance. The reasons are explained as well as the measures to be taken to minimise impacts:

- Demolition of the Refinery Process Units, including all of the plant and the associated Powerhouse, would have major permanent adverse impact on the physical fabric, historic, technical and research/scientific significance of the Australian Oil Refinery site, and its rarity and representativeness, by profoundly diminishing its ability to demonstrate the principal characteristics of an operational oil refinery, and the development of the oil refining industry in NSW during the twentieth century. The overall historic and physical integrity of the Site would be lost. The landmark value of the Site in the local area would be considerably diminished.

- Demolition of up to 64 tanks in the Eastern Tank Area and 15 tanks in the Western Tank Area would have a major adverse impact on the physical fabric, historic and technical significance of the Australian Oil Refinery site and its representative value, by reducing its ability to demonstrate the principal characteristics of an oil refinery tank farm of the mid-twentieth century and the development of the oil refining industry in NSW during the twentieth century. The demolitions would also likely reduce the historic and physical integrity of the original tank farm layout.

- Removal of original pipelines and associated pumps and valves, including excavation and re-covering of existing pipeline trenches within the Eastern and Western ROWs, Silver Beach and road reserves and removal of cooling water inlet pipes from the Kurnell Wharf, would have a major adverse impact on the physical fabric, technical significance and representative value of the Australian Oil Refinery site, and could impact on future understanding of the form and layout of the production areas of the Site.

- Demolition of 14 moderately significant and 7 highly significant original and early buildings across the Site would have a major adverse impact on the physical fabric, historic and physical integrity and representative value of the Australian Oil Refinery site.

- Impacts on the physical fabric, historic, technical, scientific and representative values of the refinery would be mitigated by Caltex's implementation of the following measures, which are outlined in the HMS for the Site:
    - Conservation of a representative sample of significant refinery infrastructure in use as part of the finished product terminal, including examples of original tanks, original workshops, administrative and amenities buildings, and the Kurnell Wharf. At least six original tanks would be retained in use in the Eastern Tank Area, including three along the northern boundary of the site and three to the west of the OMC; one early tank would also be retained between Road B and the Main Pipeway, while three early tanks within the Western Tank Area between Roads O and P would also be retained in use. The original OMC, Plant1/Plant 33 Control Room, Main Workshop, Storehouse, Firehouse, Main Office, and Main Change Rooms, and Group of 6 houses would be retained in use or adapted to a new use in the terminal.
    - Preparation of audio-visual recording of the refinery while it is still in operation. Caltex has engaged film-maker John Marsh to prepare a 30 minute documentary explaining how the Site works, its work culture, and the roles and responsibilities of employees across the Site. The documentary is in preparation.
    - Preparation of an archival quality photographic recording of the refinery plant and infrastructure while it is still in operation, and during demolition works, in accordance with Heritage Council guidelines for *Photographic Recording of Heritage Items Using Film or Digital Capture* (2006). Caltex has engaged Freeman Ryan Designs to prepare the recording, which is in progress. The photographic recording would be lodged with appropriate long-term storage facilities with public access, including Sutherland Shire Library and the NSW State Library.
    - Preparation of an archival quality catalogue of original plans, drawings, photographs and audio-visual media associated with construction and development of the plant and supporting infrastructure. The cataloguing is in progress.
    - Preparation and publication of a 'popular' coffee table book illustrating the history of the refinery, written by professional author Gary Lester. The book is in progress, and is due to be published in December 2014.
    - Identification and collection of a representative sample of moveable heritage items associated with the operation of the plant. During verification of the archival photographic recording, Caltex would prepare a list of significant items to be salvaged during the decommissioning process.
    - Development of a long-term strategy for the storage of, conservation of, and public access to the Site's significant industrial heritage records, original plans, drawings, photographs, audio-visual media, and moveable heritage collections.

- Demolition of the Refinery Process Units would have a minor or temporary adverse effect on the social values of the Australian Oil Refinery site for current and former refinery employees. These impacts would be mitigated by Caltex's implementation of the following measures:
    - Public exhibition of photographs of the refinery at the Cronulla Central Gallery, based on amateur photography of the Site by past and present employees and contractors. The *Capturing the Spirit of the Kurnell Refinery* exhibition runs from 4 June 2014 to 29 August 2014.
    - Preparation and publication of a 'popular' coffee table book illustrating the history of the refinery. The book would be distributed to present and former employees of the refinery, as well as Sutherland Shire Library and the NSW State Library.

- The proposed demolition of the original Cafeteria, Old Training Centre (Old Garage), Yard Office North, Area 2 Maintenance, Old Laboratory, and the former CLOR Maintenance Services building (Change Rooms) would have a major adverse impact on significant physical evidence of Bunning and Madden's architectural design work at the refinery, and the historic integrity and aesthetic value of the Site's overall grouping of modernist architecture. These impacts would be mitigated by Caltex's implementation of the following measures, which are outlined in the HMS for the Site:
    - Conservation of a representative sample of significant original / early modernist buildings in use across the Site, including buildings designed by architectural firm Bunning and Madden for the Australian Oil Refinery and CLOR complexes: the Main Office, Main Change Rooms, and the Firehouse in the north central part of the Site, and the former CLOR Cafeteria (PR Room) at the south east corner of the Site; and conservation of the Group of six houses designed by architect Harry Seidler.
    - Preparation of an archival quality photographic recording of buildings across the Site prior to the conversion works.
    - Preparation of an archival quality catalogue of original plans, drawings, photographs and audio-visual media associated with the design, construction and development of the buildings, where extant, and where confidentiality and intellectual copyright permit.
    - Development of a long-term strategy for the storage of, conservation of, and public access to the Site's significant industrial heritage records.

- Demolition of the Refinery Process Units and other infrastructure has the potential to impact on the structural integrity of significant buildings that are to be retained on the Site as part of the finished product terminal, particularly older masonry structures, through the effects of vibrations from demolition works.

- Removal of subsurface pipelines within the Eastern and Western ROWs and from beneath Prince Charles Parade and Silver Beach would have a minor, temporary impact on the aesthetic significance and amenity of the local heritage item Silver Beach and roadway. The works would have a minor adverse impact on the physical fabric of an informal sandstone wall alongside the beach, which makes a minor contribution to the aesthetic significance of this local heritage item. Works would also have a minor adverse impact on the physical fabric and narrative continuity of an interpretative concrete footpath in front of the entrance to the Kurnell Wharf, which illustrates the early European history of the local area. These impacts would be mitigated by restoration of the beach, dunes, sandstone wall, footpath and roadway by Caltex using compatible materials following removal of the pipelines. Impacts on the narrative continuity of the interpretative footpath would be mitigated by reinstatement of interpretive footpath (or the re-creation of the interpretative design in the footpath) during restoration works.

- The demolition works may have minor, temporary adverse impacts on the landscape setting, social and symbolic values of the Kamay Botany Bay National Park and Kurnell Peninsula Headland during demolition works, arising from unpleasant sensory impacts of the demolition works on a visitor's experience of the place. These impacts would be minimised by onsite measures implemented by Caltex to limit the effects of the works on the Kurnell district during demolition. These impacts would also be mitigated by the long-term benefit to the landscape setting of the park, arising from the reduced prominence of the Site in significant views of the headland.

The following sympathetic solutions have been considered and discounted for the following reasons:

Have all options for retention and adaptive re-use been explored?

The HMS included strategies for the adaptive reuse of some of the more significant heritage buildings across the Site for other purposes following the conversion works. Caltex has indicated that, following the conversion, fewer buildings would be required to accommodate the reduced staff numbers and operational requirements of the terminal, and that all buildings that can be reused for terminal operations are being retained (see above Section1.1.2).

Is demolition essential at this time or can it be postponed in case future circumstances make its retention and conservation more feasible?

It has been proposed that Caltex consider options for 'mothballing' highly significant buildings that cannot be immediately reused as part of the import terminal, but could conceivably be used to fulfil future planning needs. Caltex has indicated that demolition of redundant buildings is necessary to facilitate safe operation of the terminal. As long as these buildings have no use, their condition and structural integrity would continue to deteriorate and may present a WHS risk to the Caltex workforce.

However, it is also noted that buildings would be demolished during the final stage of demolition works and, as operational requirements would continue to be reviewed, it is possible that the predicted circumstances would change. Caltex has confirmed that all significant heritage buildings would be managed in accordance with the strategies outlined in the HMS. As noted in the HMS, although the former CLOR Maintenance Services building (Change Rooms) had been identified for demolition, options to retain and adaptively re-use this highly significant representative example of a Bunning and Madden designed building should continue to be considered. Should it not be possible to retain the building, the sculptural panel should be retained and conserved as an example of the early work of the famous Australian sculptor, Bert Flugelman.

4.1 Summary Statement of Heritage Impacts

Australian Oil Refinery

The proposed demolition works would have a significant adverse impact on the physical fabric, historic, technical and research/scientific significance of the Australian Oil Refinery site, and its rarity and representativeness. The demolition works would profoundly diminish the Site's ability to demonstrate the principal characteristics of an operational oil refinery, and the development of the oil refining industry in NSW during the twentieth century. The overall historic and physical integrity of the Site would be lost. The landmark value of the Site in the local area would be considerably diminished.

The demolition works would also have a major adverse impact on the aesthetic value of the Site's overall grouping of modernist architecture, including significant physical evidence of Bunning and Madden's architectural design work.

The adverse impacts of the demolition works would be mitigated by Caltex's implementation of the HMS for the Site, including an archival photographic recording of the refinery while it is still in operation and during demolition works. Adverse impacts would also be mitigated through the development and implementation of a long-term strategy for the storage of, conservation of, and public access to the Site's significant industrial heritage records, including original plans, drawings, photographs, audio-visual media, and moveable heritage collections associated with the Refinery Process Units and associated buildings and infrastructure.

The adverse impact of demolition works would also be mitigated by conservation of a representative sample of significant refinery infrastructure in use as part of the finished product terminal, including examples of original tanks, original workshops, administrative and amenities buildings. At least six original tanks would be retained in use in the Eastern Tank Area along the northern boundary of the Site, three to the west of the OCM and three early tanks within the Western Tank Area. The original OMC, Plant1/Plant 33 Control Room, Main Workshop, Storehouse, Firehouse, Main Office, and Main Change Rooms, and Group of 6 houses would be retained in use.

Four Wheel Drive Track (Captain Cook Drive)

The demolition works would not impact on significant fabric of the former Four wheel drive track or the historic significance of the local heritage item.

Silver Beach and Roadway

The demolition works would have a minor, temporary impact on the aesthetic significance and amenity of Silver Beach and roadway. It would also have a minor adverse impact on the physical fabric of an informal sandstone wall alongside Silver Beach, and on the physical fabric and narrative continuity of an interpretative concrete footpath in front of the entrance to the Kurnell Wharf. Impacts on heritage significance would be mitigated by restoration of the beach, dunes, sandstone wall, footpath and roadway by Caltex using the same or appropriate materials following removal of the pipelines.

Kamay-Botany Bay National Park and Kurnell Peninsula Headland

The demolition works would likely have a major positive long-term impact on the landscape setting of the Kamay Botany Bay National Park and Kurnell Peninsula Headland, by reducing the vertical scale and prominence of the Site in significant views of the headland, thereby enhancing the natural beauty of the headland and its symbolic importance to the State of NSW and to the Nation. There would be no change to the historic values of the place.

Demolition and removal of the Refinery Process Units would also likely improve the aesthetic significance and natural landscape setting of the Cape Bailey Lighthouse, which is a local landmark along the coast, and views from the coastal walking track within Kamay Botany Bay National Park.

During the demolition works, there may be minor, short-term adverse impacts on the landscape setting, social and symbolic values of the Kamay Botany Bay National Park and Kurnell Peninsula Headland, arising from potential unpleasant sensory impacts of the works on a visitor's experience of the place. These adverse effects would be minimised by onsite measures implemented by Caltex to limit impacts on the Kurnell district, and mitigated by the long-term benefits to the park.

5 Conclusions and Recommendations

5.1 Australian Oil Refinery

5.1.1 Retaining Significance

The HMS for the Caltex Kurnell Refinery (completed as a condition of consent for the conversion works) reviewed the heritage significance of the Australian Oil Refinery. The HMS concluded that the Site currently satisfies the criteria for listing on the State Heritage Register, based on its historic, technical and research values, and for its rare and representative elements of oil refining technology and associated engineering archives. The Site also retains much of its original layout, and an important grouping of mid-twentieth century modernist architecture in an industrial setting.

This report has built upon the background information and recommendations contained within the previous HIA for the conversion works and HMS, and incorporates a Statement of Heritage Impact (SoHI) for the demolition works. This report has confirmed that the overall heritage significance of the Site would be significantly impacted by the demolition works. However, implementation of the HMS for the Site would provide some mitigation for the loss of heritage value, by:

- Preserving a representative sample of significant refinery infrastructure in use as part of the fuel import terminal, including examples of original tanks, workshops, administrative and amenities buildings. These remnant buildings and structures were originally constructed to support the operation of the refinery. Ongoing use of these items in terminal operations is consistent with the identified heritage values of the Site, and would contribute to the conservation of these heritage values into the future.
- Preserving a representative sample of significant original / early modernist buildings in use across the Site. Consideration should be given to preparing detailed conservation management plans for highly significant buildings.
- Creating a permanent archival collection of records and moveable heritage items that documents the engineering history, social history, and unique character of the Site. A permanent and accessible archive would be a basic resource for people wishing to understand or interpret the heritage significance of the Site to present and future generations.
- Communicating the history and significance of the refinery to Caltex staff and the broader community.

Caltex has made substantial progress in implementating the strategies outlined in the HMS, although there are a few key strategies that remain to be addressed, as described in Section 1.1.2 above. Caltex has also instigated a number of additional projects to interpret or celebrate the history of the refinery, including publication of a 'popular' book about the history of the refinery, and presentation of an amateur photography exhibition featuring the refinery, currently on display in a local area gallery. Consideration could be given to exploring further future opportunities to disseminate information about the heritage significance of the place to a wider audience. Options could include temporary exhibits of photographs, archival material and/or moveable heritage items outside the local area, perhaps at the NSW State Library or the Powerhouse Museum, or an online exhibition on the Caltex website.

The following recommendations are specific to managing the potential heritage impacts of the demolition works.

Recommendation 1

Caltex would continue to implement the strategies outlined in the Kurnell Refinery HMS to mitigate the loss of heritage value arising from the Stage 2 demolition works.

Recommendation 2

Caltex would develop and implement a long-term strategy to store and conserve the Sites's significant industrial heritage records and moveable heritage collections, and disseminate information about these collections to the wider public, in accordance with the HMS. Public access to these records and collections could be supported by a continuing program of temporary exhibitions in publicly accessible locations and on the Caltex website.

Section 3.1.6 Summary of Individual Elements above notes that three buildings have been identified for demolition that are additional to those identified in the HMS. These are:

- IT/Inspection Records building (adjacent COB) (Off Cook Street);
- TAJ (Off Cook Street); and
- Substation T (Area 3: Road 6).

The IT/Inspection Records building, the TAJ and Substation T have previously been identified as having little significance or as being intrusive elements at the Site. The removal of these buildings would therefore have a minor positive impact on the heritage value of the Site.

The CLOR Maintenance Services (Change Rooms) (Area 4: Road U) was initially identified in the draft HMS for demolition. However, during finalisation of the HMS, Caltex agreed to review this decision and continue to explore the potential for the building's retention and adaptive reuse. The building has now been included in the proposed demolition works, but Caltex are committed to continuing to look at options to retain and reuse the building. If the building is demolished or retained, Caltex has committed to retaining and conserving the sculptural panel on the building as an example of the early work of the famous Australian sculptor, Bert Flugelman. Located in the former CLOR sub-precinct, this Bunning and Madden-designed building has high significance and as such its loss would have a major adverse impact on the overall heritage significance of the Site (see also Section 5.1.2 Sculptural Panels below).

The proposed demolition of other elements of plant and infrastructure has also been expanded / refined beyond what was discussed in the HMS to include:

- Additional tanks from the Eastern and Western Tank Areas; and
- Cooling water intake pipelines and pumps from the Kurnell Wharf.

One element previously scheduled for partial demolition would be retained:

- Mercaptan Oxidation Unit (Merox) (Area 1: Plant 49).

The number of early and original tanks, and the functional range of tanks proposed to be demolished as presented in this report is likely have a greater adverse impact on the physical fabric, technical significance and representative value of the Australian Oil Refinery site than previously presented in the original HIA for SSD 5544 and the HMS. However, the loss of additional significant tanks from the Eastern and Western Tank Areas would be mitigated by the retention of at least six original tanks and four other early tanks in use at the Site. The rarity and representative value of these remaining tanks would increase. The loss of original pumps and cooling water intake pipes from the Kurnell Wharf would be mitigated by retention of the cooling water pumphouse structure beside the wharf, which would continue to provide some physical evidence of the original design and function of the wharf. Consideration could be given to also retaining the steel pipe brackets along the wharf, to provide a better indication of the past function and appearance of the wharf. These brackets feature in original construction photographs of the wharf, and originally appear to have been installed prior to the pipes.

Recommendation 3

Where possible, Caltex would continue to review opportunities to adaptively reuse redundant buildings identified in the HMS as having high or moderate heritage significance prior to final demolition works. Consideration should be given to opportunities to adaptively re-use the significant heritage buildings in the former CLOR sub-precinct that are included in scope of demolition works. Demolition of high or moderately significant buildings and infrastructure should only be considered as a last resort, where there is no conceivable reuse for the building or structure.

Recommendation 4

Caltex would retain and conserve a representative sample of original tanks on site, in accordance with the HMS. These would preferably be retained in use as part of the fuel import terminal.

5.1.2 Sculptural Panels

The Bunning and Madden designed former CLOR Cafeteria (PR Room) and Maintenance Services (Change Rooms) buildings incorporate a complementary pair of high relief sculptural panels by Australian artist Herbert (Bert) Flugelman. The high relief sand panels cast in concrete, executed in 1962, represent Flugelman's first sculptural commission and as such have considerable historic importance as early examples of this famous sculptor's public art. The sculptural panels should be retained and conserved in situ. Should no opportunities for adaptive re-use of the CLOR Maintenance Services (Change Rooms) building be identified and the building is demolished as part of the demolition works, the sculptural panel, should be retained and conserved for appropriate installation elsewhere on the site. The panels were Flugelman's first commission for a large scale work and as such have considerable historic, as well as aesthetic value.

Recommendation 5

Caltex would retain and conserve the sculptural panels executed by renowned Australian sculptor Bert Flugelman. As Flugelman's first public art commission, these panels have considerable artistic and historic value.

5.1.3 Effects of Vibration

Excessive vibrations have the potential to cause structural damage to historic buildings and other structures. Significant heritage buildings that are to be retained on the Site as part of the finished product terminal could be at risk of damage due to increased vibrations during the demolition works, particularly the masonry structures.

The ***Noise and Vibration Impact Assessment,*** which forms part of this SEE (Appendix E), addresses the effects of vibration on building occupants (human comfort) and building structures (building damage). That assessment refers to the methods and criteria outlined in *Assessing Vibration: A Technical Guideline* (DEC 2006), which gives "preferred" and "maximum" vibration levels at buildings exposed to continuous and impulsive vibration. For construction vibration the guideline is to initially apply the criteria for preferred continuous vibration. In relation to building damage from vibration, suitable levels for heritage structures are determined from German Standard DIN 4150-3: 1999 *Structural Vibration – Part 3: Effects of vibration on structures*. The limits interpreted from these Standards and simplified for ease of assessment and measurement are included in Table 5.1 and Table 5.2.

Table 5.1 Vibration Criteria

Receiver	Human comfort Vibration criteria, maximum peak particle velocity (mm/s)	Building damage Vibration criteria, maximum component peak particle velocity (mm/s)
Residential buildings during daytime	0.28	5
Residential buildings during night time	0.20	5
Offices / Commercials during day	0.56	-
Heritage buildings	n/a	3

Table 5.2 Structural Damage Criteria

Type of Strucure	Peak Component Particle Velocity, mm/s			
	Vibration at the foundation at a frequency of			Vibration of horizontal plane of highest floor at all frequencies
	1Hz to10Hz	10Hz to 50Hz	50Hz to 100Hz*	
Buildings used for commercial purposes, industrial buildings and buildings of similar design	20	20 to 40	40 to 50	40
Dwellings and buildings of similar design and / or use	5	5 to 15	15 to 20	15
Structures that, because of their sensitivity to vibration, do not correspond to those listed in lines 1 and 2 and are of great intrinsic value (e.g. buildings that are under a preservation order [heritage buildings])	3	3 to 8	8 to 10	8

Note: * For frequencies above 100Hz, at least the values specified in this column shall be applied.

The *Noise and Vibration Impact Assessment* has concluded that typical vibration levels for the demolition works are unlikely to result in levels that would cause damage to buildings. Although there would be potential for demolition material to be dropped and cause vibration, every effort would be made to avoid this occurrence. However, as the standard vibration levels are indicative levels only, the *Noise and Vibration Impact Assessment* has recommended that Caltex prepare a Vibration Management Plan for buildings to be retained and which are identified in this assessment as having high or medium heritage significance. The Vibration Management Plan would outline vibration monitoring and management measures designed to protect the structural integrity of individual buildings. Caltex should implement the recommended measures to monitor the effects of vibrations on significant heritage buildings during demolition activities, to ensure against adverse impacts on significant original fabric.

Recommendation 6

Monitoring for the effects of vibration on medium and highly significant heritage buildings and structures in the vicinity of demolition works should be undertaken on a regular basis and in accordance with best practice standards, to ensure that demolition activities do not damage the fabric or structural integrity of these items.

5.2 Silver Beach and Roadway

Silver Beach and roadway is a local heritage item with aesthetic and scientific significance, and rarity value for the local area. This report has confirmed that the removal of pipelines from beneath the beach, road reserves and the neighbouring ROWs would have a minor, temporary impact on the aesthetic significance and amenity of the place. This would be mitigated by restoration of the beach, dunes, and roadway by Caltex using compatible materials following removal of the pipelines. Removal of the cooling water outlet pipe would also have a minor adverse impact on the physical

fabric of an informal sandstone wall alongside Silver Beach, while removal of various subsurface pipelines connected to the Kurnell Wharf would have a minor adverse impact on the physical fabric and narrative continuity of an interpretative concrete footpath in front of the driveway entrance to the wharf, off Prince Charles Parade. The interpretative pavement demonstrates the importance of local area's history to the community of Sutherland Shire. It is appropriate that Caltex consult with Sutherland Shire Council regarding likely damage to the interpretative pavement and the proposed mitigation measures.

Recommendation 7

Sandstone blocks from the informal sandstone wall along Silver Beach should be set aside in a secure location prior to works, and reinstated in the same location following removal of the cooling water outlet pipeline.

Recommendation 8

Caltex would implement appropriate mitigation meaures to avoid or reduce the likely damage to the interpretive footpath in front of the driveway entrance to the Kurnell Wharf. A record should be made of the current state of the pavement prior to works, and the pavement reinstated in the same location following the removal of pipelines leading to/from the wharf. The pavement would preferably be removed in sections from the area beside the wharf and set aside in a secure location for later reinstatement at the site. If this is not possible, a similar pavement treatment and a matching or compatible interpretative design should be reinstated in the footpath following the removal of the pipelines.

5.3 Kamay-Botany Bay National Park and Kurnell Peninsula Headland

The demolition works may have minor, temporary adverse impacts on the landscape setting, social and symbolic values of the Kamay Botany Bay National Park and Kurnell Peninsula Headland during demolition works, arising from potential unpleasant sensory impacts of the demolition works on a visitor's experience of the place. However, these impacts would not be sufficient to warrant a referral to the Australian Government Department of the Environment for assessment and approval by the Minister under the provisions of the EPBC Act. It has been noted that any temporary impacts would be mitigated by the long-term benefit to the landscape setting of the park, arising from the reduced prominence of the Site in significant views of the headland.

Recommendation 9

Caltex would implement onsite measures to limit the potential offsite impacts of the demolition works on visitors to the Kamay-Botany Bay National Park and Kurnell Peninsula Headland during demolition works, to preserve the social and symbolic value of the place.

5.4 Historical Archaeological Relics

The previous HIA indicated that there is unlikely to be any subsurface archaeology extant on the Site which pre-dates the history of the refinery. It is therefore unlikely that excavations associated with the demolition works would impact on significant historical archaeological relics. However, should archaeological relics be unexpectedly found during the demolition works, works in the area of the relics should cease and the Heritage Council of NSW should be notified, in accordance with Section 146 of the Heritage Act. Mitigation may include archaeological excavation of the relics.

Recommendation 10

Should historical archaeological relics be unexpectedly found during the demolition works, works in the area of the relics should cease and the Heritage Council of NSW should be notified, in accordance with Section 146 of the Heritage Act.

5.5 Aboriginal Heritage

The HIA undertaken for the conversion works indicated that the Site does not have potential to contain intact Aboriginal archaeological deposits. As with the Site, the land surface along Silver Beach has been extensively disturbed, by previous land clearance and shore reclamation works, construction of the Kurnell Wharf, and the original laying of the subsurface pipelines, such that there is unlikely to be any subsurface archaeology extant along the alignments of the pipelines which pre-dates the history of the refinery. It is therefore unlikely that excavations associated with the pipeline removal works would impact on significant archaeological deposits, objects or relics. As such, no further Aboriginal heritage assessment or community consultation is required.

The Site is unlikely to retain Aboriginal objects; however, should any Aboriginal objects be exposed during works, excavation or disturbance in the vicinity of the object should immediately cease and the Planning and Aboriginal Heritage Section of OEH should be informed in accordance with Section 91 of the NPW Act. Works should not continue without the written consent of OEH.

Recommendation 11

If unexpected Aboriginal objects are discovered during the demolition works, all work in the vicinity of the find, or with the potential to impact the find, should stop immediately and the Planning and Aboriginal Heritage Section of OEH should be informed in accordance with Section 91 of the NPW Act. Works should not proceed without the written consent of OEH.

Although the Site is unlikely to retain undisturbed soils with potential to contain Aboriginal cultural heritage items, human remains are occasionally found in coastal areas, and should any suspected human remains be identified during works, OEH protocols as per the *Code of Practice for Archaeological Investigation of Aboriginal Objects in New South Wales (Department of Environment, Climate Change and Water NSW* [DECCW] 2010: 34-35) should be followed.

Recommendation 12

If any human remains are disturbed during the demolition works all work in the vicinity of the remains must stop immediately and the remains must not be further disturbed or moved. The NSW Police and OEH's Environment Line must be notified (131 555) and provided available details of the remains and their location as soon as practicable. Works should not proceed without the written consent of OEH.

Recommendation 13

Prior to the start of works, all personnel and contractors should be briefed on the statutory requirements of the NPW and EP&A Acts and their obligations regarding protection of Aboriginal places and objects, including the protocols for unexpected finds and the discovery of human remains.

5.6 Summary of Mitigation and Management Measures

Table 5.3 Summary of proposed heritage mitigation and management measures for the demolition works.

Management and Mitigation Measures	Implementation		
	Design	Demolition	Operation
Ongoing implementation of the heritage conservation and mitigation strategies identified in the HMS	✓	✓	✓
Caltex would develop and implement a long-term strategy to store and conserve the Site's significant industrial heritage records and moveable heritage collections, and disseminate information about these collections to the wider public, in accordance with the HMS.	✓	✓	✓
Caltex would continue to review opportunities to adaptively reuse redundant buildings identified in the HMS as having high or moderate heritage significance prior to final demolition works. Consideration would be given to opportunities to adaptively re-use the significant heritage buildings in the former CLOR sub-precinct that are included in scope of demolition works.	✓	✓	✓
Caltex would retain and conserve a representative sample of original tanks on site, in accordance with the HMS. These would preferably be retained in use as part of the fuel import terminal.	✓	✓	✓
Caltex would retain, conserve and preserve the sculptural panels executed by renowned Australian sculptor Bert Flugelman. As Flugelman's first public art commission, these panels have considerable artistic and historic value.	✓	✓	✓
Monitoring for the effects of vibration on medium and highly significant heritage buildings and structures in the vicinity of demolition works would be undertaken on a regular basis and in accordance with appropriate standards, to ensure that demolition activities do not damage the fabric or structural integrity of these items.	✓	✓	
Sandstone blocks from the informal sandstone wall along Silver Beach would be set aside in a secure location prior to works, and reinstated in the same location following removal of the cooling water outlet pipeline.	✓	✓	
Caltex would implement appropriate mitigation meaures to avoid or reduce the likely damage to the interpretive footpath in front of the driveway entrance to the Kurnell Wharf. A record should be made of the current state of the pavement prior to works, and the pavement reinstated in the same location following the removal of the pipelines. The pavement would preferably be removed in sections from the area beside the wharf and set aside in a secure location for later reinstatement at the site. If this is not possible, a similar pavement treatment and a matching or compatible interpretative design should be reinstated in the footpath following the removal of the pipelines.	✓	✓	
Caltex would implement measures to limit the potential offsite impacts of the project on visitors to the Kamay-Botany Bay National Park and Kurnell Peninsula Headland during demolition works, to preserve the social and symbolic value of the place	✓	✓	
Should historical archaeological relics be unexpectedly found during the demolition works, works in the area of the relics should cease and the Heritage Council of NSW should be notified, in accordance with Section 146 of the Heritage Act.		✓	
If unexpected Aboriginal objects are discovered during the demolition works, all work in the vicinity of the find, or with the potential to impact the find, should stop immediately and the Planning and Aboriginal Heritage Section of OEH should be informed in accordance with Section 91 of the NPW Act. Works should not proceed without the written consent of OEH.		✓	
If any human remains are disturbed during the demolition works all work in the vicinity of the remains must stop immediately and the remains must not be further disturbed or moved. The NSW Police and OEH's Environment Line must be notified (131 555) and provided available details of the remains and their location as soon as practicable. Works should not proceed without the written consent of OEH.		✓	

Management and Mitigation Measures	Implementation		
	Design	Demolition	Operation
Prior to the start of works, all personnel and contractors should be briefed on the statutory requirements of the NPW and EP&A Acts and their obligations regarding protection of Aboriginal places and objects, including the protocols for unexpected finds and the discovery of human remains.		✓	

Bibliography

Australia ICOMOS 2013, *The Burra Charter: The Australia ICOMOS Charter for Places of Cultural Significance*, <The-Burra-Charter-2013-Adopted-31.10.2013.pdf>.

Australian Museum Business Services (AMBS) 2011, *Kurnell B Line Upgrade: Heritage Impact Assessment*. Consultancy Report for URS on behalf of Caltex.

AMBS 2012, *Kurnell Port and Berthing Project: Heritage Impact Assessment*. Consultancy Report for URS on behalf of Caltex.

AMBS 2013, *Caltex Kurnell Refinery Conversion: Heritage Impact Assessment*. Consultancy Report for URS on behalf of Caltex.

Australian Museum Consulting (AM Consulting) 2014, *Caltex Kurnell Refinery Heritage Management Strategy*, Consultancy Report for URS on behalf of Caltex.

Department of Environment, Climate Change and Water NSW 2010, *Code of Practice for Archaeological Investigation of Aboriginal Objects in New South Wales*, <http://www.environment.nsw.gov.au/resources/cultureheritage/10783FinalArchCoP.pdf>

Department of the Environment and Heritage 2006, *Place Details Kurnell Peninsula Headland*, <http://www.environment.gov.au/system/files/pages/b79bf717-c33f-407e-9701-2e8fa889d804/files/10581201.pdf>

Department of the Environment 2013, *Matters of National Environmental Significance: Significant impact guidelines 1.1*, <http://www.environment.gov.au/system/files/resources/42f84df4-720b-4dcf-b262-48679a3aba58/files/nes-guidelines_1.pdf>

NSW Heritage Office and Department of Urban Affairs & Planning 1996, *NSW Heritage Manual*, Sydney.

NSW Heritage Office 2001, *Assessing Heritage Significance: a NSW Heritage Manual update*.

NSW Heritage Office revised 2002, *Statements of Heritage Impact*, <http://www.environment.nsw.gov.au/resources/heritagebranch/heritage/hmstatementsofhi.pdf>.

NSW Heritage Office 2006, *Photographic Recording of Heritage Items Using Film or Digital Capture*, <http://www.environment.nsw.gov.au/resources/heritagebranch/heritage/infophotographicrecording2006.pdf>.

Sutherland Shire Council (1993-2014) *Sutherland Shire Heritage Inventory*. Comprising inventories from the *Sutherland Shire Heritage Study* Volume 6, compiled by Perumal Murphy Wu Pty Ltd, with contributions by Edward Higginbotham Consultant Archaeological Services; *Sutherland Foreshore Heritage Study* by Paul Davies Pty Ltd; *Sutherland Shire Foreshore Heritage Study Review* by Architectural Projects Pty Ltd; and ongoing updates by Sutherland Shire Council. Unpublished inventory forms and State Heritage Inventory database.

Rainer, JH 1982, 'Effect of Vibrations on Historic Buildings: An Overview,' *The Association for Preservation Technology Bulletin* Volume XIV, No. 1, Pp 2–10.

University of Wollongong 2009, 'Herbert Flugelman - School of the Arts, English and Media @ UOW', <http://lha.uow.edu.au/taem/uowac/UOW034328.html>, viewed 8 July 2014.

Websites

Australian Government, Department of Environment
<http://www.environment.gov.au>

Australian Heritage Database
<http://www.environment.gov.au/cgi-bin/ahdb/search.pl>

NSW State Heritage Inventory
<http://www.environment.nsw.gov.au/heritageapp/heritagesearch.aspx>

NSW State Library, Manuscripts, oral history & pictures
<http://www.sl.nsw.gov.au/using/search/>

Appendix A: Heritage Inventories

National Heritage List

Kurnell Peninsula Headland

State Heritage Register

Kamay Botany Bay National Park (North and South) and Towra Point Nature Reserve

Sutherland Hire Heritage Study

Four wheel drive track (Captain Cook Drive)

Silver Beach and roadway

Commonwealth of Australia Gazette

No. S 38, Monday, 28 February 2005

SPECIAL

Published by the Commonwealth of Australia

Environment Protection and Biodiversity Conservation Act 1999

DECISION ABOUT INCLUSION OF A PLACE IN THE NATIONAL HERITAGE LIST

I, Ian Gordon Campbell, Minister for the Environment and Heritage, having considered, in relation to Kurnell Peninsula (the place), included in the National Heritage List on 20 September 2004 under section 324F (Emergency Listing) of the *Environment Protection and Biodiversity Conservation Act 1999* (the Act)–

(a) the Australian Heritage Council's assessment whether the place meets any of the National Heritage criteria; and

(b) the comments given to the Council under section 324G of the Act;

alter the boundary, pursuant to subsection 324J(5) of the Act, of the listed place described in the National Heritage List to that described in the Schedule below, and remove from the List for the place the National Heritage value that caused it to meet criterion (e) as prescribed by the regulations for the purposes of section 324D of the Act.

The descriptions of the values under criteria (a), (b), (g) and (h) are varied, including: removal of the natural National Heritage values ascribed to the place under criterion (a); and removal of the historic National Heritage values ascribed to the place with respect to La Perouse under criterion (a).

The entry for this place in the National Heritage List is now as set out in the Schedule.

Dated this 24th day of February 2005

Ian Gordon Campbell
Minister for the Environment
and Heritage

Cat. No. S3805
ISSN 1032-2345

SCHEDULE

STATE
Local Government Area
Name:
Location
Values:

NEW SOUTH WALES

Sutherland Shire

Kurnell Peninsula Headland:

About 400ha, at Kurnell, comprising Botany Bay National Park, Lot 1 DP91704, the road reserve extending from Cape Baily Lighthouse in the east to the Park boundary in the west and the area between the seaward boundaries of the National Park and Lot 1 DP91704 and the Low Water Mark.

Criterion	**Values**
(a) the place has outstanding heritage value to the nation because of the place's importance in the course, or pattern, of Australia's natural or cultural history.	The Meeting Place Precinct, Kurnell Peninsula, was the site of first recorded contact between Indigenous people and Britain in eastern Australia, and symbolically represents the birthplace of a nation, and the dispossession of Indigenous people. This symbolism is reinforced by its proximity to Sydney, the site of the first British settlement, as well as its accessibility. The discovery of Botany Bay, including Kurnell Peninsula, in April 1770 by Lt. James Cook, Commander of the Endeavour, was a precursor to the colonization of Australia by Britain. The association of Cook's visit with the place is clear and well substantiated and has been celebrated since 1822. The Meeting Place Precinct, including Captain Cook's Landing Place, includes memorials and landscape plantings commemorating the events of 1770. Place names such as Inscription Point and Point Solander, the remnant watercourse, the memorials to explorers and Indigenous inhabitants, and Cook's maps of the Peninsula, in conjunction with Cooks Journal, and those of officers and scientists, clearly illustrate the events of 1770. Attributes specifically associated with its Indigenous values include the watering point and immediate surrounds, and the physical evidence of Aboriginal occupation in the area broadly encompassed by the watering place and the landing stage. Kurnell Peninsula, Botany Bay, was the first site on the east coast of the Australian continent explored by scientists from Britain, with many of the first type-specimens of flora and fauna collected near the landing site by both Banks and Solander. Of particular note in 1770 was the naming of the *Banksia* genus after Joseph Banks. Cook's naming of 'Botany Bay' in 1770 would result in its adoption as an emotive term

	for a destination, which came to be associated with convictism for much of the nineteenth century. Although Cooks' mapping of the east coast of Australia in 1770 did not appreciate the extent and importance of Port Jackson, nor the existence of Bass Strait, his running surveys were an outstanding achievement, which enabled the continental characteristics of Terra Australis, and its relationship to Papua New Guinea and New Zealand, to be defined fully for the first time. Cook's survey of Botany Bay in 1770, and clear description of the headlands at its entrance, provided information about a safe harbour with fresh water for British ships which followed. The headland area of Kurnell Peninsula, in its landmark role bounding the entrance to Botany Bay, is significant to the nation as the destination for the First Fleet under Captain Arthur Phillip in 1787. Although first settlement occurred at Sydney Cove in January 1788, Cook's first voyage, with his first landfall in Australia at Kurnell Peninsula, Botany Bay, informed the subsequent British declaration of terra nullius through his reports, and, as the destination of the First Fleet, began the process that would lead to British possession of the Australian continent by 1830.
(b) the place has outstanding heritage value to the nation because of the place's possession of uncommon, rare or endangered aspects of Australia's natural or cultural history.	Kurnell Peninsula was the first landfall made by Cook on continental Australia during his successful mapping of the eastern coastline, and is the point of first recorded contact between the British and Indigenous Australians in eastern Australia. The impact of the event and the events themselves are well described. The association of the events with the place is clear and well substantiated. The place possesses rare aspects of Australia's cultural heritage and is of outstanding heritage value to the nation. For Attributes refer to the first entry for Criterion (a).
(g) the place has outstanding heritage value to the nation because of the place's strong or special association with a particular community or cultural group for social, cultural or spiritual reasons.	'Captain Cook's Landing Place' at Kurnell Peninsula is considered by many to be of outstanding heritage value to the nation for its association with the 'the birth of the nation'. The events hold a different meaning for Indigenous Australians, marking the commencement of colonization of Australia, and dispossession, underpinned by the doctrine of *terra nullius.* The story of Cook's first landing on the east coast of Australia is nationally important, and Captain Cook's Landing Place has become a symbolic place representing an important national story.

The story of Cook's voyage, including Cook's landing place at Kurnell and first contact between the British and Indigenous Australians on the eastern seaboard, has become an integral part of Australian folk-lore and our collective psyche. There are 'Captain Cook' stories in many parts of Aboriginal Australia, including remote areas such as Central Australia and the Victoria River Downs, Northern Territory. The events have been well documented by many authors, acknowledging the place's important association with Indigenous Australian's at a national level.

Captain Cook's Landing Place is within the Meeting Place Precinct and part of the reserve set aside in 1899. For Attributes refer to the first entry for Criterion (a).

(h) the place has outstanding heritage value to the nation because of the place's special association with the life or works of a person, or group of persons, of importance in Australia's natural or cultural history

The Meeting Place Precinct, Kurnell Peninsula, is significant to the nation as the first landfall of Captain James Cook during his successful mapping of Australia's eastern coastline in 1770. This event has been celebrated by the placing of memorials since 1822 and through commemorations such as the bicentenary in 1970.

On this, Cook's first of three voyages in the Pacific, Joseph Banks was botanist, assisted by Daniel Solander and the artists Sydney Parkinson, Alexander Buchan and Herman Sporing. The artists were to produce botanical, zoological and ethnographic drawings. Banks and Solander collected 83 specimens, many of which are now the type specimens of species and genera, including Banksia. Both Banks and Solander as scientists on Cook's crew are remembered by local geographical place names; Cape Banks and Point Solander have defined the entrance to Botany Bay since 1770.

Attributes clearly associated with the landing are included within the Meeting Place Precinct. Although the location of botanical specimens collected by Banks and Solander was referred to generically as 'Botany Bay', the landing place, as the site of first exposure to the environment, was a key source of botanical specimens and species types. A number of species, including *Angophora costata* woodland on the adjacent headland areas and a native violet at the watering place, named after Banks, occur in close proximity to the landing site.

Kamay Botany Bay National Park (North and South) and Towra Point Nature Reserve

Item details

Name of item: Kamay Botany Bay National Park (North and Towra Point Nature Reserve
Other name/s: La Perouse Monument, Tomb of Pere Receve Watchtower, Cable Station
Type of item: Complex / Group
Group/Collection: Aboriginal
Category: Historic site
Primary address: Cape Solander Dve, Kurnell, NSW 2231
Parish: Sutherland
County: Cumberland
Local govt. area: Sutherland

Property description

Lot/Volume Code	Lot/Volume Number	Section Number	Plan/Folio Code	Plan/Folio Number
LOT	1		DP	1014443
LOT	1		DP	1030269
LOT	5		DP	1110408
PART LOT	456		DP	1137279
LOT	7334		DP	1162374
LOT	31		DP	217907
LOT	3		DP	232077
LOT	101		DP	555205
LOT	1		DP	556396
LOT	1		DP	706164
LOT	4		DP	732257
LOT	119		DP	752064
LOT	145		DP	752064
LOT	101		DP	777967
LOT	102		DP	777967
LOT	103		DP	777967

LOT	104		DP	777967
LOT	105		DP	777967
LOT	106		DP	777967
LOT	107		DP	777967
LOT	108		DP	777967
LOT	109		DP	777967
LOT	114		DP	777967
PART LOT	2		DP	856868
LOT	71		DP	908
LOT	72		DP	908
LOT	73		DP	908
LOT	74		DP	908
LOT	75		DP	908
LOT	76		DP	908
LOT	85		DP	908
LOT	1		DP	90998

Boundary:

Kamay Botany Bay National Park comprises an area of the north and south sandstone headlands to Botany Ba about 14 km from the centre of Sydney. The listing bou includes Towra Point Nature Reserve, a 386.4 ha penir the south west of Kurnell village in Botany Bay. (Towra Reserve Plan of Management)

All addresses

Street Address	Suburb/town	LGA	Parish	County	T
Cape Solander Dve	Kurnell	Sutherland	Sutherland	Cumberland	Pr A
Anzac Parade	La Perouse	Randwick	Botany	Cumberland	Al A
Captain Cook Drive	Kurnell	Sutherland	Sutherland	Cumberland	Al A

Owner/s

Organisation Name	Owner Category	Date Ownership Updated
Office of Environment and Heritage	State Government	

Statement of significance:

Kamay Botany Bay National Park and Towra Point Nature Reserve are of outstanding state heritage

significance as a rare place demonstrating the continuous history of occupation of the east coast of Australia. The place holds clear and valuable evidence of Indigenous occupation prior to European settlement and the natural history of the state. It is also the place where the shared history of Indigenous and non-Indigenous Australia began. It was the place where Lieutenant James Cook first stepped ashore to claim the country for Britain and plays a central role in the European history of arrival, the history of Indigenous resistance, dispossession and devastation through illness, land grants, cultivation and development.

Traditional Aboriginal custodians of the land and the current Aboriginal community have strong historical association with Kamay Botany Bay National Park and Towra Point Nature Reserve. Gweagal warriors resisted the arrival of Cook and continue to be important symbols of Aboriginal resilience. There are two important burial repatriation sites within the curtilage which are designated Aboriginal Places and have high social significance for the Aboriginal community.

The place is also significant for its historical association with important European explorers and scientists and their life's work. These include James Cook, Joseph Banks, Daniel Solander, Compte de Laperouse, Pere Receveur and Joseph Lepaute Dagelet. It is also associated with the First Fleet and the first Governor of NSW, Arthur Phillip.

The place is of state significance for the technical achievement of Banks and Solander who during their visit in 1770 made the first important collection of fauna and flora from Australia which included some items that had never before been described and classified. Previous archaeological excavations indicate that Kamay Botany Bay National Park and Towra Point Nature Reserve have significance for their high level of archaeological potential.

Kamay Botany Bay National Park and Towra Point Nature Reserve have aesthetic value as landmark headlands and natural areas with a collection of historic monuments that, combined, have important symbolism to the state of NSW. Both northern and southern parts of the national park, together with the nature reserve, contain a valuable research resource relating to Indigenous occupation, the natural history of the State and the early settlement of the colony.

Kamay Botany Bay National Park and Towra Point Nature Reserve are of state heritage significance as they contains rare remnant vegetation and flora communities and is a critical link in the

network of parks and reserves that conserve the biodiversity of NSW.

The La Perouse part the national park provides evidence of the history of French exploration in the Pacific in the late 19th century and continues to have ongoing cultural associations with the French community today.

Date significance updated: 29 Jul 13

Note: There are incomplete details for a number of items listed in NSW. The Heritage Branch intends to develop or upgrade statements of significance and other information for these items as resources become available.

Description

Physical description:

The total area of the proposed listing is 878 hectares. 492 hectares of the listing comprises Kamay Botany Bay National Park which is situated on the north and south sandstone headlands of Botany Bay. The headlands create the dramatic entrance to Botany Bay which is located about 14 km south of the centre of Sydney. The listing boundary also includes the Towra Point Nature Reserve, an area of 386.4 hectares of wetlands located to the west of Kurnell village in Botany Bay. (DECCW 2002 Botany Bay National Park Plan of Management and DECCW 2001 Towra Point Nature Reserve Plan of Management).

Northern Section
Approximately 168 hectares of Kamay Botany Bay National Park is located on the northern headland and includes Cape Banks, the coast land at Cruwee Cove, Henry Head, Congwong Beach, scrub covered dune to Anzac Parade and the peninsular on the north-eastern corner of Botany Bay known as La Perouse Headland. As Bare Island and the causeway joining it to the mainland are already listed on the State Heritage Register they are not included in the curtilage of this listing.

The coast is characterised by rocky sandstone cliffs demonstrating a fine example of the stratification of Hawkesbury sandstone. The cliff formations are punctuated by large gorges, the result of eroded basalt dykes which formed in the sedimentary rock in the early Tertiary period. (DECCW 2002)

The sandy soils are covered with diverse vegetation comprising over 350 species once common in the eastern suburbs of Sydney including rare species and communities. The most common vegetation cover is heath Banksia community (Banksia ericofolia),

prickly tea tree (Leptospermum juniperinum) and paperbark (Melaleuca nodosa). To the west of the park is a thick covering of coastal tea tree scrub (Leptospermum laevigatum) consisting of coast banksia (Banksia intergrifloria) and bangalay (Eucalyptus botryoides). In sheltered areas such as behind little Congwong Bay, lies a low closed forest of smooth barked apple (Angophora costata). (DECCW 2002)

There are several examples of vegetation communities in the park which are considered rare including the wet heath between Henry Head and Cape Banks and the closed forest around Happy Valley. The stands of Eastern Suburbs Banksia Scrub are considered to be an endangered community. An area of land bordering on Grose St contains over 140 species including pants regarded as rare and the last remaining example of the full diversity of Eastern Suburbs Banksia Scrub. It also contains several endangered freshwater swamps. This part of the park also attracts over 70 species of native birds as well as a number of species of possum, flying fox, bats and snakes. (DECCW 2002)

The northern section of Kamay Botany Bay National Park contains a number of sites relating to the pre-contact Aboriginal occupation of the place including rock engravings and a number of shell middens. (Sheppard 2009)

The La Perouse Headland contains significant historic items including; Macquarie Watchtower, Laperouse Monument, Pere Receveur's grave, the Cable Station which is now the La Perouse Museum, the Coast Cemetery, fortifications including Henry Head Battery and Fort Banks and, the site of the Happy Valley settlement.

Macquarie Watchtower is a two storey, octagonal Sydney sandstone tower approximately 7 metres tall. The walls are topped by a castellated parapet that was reconstructed circa 1961. The structure has window openings which have been in-filled with sandstone blocks and an entry door on the southern facade. (Sheppard, J. La Perouse Headland Conservation Management Plan 2008)

The former Cable Station that now houses Laperouse Museum is a two storey rendered masonry building situated on a grassy knoll of La Perouse Headland facing north overlooking Frenchmans Bay. The orientation of the building is attributed to

the positioning of the telegraph cable which came ashore at Frenchmans Bay. Designed by the Colonial Architects office the building has a single storey veranda on its northern facade and a u shaped plan. Originally symmetrical the building has had additional bays added to ether end of the building. (Sheppard 2009)

Also situated on the La Perouse Headland is a monument to the French expedition of 1788 led by Jean-Franois de Galaup Laperouse and the grave of Pere Receveur. The Laperouse monument has a central obelisk topped by a spherical brass astrolabe. It is mounted on base and surrounded by a low wall topped with a steel picket fence. Numerous plaques have been placed around the monument commemorating the voyages of other French ships. The headstone and tomb of Pere Receveur, the priest and naturalist of the French expedition, was erected many years after his death. Initially the grave was marked by an inscription on a tree and over time became more formalised.

Behind Congwong Beach is the location of a former settlement known as Happy Valley that was a collection of shacks erected during the Depression. The shacks have been removed and vegetation has regenerated. There is potential for archaeology dating from this period of occupation.

There are coastal fortifications located on Henry Head and Cape Banks designed and constructed by the British army from the late 19th century onwards.

Behind the headland is the original Coast Hospital Cemetery which is now a designated Aboriginal Place; the Dharawal Resting Place - Coast Hospital Cemetery. Containing approximately 3000 burials there are some headstones and the remains of a paved stone road to the site. Aboriginal ancestral remains were reburied within the Dharawal Resting Place (previously known as the Little Bay Cemetery Resting Place) in 2002 and 2005.
(http://www.environment.nsw.gov.au /aboriginalplaces /DharawalCoastHospitalCemetery.htm)

Southern Section
The southern section of Kamay Botany Bay National Park covers an area of about 324 hectares on the eastern end of the Kurnell Peninsula.

The area of the park to the north east of Kurnell village is bounded by the waters of Botany Bay and large rock platforms. This area, which is sometimes referred to as "The Meeting Place", extends over approximately 20 hectares of the eastern part of the park.

The Meeting Place precinct contains a large number of items of pre-contact Aboriginal heritage, shell middens, burial sites, a bora ring, birthing tree and other items of Aboriginal heritage significance. It also contains post contact heritage items of significance to both European and Aboriginal history.

The Meeting Place contains a number of monuments and memorials to Cook, the botanist Solander, Sir Joseph Banks and Forby Sutherland, an Endeavour crew member who died at Botany Bay. It also contains Alpha House previously known as the Kurnell accommodation house, constructed by the Captain Cooks Landing Place Trust in 1902. The accommodation house was built on the remains of two earlier dwellings and a cellar of one of these remains beneath the cottage.

An important element, historically and environmentally is the stream that flows into Botany Bay near the landing place. It was here that Cook and his party restocked their fresh water supplies under the careful eye of the local Aboriginal people. There have been a number of archaeological excavations in this area and on the flat between the wharf and the stream and in the vicinity of the Alpha House site. The area is considered to have high archaeological potential. The place is marked by a plaque and by more recent interpretive works.

To the southern and eastern boundary of the park follows the 40 metre high Hawkesbury sandstone cliff landscape of Cape Solander which is punctuated by deep narrow gorges at Tabagai Gap and Yena Gap. Further to the south this rocky coastal boundary gives way to sand dunes which extend south to Potter Point . Within the cliff landscape and dunes of this area there have been archaeological excavations and it is considered these areas also have archaeological potential. Dune landscape characterises the southern part of the park inland. Vegetation is mainly Kurnell dune forest which grows on the sand hills which overlook the coast where Cook is said to have landed. There are pockets of dry eucalypt forest on the higher reaches and this forest continues over Cape Solander

Drive and up to the sandstone heights approaching the sandstone cliffs falling to the ocean on the east. (DECCW 2002)

The area down to Potters Point supports heath lands on sandstone and heath on dunes, which are characterised by old man banksia (Banksia serrata), sheoak (Allocasuarina distyla) and grass trees (Xanthorrhoea resinosa). There are also wetlands on sandstone and wetlands in dunes which sustain native grasses (Gahnia sieberana and Scripus littoralis), lemon scented bottlebrush (Callistemon citrinus), and heath banksia (Banksia robur) which are rare in the Sydney region. As well as pockets of dry eucalyptus forest, there are also several pockets of Kurnell dune forest in the southern reaches of the Park and important patches of littoral rainforest. (DECCW 2002)

Among the diversity of fauna living on the Kurnell peninsula are endangered or vulnerable species. The threatened green and gold bell frog (Litoria aurea) and the threatened tinkling froglet (Crinia tinnula) have been recorded in the southern part of the park along with the more common eastern long-necked tortoise (Chelodina longicollis). 96 species of bird frequent the scrub, forest wetlands and shores of the Kurnell peninsula. Some of the species noted to be of local, state or regional significance are the Japanese snipe, whimbrel, arctic jaeger, common eastern tern, peregrine falcon, red-necked stint, the threatened powerful owl, silvereye, red-browed finch, New Holland honey eater and the surperb fairy wren. (DECCW 2002 op cit)

Towra Point Nature Reserve
Within the nature reserve is the Towra Point Keeping Place Aboriginal Place which is an Aboriginal reburial site where ancestral remains have been returned to Country. Evidence of past Aboriginal occupation (campsites evidenced by shell middens and stone artefact scatters) can be found in the local area. Local vegetation is dominated by sclerophyll forest and includes coast banksia and tea tree.
(http://www.environment.nsw.gov.au /aboriginalplaces /TowraPointKeepingPlace.htm)

The RAMSAR listed wetlands reserve of 386 ha is located on the shores of Botany and Wooloware Bays to the west of Kurnell village. The Towra Point landscape of alluvial and marine sands supports vegetation communities that are now rare in the Sydney

region. There are vegetated dunes and coastal banksia woodlands, littoral rainforest patches and
stands of rare bangalay and swamp oak forests. There are also a few stands of the magenta brush cherry (Syzygium paniculatum), a species listed as vulnerable. Importantly the area contains saltmarshes which support a rare sedge, (Gahnia filum) which grows at the edge of the marshes, located on the land side of Mangroves. The Towra Point wetlands are home to a large variety of local and migrating wading and shorebird species as well being the second most important breeding site for the little tern (Sternula albifrons) and the only breeding place in the Sydney region. Other species which live in the wetlands include the pied oyster catcher (Haematopis longirostris), terek sandpiper (Tringa terek) and the peregrine falcon (Falco peregrinus) all of which are listed as threatened in NSW. Full details of the vegetation communities at Towra Point can be found in Towra Point Nature Reserve Plan of Management. (DECCW 2001)

Physical condition and/or Archaeological potential: While part of the bushland areas of the park have previously been subject to farming and suburban development (La Perouse headland) the park and the nature reserve contains some of the best examples of original vegetation in the south east Sydney regions and support a host of endangered and vulnerable species of fauna.
There is a high level of archaeological potential over most of the park relating to Aboriginal cultural heritage as well as European arrival and exploration such as the French expedition's garden evidence of other activity during their visit.
The Macquarie Watchtower is in fair condition.

Date condition updated: 13 Dec 12

Further information: Relatively intact

Current use: National Park, natural and heritage conservation, research and recreation

Former use: Southern section was farm land, recreation

History

Historical notes: Geological History
Botany Bay lies within a small tectonic depression known as the Botany Basin which in turn is situated within the larger Sydney Basin comprising modified sedimentary deposits laid down about 270 million years ago during the Primean period. The northern and southern headlands featuring Hawkesbury sandstone cliffs

which were formed during the Triassic period, between 200 and 250 million years ago. (Tuck 2008).

On the Kurnell peninsular, about 20,000 years ago at the height of the ice age the Kurnell headland was a sandstone hill. The old dunes formed much of what is now Botany Bay and the Kurnell headland. Between 18000 and 10000 years ago as the sea level rose seagrass, salt marsh and mangroves developed and moved inland. The first evidence of Indigenous occupation of the area appears to be about 12000 years ago. At this time the swales of the old dunes contained swamps.(Bear 2011)

By 7400 years ago the sea levels stopped rising and the cliffs and rock platforms at Kurnell were eroded by wave action to form sheer cliffs. Between 9000 and 6000 years ago the Kurnell isthmus began to form as the mud and sand of the Georges River built up.

The locations now known as Sliver Beach and Bonna Point were subject to a build up of sand from about 6500 years ago. At about the same time a series of parallel dunes formed behind Bate Beach and Towra Point as the Georges River estuary shifted and sand and mud was dropped to the north of the Kurnell isthmus. The mud and sand deposit breached sea level and a dune formed on the deposit. This dune was vegetated with Kurnell dune forest, treed wetland, littoral rainforest, mangroves, sheoaks and saltmarsh.

From 4500 years ago swamps developed in the low parts of the dunes and a series of moving dunes formed as a result of violent weather events. These new dunes covered the peninsular and the tidal flats of Botany Bay. Here again, swamps formed in these new dunes allowing soils and dune forest to develop. As these dunes eroded, sandstone was exposed and eventually sandstone heath colonised that area. Between 3000 and 2000 years ago the sea level dropped to current levels. (Bear 2011)

Aboriginal people pre-contact
Most archaeological evidence relates to Indigenous occupation in the area from about 3000 - 2000 years ago. People living to the south of Botany Bay to Nowra were of the Dharawal language group. The people moving through and living in the Kurnell area were the northern most clan of the Dharawal speakers, the Gweagal. On the northern headland the people were most likely Cadigal people of the Darug language group. (Tuck 2008)

The people living on the headlands and shores at the entrance to Botany Bay benefited from the many food and other resources and the mild

climate of the area. On both shorelines are many midden sites providing evidence of the rich variety of sea foods enjoyed by the Indigenous people, aside from the reptiles and mammals which also lived in the heath and forests. Fishing was the major source of food for the Indigenous people of the area. Fish hooks were made from turban shells and fishing lines and nets were also made from bark and native grasses. Timber from the forests at Kurnell and La Perouse provided bark for huts, canoes, coolamons, and lomandra leaves were woven together to make bags. (Tuck 2008)

Many of the local plants were edible such as the roots of the common fern and Warrigal, a spinach like leafy plant that grew along the local fresh water streams on both northern and southern headlands. Other foods included the nectar from Banksia flowers and witchetty grubs which lived in the stems of Banksia and Wattle. (Merv Ryan cited in Andersen and Hamilton 2006)

Because of its bountiful resources, the north and south headlands of Botany Bay were important ceremonial gathering places for the Dharawal on the south of Botany Bay and the Darug on the northern shores. At Kurnell there are several important ceremonial sites including a bora ring used for rites and an ochre pit located near the current site of the oil refinery which provided pigment for such ceremonies. (Tuck 2008;, Andersen and Hamilton 2006)

Kurnell was possibly a semi-permanent home for the Gweagal. A marker tree distinguished by a ring-shaped hole in its trunk marks the site of a women's camp. The area also contains carved trees from which the bark for canoes and coolamons were taken and a women's birthing site indicating the intensive use of the area by the pre-contact Gweagal community. (Merv Ryan cited in Andersen and Hamilton 2006)

Aboriginal ancestral remains have been reburied in the park. These remains, taken from the Botany Bay region, were stored in various museum collections until repatriation. For Aboriginal people, the return of ancestors' remains to Country is highly significant because it then reunites ancestors with Country. (http://www.environment.nsw.gov.au /aboriginalplaces/TowraPointKeepingPlace.htm)

Similarly, the La Perouse section of the park contains evidence of every day lives of Aboriginal people before European settlement including middens and engravings which illustrate the everyday observations and preoccupations of the Indigenous people pre European contact. (Sheppard 2009)

Arrival of Cook
In the days preceding 29 April 1770 Dharawal people of the southern coastal area between Nowra and Kurnell observed a large "white bird" (oral tradition of the local people) or floating island which was Lieutenant James Cook's Endeavour, as it passed along the coast towards the headlands of Kamay (Botany Bay). The Endeavour entered Botany Bay and lay anchor opposite the location of a small bark hut 'village' on the southern shores of Kamay Botany Bay. Here James Cook and some of his crew prepared to land on the shores of Gweagal country. It is now understood that Cook's bold arrival and landing on Dharawal land was a severe breach of Indigenous etiquette, and an affront to the traditional owners of the land at Kurnell and was the cause of the events that then unfolded. (Aunty Beryl Timbery cited in Andersen and Hamilton 2006)

In traditional Aboriginal culture it is customary for visitors to wait to be invited to approach the custodians of that area so when Cook and his men landed, the local people attempted to discourage the strangers from entering land: two warriors painted in ceremonial ochre threatened the British with spears to which Cook ordered either one or two muskets fired. (Banks's and Cook's accounts as noted in A Contextual history of Botany Bay, Maria Nugent, 2005). One shot found its mark and hit one of the warriors who ran to find a shield and continued the defence of his country. As Cook and his party landed, a spear was thrown by one of the warriors before they retreated and commenced to ignore the intruders for the entire time the British were anchored in the bay. This according to Nugent is consistent with the customary right of country owners to demand to meet visitors on their own terms.

During the following eight days the passengers and crew of the Endeavour explored the shores and hinterland areas around Botany Bay. The main purpose of visiting Botany Bay was to obtain fresh water for the next leg of the journey. On the second day of their stay, Cook and his men found a stream located near the bark hut village from which they replenished the ships water supplies. The stream still flows today.

The location of the Endeaver's landfall and Cook's claim of the east coast of the continent for Britain is now commonly known as Captain Cook's Landing Place.

One of the most significant activities undertaken that week was the botanical collecting undertaken by Sir Joseph Banks and Daniel

Solander, the brilliant young pupil of Carolus Linnaeus. On completing his studies in Sweden, Solander travelled to England to promote the Linnaean system of classification and soon took up a position classifying collections at the British Museum. He was employed by Banks in 1868 to assist him on Cook's voyage of exploration. (Australian Dictionary of Biography)

Banks and Solander collected a large number of plant and animal specimens at Botany Bay, including many which had not been collected or described previously and became the type specimens of species and genera, including the Banksia, named for Joseph Banks. Much of the collection work was carried out near the landing place and in the area now known as Towra Point and its wetlands, and on the northern shore of Botany Bay.

The extent and quality of the specimens collected led Cook to name the bay Botany Bay in acknowledgment of the important work undertaken by Banks and Solander. Besides being described and classified by Solander, every specimen was sketched by Sydney Parkinson. These sketches were rendered as watercolours when Banks and Solander returned to England and then engraved and later included in the publication Banks Florilegium.

Arrival of Phillip
On 18 January 1788, eighteen years after the first visit by the British, Governor Arthur Phillip arrived at Botany Bay with the First Fleet where it was intended to establish the first British settlement in the colony. While anchored in Botany Bay a number of officers established seemingly friendly contact with the Aboriginal people, exchanging whistling tunes, confirming humanity and gender and exchanging gifts, and on the southern shores by introducing a child travelling with the fleet to the Aboriginal people there. (Tuck 2008; Nugent 2005; Clendinnen 2003)

Phillip was disappointed at the lack of water on the shores of the bay and dismayed by the large numbers of Aboriginal people inhabiting the place. By 26 January 1788 Phillip had left Botany Bay and sailed for Port Jackson where the first settlement in Australia was made.

Arrival of Laperouse
At the same time Botany Bay was visited by the French expedition under the command of Jean-Francois Galaup de Laperouse whose frigates, La Boussole and Astrolabe anchored near Frenchman's Beach on 24th January 1788. Captain Hunter of the first fleet established contact with the French in the absence of Governor Phillip.

The French ships had sailed from Samoa where they had been involved in a battle with the Samoans. Numerous people on both sides were killed and injured. One of those injured in the event was the expedition's priest and naturalist, Pere Receveur. Receveur died at La Perouse on 17 February 1788 and was the first French person to be buried on the mainland. He was interred in a headland grave marked with a common headstone. In 1829 a tomb was erected over the site of his grave. (Dan Tuck 2008)

The French spent 6 weeks at La Perouse during which time they repaired damage done during the Samoan battle. An observatory was established on the northern headland for the use of Joseph Lepaute Dagelet whose observations and scientific experiments are among the first European scientific endeavours in Australia. Dagelet undertook calculations on map positions of Botany Bay and carried out astronomical observations which he later shared with Englishman William Dawes. (http://www.migrationheritage.nsw.gov.au /exhibition/objectsthroughtime/dagelet/)

The departure of Phillip and then Laperouse from Botany Bay marked a period of time where, at least on the southern shores of the bay, Aboriginal people did not come into much contact with Europeans. Kurnell headland was a remote spot and was not subject to a land grant until 1815. On the northern shores of the bay the La Perouse peninsula remained relatively unsettled until the 1860s and 1880s when a pioneering fishing community worked the waters at Botany Bay and lived in La Perouse. (Tuck 2008; Clendenning 2003; Karskens 2009)

While their land was not immediately settled by Europeans white colonisation had a profound impact on the people of the area, the most significant being the spread of disease such as smallpox. There are caves at Little Bay just north of the northern section of the Botany Bay National Park and also a cave on Cape Solander in the southern section of the park in which it is believed that skeletal remains from these outbreaks were found. This has not been confirmed. (Andersen and Hamilton 2006)

Settlement during the 19th and 20th centuries - La Perouse
By 1830 the land which is now the northern section of Botany Bay National Park was dedicated as a Government Reserve. From about 1820 a small contingent of Government troops were stationed at La Perouse headland to scout for the unexpected arrival of ships and to monitor and control smuggling activity. By 1822 these troops were housed in "Macquarie's

Tower", a sandstone castellated watchtower. From 1829 when the monuments to Laperouse and Pere Receveur were erected the watchtower was used as accommodation for a caretaker employed to look after the La Perouse Monument and the tomb of Pere Receveur. These monuments are still frequently visited by the French and are the site of events such as a memorial ceremony on Bastille Day each year, mass to Pere Receveur and Laperouse Day. (Tuck 2008; OEH Comments on Draft Text 2012)

In 1831 the watchtower was acquired by the Customs Department to house a tide waiter, or customs officer, and two boatmen who manned the La Perouse customs house outstation. (Tuck 2008)

By 1869, in response to the perceived threat of armed attack by foreign forces, a program to bolster the colony's defences was in place and a military road was constructed to the La Perouse headland. By 1871 a gun battery was in place on Henry Head and in 1881 a large 'mass concrete' fort was under construction on Bare Island and was operational by 1890.

In 1876 La Perouse headland was the site where the overseas underwater telegraphic cable emerged. The first makeshift facility of tents and huts was replaced in 1881 by a brick Cable Station sited centrally on the west of the headland overlooking Frenchman's Beach. After 1917 when it was no longer used as offices for the telegraph company it became a nurses' home and later a home run by the Salvation Army Most recently it is used as the La Perouse Museum. (Tuck 2008)

Many Aboriginal people who had traditionally lived in the La Perouse area left after the establishment of European settlement but by the 1870s Aboriginal people, including descendents from families associated with La Perouse and Botany Bay, along with Aboriginal people from the south coast, began to return to the area. When George Thornton, the government's Protector of Aborigines, started removing Aboriginal people from urban areas he was successfully lobbied by a group from La Perouse who were allowed to remain at the La Perouse camp. Thornton even constructed huts for them at the camp, justifying the decision to parliament by arguing that the camp was economically viable. By 1881 there were two camps with 35 Aboriginal people recorded to be living at La Perouse and a further 15 in Botany Bay within the boundaries of what is today Kamay Botany Bay National Park. (La Perouse Mission Church SHR Nomination OEH 2012)

In 1881 there was an outbreak of smallpox in

the colony. To deal with the epidemic an isolation hospital was established at Little Bay which became known as the Coast Hospital and later in 1934 became Prince Henry Hospital. Associated with the Coast Hospital is the Coast Cemetery which is located south of the hospital and now is enclosed by Kamay Botany Bay National Park.

The Coast Hospital Cemetery is an Aboriginal Place and is an important burial, repatriation, and reburial site for the La Perouse and Metropolitan Local Aboriginal Land councils and Dharawal Aboriginal people. In 1881, the first part of the Coast Hospital Cemetery was opened. This section was used until 1897, when a northern burial section was established and used until 1952. The cemetery was used as a burial ground for the La Perouse Aboriginal reserve; though, the cemetery was predominantly used as a burial ground for infectious disease patients from Prince Henry Hospital. There are 90 marked graves in the Coast Hospital Cemetery, though it is estimated that up to 3000 people are buried there.
The area was selected as an Aboriginal repatriation and reburial site because of its long-standing significance to the local Aboriginal people. The cemetery contains the burials of several family members. Aboriginal ancestral remains were reburied within the Dharawal Resting Place (previously known as the Little Bay Cemetery Resting Place) in 2002 and 2005. Members of the La Perouse and Metropolitan Local Aboriginal Land councils and other Dharawal descendents regularly visit the area, maintaining close connections to Country and ancestors. (http://www.environment.nsw.gov.au /aboriginalplaces /DharawalCoastHospitalCemetery.htm)

A small Anglican Aboriginal mission was established in the area in 1885 and a church built in1894. In 1895 the camp at Frenchmans Bay, La Perouse was gazetted as an Aboriginal Reserve. The people who lived there worked as fishermen, in the Chinese Gardens, at the timber mills and wool washes in the area or made boomerang and other artefacts for sale to tourists who flocked to the area after the construction of the tramway to La Perouse at the turn of the century. Many women and children crafted shell decorations for sale. (La Perouse Mission Church SHR Nomination OEH 2012)

During the Great Depression, La Perouse was the site of a shanty town known as Happy Valley which was located within the boundaries of the Botany Bay National Park behind Congwong Beach. Those who arrived at Happy Valley simply selected a spot and erected their home from corrugated iron or whatever could be

found. Reputedly there was a lot of positive interaction between residents at Happy Valley and those on the Aboriginal Reserve. While life was hard at Happy Valley some residents revelled in the carefree existence where without a job one could swim at the beach all day. In 1939, after intense lobbying by the neighbouring Golf Club, Randwick Council moved all the residents to more suitable accommodation and demolished the shanty town. (migrationheritage.nsw.gov.au/exhibition /atthebeach/happy-valley/)

During the 1960s a wave of new white residents arrived at La Perouse and lobbied for the removal of the reserve at Yarra Bay. The Aboriginal community has resisted these efforts and the La Perouse community remains one of the strongest and most established Aboriginal communities in Sydney. (Dan Tuck 2008 Op cit)

Settlement in the 19th and 20th Century - Kurnell
In 1815 Governor Macquarie made a grant of 700 acres of land to James Birnie at Kurnell. Here he established a farm, raising vegetables and stock and constructing a homestead on the site of the current Alpha House near Captain Cooks Landing Place in the Kamay Botany Bay National Park.

In 1821 another grant was made of 1000 acres at the nearby Quibray Bay to John Connell, a free settler who arrived in NSW in 1801 and set up a large iron mongery in Sydney. When in 1828 Birnie was declared insane, Connell bought Alpha Farm and by 1838 he owned almost the entire Kurnell peninsula. His grandson John inherited the estate on John senior's death in 1851. He cleared the land heavily and sold the timber to the Sydney market. (www.ssec.org.au/our_environment /our_bioregion/kurnell/history/occupation /earliestsettlers)

Facing financial ruin in 1860, John Connell Jr mortgaged his landholdings at Kurnell to Thomas Holt who took ownership in 1861. Holt, a successful wool merchant and member of the Legislative Council, was a prominent and influential figure in NSW. (Australian Dictionary of Biography)

Holt established a scientific oyster farming program at Quibray Bay, attempted to raise sheep on specially planted pastures of imported grass and dabbled in timber getting and even coal mining on the Kurnell peninsula. This work was done with the assistance of a large number of employees including a number of Aboriginal people including William Rowley, a Gweagal man, who was also an enterprising local

fisherman born at Towra Point. (Dan Tuck 2008 Op cit)

Despite Holt's efforts at Kurnell none of the enterprises were very successful and by 1881 he began subdividing the estate. Even this exercise was not successful and a number of unsold lots within the current national park were set aside as a public reserve in the 1899 along with an area similarly reserved at an earlier date. The reserve, totalling 100 hectares at the time, was managed by a Trust under the auspices of the Department of Lands. (Sue Andersen and Mary Ann Hamilton 2006 Op cit)

From the 1820s Captain Cook's Landing Place was a popular destination for people with an interest in European history in Australia. Many people visited various places of interest such as the plaque at Inscription Point which had been installed by the Philosophical Society of Australasia in the early 1820s (Design 5 Architects & Biosis Research and Geoffrey Brittan 2006 The Meeting Place Heritage Assessment). In 1870 Thomas Holt erected Cook's Obelisk to mark the European arrival at Botany Bay. To cope with the area's increasing visitation Holt built the first wharf at Kurnell just adjacent to the Obelisk and a steam ferry began to operate some time around 1882 (ibid).

The reserve was the responsibility of the Department of Lands up until 1967 and was managed by a Trust right up until 1974. The Trust employed a caretaker and field staff to maintain the reserve. It also spent considerable time and money on siting and erecting monuments to Cook and his crew. In 1918 the Trust erected the Solander Obelisk and in 1947 the Banks Memorial. (Sue Andersen and Mary Ann Hamilton 2006 Op cit)

A cottage was erected on the site of the first Alpha Farm House which provided accommodation for visitors as well as for the Reserve caretaker whose wife operated a kiosk from the kitchen.(ibid)

In the years after WWII, while under the management of the Trust, the area became a hugely popular holiday destination for campers. Families who faithfully returned to camp there each year set up semi-permanent camps in small timber cabins and tents painted with calcimine for weatherproofing and with stoves, and camp beds. Most of their food they brought with them but fresh milk was sourced daily from the caretaker's wife who managed a herd of cows which roamed the reserve. Holiday camping at the park continued until around 1977 when the National Parks and Wildlife Service discontinued this use and disposed of the semi-permanent

dwellings. (ibid)

Like at La Perouse, the Kurnell section of Botany Bay National Park had a shanty town. This was established in the cliff overhangs and caves overlooking the Pacific Ocean at Cape Solander and Tabbagi Gap. The earliest dwelling was built in 1919 and others were constructed during the Great Depression in the 1930s. These dwellings were constructed of tin and timber, and stoves and other home wares were installed to make the place comfortable. They continued to be used during the 1940s, 1950s and 1960s by recreational fishermen and local eccentrics. (ibid)

The Aboriginal people of La Perouse retained a strong link with the Kurnell section of the Botany Bay National Park throughout the 20th century. Kurnell was a frequent destination for family groups who would travel over by ferry and spend the day fishing, swimming, foraging for bush foods. The banks of Cooks Stream was a source of warrigal greens and further afield one could find five corner berries, wombat berries and sarsaparilla. (ibid)

Sonny Simms who grew up at La Perouse in the 1930s and 40s recalled that the resources of the bay, its fish and shellfish, were an important supplement to the family's food resources when his father left and his mother became the sole provider for her family of 9 children. The family would travel to Kurnell where their mother taught them how to catch fish, lobster and abalone. The fish caught would be cooked up in an old five gallon drum and eaten on the spot. (ibid)

Other resources found in the park and at Towra Point were the mangrove knees which up until the late 1960s were harvested to make boomerangs for the tourist trade. The shells for the La Perouse women's shell craft work were collected from the beach at Wanda. (Elder Gloria Ardler cited in Andersen and Hamilton 2006)

The huge sand dunes and their large freshwater ponds were a strong memory for Sonny Simms who as a child regularly swam in these. The dunes survived relatively unaffected up until the 1950s when the Oil Refinery was established there. It was not until the Sydney building boom in the late 1960s and 1970s that the demand for sand resulted in the dunes becoming degraded by sand mining over much of the Kurnell peninsula. (ibid)

In 1967 the Reserve at Kurnell was handed over to the National Parks and Wildlife Service which, besides its environmental charter, had custody of historic sites of which Captain Cook's Landing

Place at Kurnell was one. By 1974 National Parks and Wildlife Service was able to take on the full management of the Park and the Reserve Trust was disbanded. The Botany Bay National Park was finally gazetted in 1988. (ibid)

Under the management of National Parks and Wildlife Service much work has been done to redress the balance in articulating the Aboriginal and European historical and cultural values of the place. This is evidenced in the renaming of the longstanding Commemoration Day ceremony as the Meeting of Cultures ceremony and the structured involvement of local Aboriginal elders in the ceremony. In addition Aboriginal people have been closely involved in other important events in the park such as the start to the Olympic Torch Relay in 2000 which was commenced by one of the Aboriginal Park Rangers.(ibid) A significant amount of work has been done to the interpret the history and connections of the site in particular in the opening of interpretive walks and the re-opening of the freshwater stream. (submission from NPW, OEH 2013)

Perhaps the most significant events to have been held in the park in recent years have been the repatriation burials. These events are of great importance to the local Aboriginal community as local Elders received back the remains of their ancestors from public institutions where they were studied and regarded as curiosities to their own land.(ibid)

Historic themes

Australian theme (abbrev)	New South Wales theme	Local theme
1. Environment-Tracing the evolution of a continent's special environments	Environment - naturally evolved-Activities associated with the physical surroundings that support human life and influence or shape human cultures.	(none)-
2. Peopling-Peopling the continent	Aboriginal cultures and interactions with other cultures-Activities associated with maintaining, developing, experiencing and remembering Aboriginal cultural identities and practices, past and present.	(none)-
4. Settlement-Building settlements, towns and cities	Land tenure-Activities and processes for identifying forms of ownership and occupancy of land and water, both Aboriginal and non-Aboriginal	(none)-
4. Settlement-Building settlements, towns and cities	Towns, suburbs and villages-Activities associated with creating, planning and managing urban functions, landscapes and lifestyles in towns, suburbs and villages	(none)-

7. Governing-Governing	Government and Administration-Activities associated with the governance of local areas, regions, the State and the nation, and the administration of public programs - includes both principled and corrupt activities.	(none)-
8. Culture-Developing cultural institutions and ways of life	Creative endeavour-Activities associated with the production and performance of literary, artistic, architectural and other imaginative, interpretive or inventive works; and/or associated with the production and expression of cultural phenomena; and/or environments that have inspired such creative activities.	(none)-
8. Culture-Developing cultural institutions and ways of life	Leisure-Activities associated with recreation and relaxation	(none)-

Assessment of significance

SHR Criteria a)
[Historical significance]

The geological and botanical features of Kamay Botany Bay National Park and Towra Point Nature Reserve are of state heritage significance for their ability to demonstrate the natural history of the state.

Kamay Botany Bay National Park and Towra Point Nature Reserve also have the ability to clearly demonstrate Indigenous pre-contact history of the state and to demonstrate aspects of the way of life of the Aboriginal people before European settlement.

Kamay Botany Bay Park is of exceptional heritage significance for the state as the place where the shared Indigenous and European history of Australia began. It was the place where Lieutenant James Cook first stepped ashore to claim the country for Britain and the first meeting place between Indigenous people and the colonisers. The place plays a central role in the European history of arrival and the history of Indigenous dispossession and devastation through illness, land grants, cultivation and development. The meeting of Indigenous and non-Indigenous Australia is a story that is central to the development of the colony and of symbolic importance to the state .

Kamay Botany Bay National Park is

	historically significant as it was the first point of landing of the first fleet of settlers in Australia and the site of later developments in colonial defences and customs regulation. It also demonstrates the early development of communications in the colony. The park is historically significant as it contains evidence of French exploration during the late 18th century. Kamay Botany Bay National Park and Towra Point Nature Reserve are historically significant as the place where Joseph Banks's and Daniel Solander's unique botanical collection was sourced and later classified using the Linnaean system of classification. Kurnell Peninsula and Towra Point were the sites of the first scientific investigation of the east coast of Australia by British scientists. The former Cable Station at La Perouse is significant for its role in telegraphic communication connecting New Zealand with Australia by sub-marine cable for the first time in 1876.
SHR Criteria b) [Associative significance]	Traditional Aboriginal owners of the land and the current Aboriginal community have strong historical association with Kamay Botany Bay National Park and Towra Point Nature Reserve. The place is associated with the Gweagal warriors who resisted the arrival of arrival of Cook and the crew of the Endeavour. Kamay Botany Bay National Park and Towra Point Nature Reserve is significant for its association with important European explorers and scientists and their life's work. These include James Cook, Joseph Banks, Daniel Solander, Comte de Laperouse, Pere Receveur and Joseph Lepaute Dagelet. Kamay Botany Bay National Park has an important association with the First Fleet and Governor Arthur Phillip, first Governor of NSW. Governor Macquarie is also associated with the site as he commissioned the erection of the earliest known sandstone tower building in Australia, the Macquarie Watchtower. The place is also associated with French explorers

	under the command of Comte de Laperouse who were the first Europeans to stay in the place for an extended period of 6 weeks. The Kurnell peninsula has an important association with one of the colony's noted entrepreneurs and politicians, Thomas Holt. It also has historic association with members of the Aboriginal community who lived and worked with the first settlers on the Kurnell peninsula. The place also has historical association with the Aboriginal people who lived at La Perouse throughout the nineteenth and twentieth centuries and whose descendents continue to live in the area.
SHR Criteria c) [Aesthetic significance]	The cliffs edging the sea side entrance to Kamay Botany Bay National Park in both the northern and southern sections are of state heritage significance for their strong and dramatic landmark qualities that take on a symbolic aspect in relation to the historic events that took place after the Endeavour laid anchor inside Botany Bay and Cook stepped onto Dharawal land. As well as the natural features of the site there are significant structures which have aesthetic value. The former cable station was designed by the noted colonial architect, James Barnet. The two storey octagonal sandstone tower with castellated turret top built in circa1811, as a military guardhouse and lookout station, is a distinctive feature on the headland. The Doric column memorial to the Laperouse expedition is another feature of the grouping on the northern headland. On the southern headland a commemorative obelisk marking Captain Cook's landing site erected in to 1822 is another distinctive landmark. The green peninsula of Towra Point Nature Reserve is an aesthetically appealing natural landscape amidst an otherwise industrial or suburban setting on the south side of Botany Bay.
SHR Criteria d) [Social significance]	Both the northern and southern sections of the Botany Bay National Park are of State heritage significance for members of the local and state-wide Aboriginal community

as it is the site of the first meeting of Indigenous and European cultures. For many people who live locally and throughout the state it is the home of their ancestors, it is the place where their ancestors are buried and where they lived before Europeans arrived. It is also important to Aboriginal people as one of the earliest sites of resistance to British colonisation. The place is also an important site of cultural renewal as the story of the arrival of Cook and those that followed remains an important story within the Aboriginal community.

The Towra Point Keeping Place Aboriginal Place and the Dharawal Resting Place - Coast Hospital Cemetery repatriation sites are highly significant places to members of the La Perouse Local Aboriginal Land Council and the Dharawal Aboriginal people associated with Botany Bay. Visitation to these sites enables Dharawal people to maintain close connections to Country and ancestors.

Cook's landing place is important to the European community as it marks the arrival of the British and the establishment of Britain's southern-most colony. It is regarded as the birthplace of the European Australian Nation and the first meeting place of Aboriginal and British communities.

The northern shores of Botany Bay, the La Perouse peninsula, has a very special association for the French community in Australia and French people overseas as it was the last landfall of the noted French explorer, Jean-Francois Galaup de Laperouse. The esteem the expedition is held in is marked by the Monument to Laperouse commissioned in 1829 by the French and the annual ceremonies celebrating the visit of Laperouse.

SHR Criteria e)
[Research potential]

The place is of state significance as a place of important technical achievement with the collecting efforts of Banks and Solander who during their visit in 1770 made the first important collection of fauna and flora from Australia. The Banks and Solander collection included many items that had never before

	been described and classified. The publication of Banks's Florilegium, a full colour edition which included illustrations and descriptions of the entire collection from the voyage in 1770, was the culmination of Banks's and Solander's work. Previous archaeological excavations indicate that Kamay Botany Bay National Park and Towra Point Nature Reserve have significance for their high level of archaeological potential. The La Perouse headland is significant as the place where the crew of Laperouse's expedition of exploration made camp was where Joseph Lapaute Dagelet set up his observatory and made the first astronomical observations in Australia.
SHR Criteria f) [Rarity]	Kamay Botany Bay National Park is a unique place with state level rarity values as it is the place where the British colonisers first stepped ashore in Eastern Australia and the meeting place of Indigenous and white colonial Australia. Kamay Botany Bay National Park and the Towra Point Nature Reserve wetlands contain rare remnant vegetation and fauna communities threatened and endangered species and vegetation communities such as: the Eastern Suburbs Banksia Scrub community, the littoral rainforest and Kurnell dune forest, a vast array of threatened and endangered bird species such as the little tern, frogs such as the green and gold bell frog and mammals like the grey headed flying fox. The park is an important link in the network of parks and reserves in NSW and plays an important role in conserving the biodiversity of the State.
SHR Criteria g) [Representativeness]	Kamay Botany Bay National Park contains evidence of the intensive occupation by Indigenous people before the arrival and settlement by Europeans and is representative of the pre-contact Indigenous cultural landscape. The remnant vegetation communities of Towra Point Nature Reserve and Kamay Botany Bay National Park are representative of the original vegetation communities which would

have been evident from Sydney Cove to Port Hacking.

Kamay Botany Bay National Park is a representative example of a site with an extensive grouping of memorials commemorating highly significant historic events: the historic meeting of Indigenous and British cultures, the exploration of Captain James Cook, the important scientific collection work undertaken on the site by Banks and Solander, the noted French explorer Comte de Lapérouse and his party.

Towra Point Nature Reserve and Kamay Botany Bay National Park represent the role of parks and reserves in the conservation of biodiversity.

Integrity/Intactness: Substantially intact.

Assessment criteria: Items are assessed against the State Heritage Register (SHR) Criteria to determine the level of significance. Refer to the Listings below for the level of statutory protection.

Procedures /Exemptions

Section of act	Description	Title	Comments	Action date
57(2)	Exemption to allow work	Standard Exemptions	SCHEDULE OF STANDARD EXEMPTIONS HERITAGE ACT 1977 Notice of Order Under Section 57 (2) of the Heritage Act 1977 I, the Minister for Planning, pursuant to subsection 57(2) of the Heritage Act 1977, on the recommendation of the Heritage Council of New South Wales, do by this Order: 1. revoke the Schedule of Exemptions to subsection 57(1) of the Heritage Act made under subsection 57(2) and published in	Sep 5 2008

			the Government Gazette on 22 February 2008; and 2. grant standard exemptions from subsection 57(1) of the Heritage Act 1977, described in the Schedule attached. FRANK SARTOR Minister for Planning Sydney, 11 July 2008 To view the schedule click on the Standard Exemptions for Works Requiring Heritage Council Approval link below.	
57(2)	Exemption to allow work	Heritage Act - Site Specific Exemptions	HERITAGE ACT 1977 ORDER UNDER SECTION 57(2) To Grant Site Specific Exemptions from Approval Kamay Botany Bay National Park (North and South) and Towra Point Nature Reserve SHR No. 1918 I, the Minister for Heritage, on the recommendation of the Heritage Council of New South Wales, in pursuance of section 57(2) of the Heritage Act 1977 (NSW), do, by this my order, grant an exemption from section 57(1) of that Act in respect of the engaging in or carrying out of any activities described in Schedule "C" by the [owner,	Nov 29 2013

mortgagee or lessee of the land] described in Schedule "B" on the item described in Schedule "A".

The Hon Robyn Parker, MP.
Minister for Heritage

Sydney, Day of 2013

SCHEDULE "A"

The item known as the Kamay Botany Bay National Park (North and South) and Towra Point Nature Reserve, situated on the land described in Schedule "B".

SCHEDULE "B"

All those pieces or parcels of land known as Lot 1 of Deposited Plan 1014443, Lot 1 of DP 1030269, Lot 5 of DP 1110408, Lot 7334 of DP 1162374, Lot 31 of DP 217907, Lot 3 of DP 232077, Lot 101 of DP 555205, Lot 1 of DP 556396, Lot 1 of DP 706164, Lot 4 of DP 732257, Lot 119 of DP 752064, Lot 145 of DP 752064, Lot 104 of DP 777967, Lot 101 of DP 777967, Lot 102 of DP 777967, Lot 106 of DP 777967, Lot 103 of DP 777967, Lot 105 of DP 777967, Lot 107 of DP 777967, Lot 108 of DP 777967, Lot 109 of DP 777967, Part

Lot 2 of DP 856868, Lot 71 of DP 908, Lot 72 of DP 908, Lot 73 of DP 908, Lot 74 of DP 908, Lot 75 of DP 908, Lot 76 of DP 908, Lot 85 of DP 908, Lot 1 of DP 90998, Parish of Sutherland, County of Cumberland shown on the plan catalogued HC 2565 in the office of the Heritage Council of New South Wales.

SCHEDULE "C"

The following activities do not require approval under 57(1) of the Heritage Act 1977 providing they do not impact the significant fabric or cultural landscapes of Kamay Botany Bay National Park or Towra Point Nature reserve. Exempt activities are as follows: Activities identified as having an acceptable level of heritage impact in a Plan of Management for Kamay Botany Bay National Park or Towra Point Nature Reserve. Cultural practices by Aboriginal people and the sharing of these practices with others. Conservation works and activities clearly identified in the maintenance schedules or schedule of works outlined in a Conservation Management Plan for the site or elements within the

site which has been endorsed by the Heritage Council of NSW.
Temporary infrastructure associated with Festivals, filming and events.
Bush regeneration activities including re-vegetation that do not involve any impacts on archaeological resources and relics.
Threatened species and communities recovery and pest management activities.
Emergency management and response activities related to significant incidents, which may require immediate and urgent action.
New tracks, track maintenance, upgrades and improvements which do not materially affect the significance of the park and do not involve any impacts on archaeological resources and relics.
Infrastructure maintenance and improvement including: energy saving works and the installation of sustainable technologies (solar power, water tanks etc), electrical supply infrastructure, navigation aids, water and sewerage pipelines, pump stations and pits, existing toilet facilities and enclosed

			infrastructure, fences, erosion control and soil conservation works, Park User Fee infrastructure (including parking metres and E-tag technologies), maintenance of existing roads, fire and other trails and tracks, including sub-grade, pavement and drainage works where these works do not involve any impacts on archaeological resources or structures identified as being significant. Maintenance and upgrade of existing visitor facilities including toilets, bbqs, picnic shelters, signage, car parks, walking track, fencing, bollards, road barriers and road works. New walking paths and seating on La Perouse Headland as identified in the final approved La Perouse headland Interpretive Landscape Plan. Beach re-nourishment activities. Roadside vegetation control including manual, mechanical and chemical treatment of non-culturally significant vegetation. Asset management zone vegetation control manual, mechanical and chemical treatment of non-culturally significant vegetation. Signage associated with park use and		

			management. Environmental rehabilitation work including temporary silt fencing, tree planting, and weed removal and rubbish removal. Demolition of the Sydney Pistol Club buildings and rifle range at Cape Banks and all associated remediation works. Demolition of the toilet block at the entry to La Perouse Headland loop road and all associated remediation works. Activities affecting the movable heritage that forms the collection of the Laperouse Museum in the former Cable Station building. Solar panels on a concrete pad with security fencing and associated cabling for electricity to supply Henry Head Lighthouse.	

Standard exemptions for works requiring Heritage Council approval

Listings

Heritage Listing	Listing Title	Listing Number	Gazette Date	Gazette Number	Gazette Page
Heritage Act - State Heritage Register		01918	29 Nov 13	162	5397 & 539

References, internet links & images

Type	Author	Year	Title	Internet Links
Written		2011	Draft Kamay Botany Bay La Perouse Headland and Bare Island Interpretation, Landscape and Architectural Plan	

Written	Sue Andersen and Mary Ann Hamilton	2006	Kamay Botany Bay Oral History	
Written	Context Pty Ltd with Urban Initiatives	2008	The Meeting Place Precinct: Conservation Management Plan	View detail
Written	Dan Tuck	2008	La Perouse Headland: A Shared History	
Written	DECCW	2010	Towra Point - internationally significant wetlands	
Written	DECCW	2002	Botany Bay National Park Plan of Management	
Written	DECCW	2001	Towra Point Nature Reserve Plan of Management	
Written	Design5 Architects, Biosis Research and Geoffry Britton	2006	Heritage Assessment for the Meeting Place	
Written	Disctionary of Biography	2011	Essays on Danial Solander, Joseph Banks, Compte de La Perouse, Pere Receuver	
Written	Grace Karskens	2009	Colony	
Written	Inga Clendinnen	2003	Dancing with Strangers	
Written	Jill Sheppard Heritage Consultants P/L	2009	La Perouse Headland: Conservation Management Plan	
Written	Maria Nugent	2005	A Contextual History of Botany Bay	
Written	Migration Heritage Centre	2011	At the Beach Exhibition	
Written	NSW Office of Environment and Heritage	2013	NSW Atlas of Aboriginal Places	View detail
Written	Sutherland Shire Environment Centre	2011		
Written	Virginia Bear	2011	Kurnell Peninsula, a guide to the plants animals, ecology	

			and landscapes	

Note: internet links may be to web pages, documents or images.

(Click on thumbnail for full size image and image details)

Data source

The information for this entry comes from the following source:

Name:	Heritage Office
Database number:	5061543
File number:	12/04200; 10/8180

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Every effort has been made to ensure that information contained in the State Heritage Inventory is correct. If you find any errors or omissions please send your comments to the Database Manager.

Present name
Captain Cook Drive

Other name(s)

Location

Locality
Connects Kurnell Peninsula with North Cronulla

Present owner
~~Road and Traffic Authority~~ SSC

Address

Category
Other work

Sub category
Other - road

Reference number
28

Date inspected
15/1/93

Survey by
Kirsty Altenburg

Property description

Site area

Existing zoning

Photograph Film / negative nos: L/31

Caption Captain Cook Drive , from West

Reference number	28
Present name	a. former four wheel drive track (now largely covered by Captain Cook Drive) b. Captain Cook Drive
Date of construction	
Architect	
Builder	
Materials exterior	Bitumen road
Materials interior	
Other physical details	Road and electricity requirements for Caltex Oil Refinery
Site condition	Intact structure
Modifications	

Listings	
SHIP themes	15. The transport network. 24. Industrialisation or deindustrialisation.
Local themes	Getting there - transport.
Historical period	1951-1975 Post 1975
Other historical notes	Kurnell was extremely isolated until Sutherland Shire Council, with apparently some limited financial contribution from Caltex, constructed the first road in the 1950s.
Information sources	Thematic History, 11-12

Historic	Representative Locality
Aesthetic	
Social	
Scientific	Representative Locality
Other	
Statement of Significance	This site represents the theme of transport and its difficulties, and the isolation of some areas within the Sutherland Shire until very recently.
Recommendations	This site should be recorded prior to disturbance.

SUTHERLAND SHIRE HERITAGE STUDY

Prepared by Perumal Murphy Wu Pty Ltd for
Sutherland Shire Council and the NSW Department of Planning

Reference No: L12

Present Name: Silver Beach and roadway	Date Inspected: 30.9.92 Survey By: WA
Location: Prince Charles Parade Town/Suburb: KURNELL Postcode: 2231 Locality Real Description	Category Sub Category
Present Owner: Town/Suburb Postcode	Site Area Existing Zoning

Evaluation Criteria:

Historic	Rare ☐	Associative ☐	Representative ☐
Aesthetic	Rare ☐	Associative ☐	Representative ☑
Social	Rare ☐	Associative ☐	Representative ☐
Scientific	Rare ☐	Associative ☐	Representative ☑
Other	Rare ☑	Associative ☐	Representative ☐

Date

Architect/Designer

Builder

Significance: Beach with remnant native vegetation in important setting on Botany Bay, affording dramatic views over Botany Bay. Combined with a series of rare stone groynes, set along beach to protect sandy beach from storms. Local significance.

Location Plan

Physical Characteristics:

Description: Narrow series of curving white sandy beaches along south eastern edge of Botany Bay. Remnant native vegetation such as Wattles and Spinifex grass. Affording extensive views of Botany Bay, Kurnell peninsula and the city skyline. Stone groynes constructed in repetitive lines, jutting into bay to conserve sand on beach rarely found in Sydney area. Recent introduction of Norfolk Island pines not sympathetic with the indigenous vegetation of Boona Reserve, or the recommended regeneration of patches of remnant native vegetation from the bay.

Historical Period:

	Built	Used
Pre 1800	☐	☐
1800 - 1825	☐	☐
1826 - 1850	☐	☐
1851 - 1875	☐	☐
1876 - 1900	☐	☐
1901 - 1925	☐	☐
1926 - 1950	☐	☐
1951 - 1975	☐	☐
Post 1975	☐	☐

Historical Themes:

SHIP EA

Local

Heritage Listings:

- ☐ Register of the National Estate (AHC) - Registered
- ☐ Register of the National Estate of Aust (AHC) - Interim
- ☐ Register of the National Trust (NSW)
- ☐ Register of Significant Twentieth Cent. Architecture (RAIA)
- ☐ Department of Public Works Heritage and Cons. Register
- ☐ Heritage Council Register - Permanent Cons. Order
- ☐ Heritage Council Register - Interim Cons. Order
- ☐ Heritage Council Register - Section 130 Order
- ☐ Heritage Council Register - Nomination
- ☐ NSW Govt Dept Heritage Register (S.170 Heritage Act)
- ☐ NP&WS Historic Sites Register
- ☐ NP&WS Aboriginal Sites Register (Contact Sites)
- ☐ Institution of Engineers (NSW) Heritage Register
- ☐ Existing Heritage Study
- ☐ Regional Environmental Plan Heritage Schedule
- ☐ Local Environmental Plan Heritage Schedule
- ☐ Other

Sources