Prepared for
Ampol Australia Petroleum Pty Ltd
ABN: 17 000 032 128

AECOM

Kurnell Terminal SSD-5544 MOD-7

Appendix K - Heritage Impact Assessment

12 May 2025

aecom.com

Delivering a better world

Kurnell Terminal SSD-5544 MOD-7

Appendix K - Heritage Impact Assessment

Client: Ampol Australia Petroleum Pty Ltd

ABN: 17 000 032 128

Prepared by

AECOM Australia Pty Ltd
Gadigal Country, Level 21, 420 George Street, Sydney NSW 2000, PO Box Q410, QVB Post Office NSW 1230, Australia
T +61 1800 868 654 www.aecom.com
ABN 20 093 846 925

12-May-2025

AECOM in Australia and New Zealand is certified to ISO9001, ISO14001 and ISO45001.

Table of contents

Figures

Tables

Executive summary

The Kurnell Terminal ('the Site') is located on the southern side of Botany Bay, in Kurnell, New South Wales (NSW) (Figure 1-1). In 2012, Ampol Refineries (NSW) Pty Ltd (Ampol) announced that the oil refinery and fuel terminal would be converted to a finished product terminal (the 'approved project'), ceasing refinery operations in 2014.

Development consent was received to complete the approved project under State Significant Development (SSD) application reference 5544 (SSD-5544). Ampol has modified SSD-5544 six times to complete the conversion and demolition works.

Currently, the operational infrastructure is primarily located in the northern part of the Site (Zones 1 and 1A, as shown in Figure 1-1). Other parts of Ampol's landholdings at Kurnell include largely vacant areas of previously developed land (Zones 2 and 3) and areas of undeveloped land containing extensive native vegetation (Zones 4 and 5).

Ampol intends to consolidate operational infrastructure, remove redundant assets, and undertake remediation and grading. Completion of these works (the 'proposed modification', MOD-7) would continue the safe, viable, and reliable operation of the Kurnell Terminal, whilst preparing the land for future uses. The location within the Site that these works would occur is referred to as the 'Project Area.'

The purpose of this Heritage Impact Assessment (HIA) report is to provide an assessment of the impacts of the proposed modification on potential non-Aboriginal heritage values. The Site is part of an archaeological item of local heritage significance in the Sutherland Shire Local Environmental Plan (LEP) 2015, as "Australian Oil Refinery" (A2524). Another item, "Four Wheel Drive Track," also passes through the Site (A2523).

Following a review of the historical context, existing heritage listings, previous heritage literature regarding the former refinery, a site visit, and a review of its heritage significance, it is concluded that the proposed modification would not cause any additional adverse impacts. It is noted that following the scale of previous demolitions, the Site is now an archaeological site and is listed as an archaeological item, rather than one of built heritage.

Despite this, the heritage significance of three structures to be demolished as part of the proposed modification is recognised. Whilst it is generally preferable to retain these buildings, it is considered that their "high" heritage significance relates to their intangible characteristics due to their roles in the operation of the former refinery, rather than any existing tangible characteristics.

Photographic, audio visual, and archival recordings were undertaken of all buildings and infrastructure within the Site while the refinery was in operation (i.e., prior to demolition) in accordance with SSD-5544 and MOD-1 (Demolition Works). These were undertaken in 2014, and a copy of the 26-volume photographic recording was viewed by the author in July 2024 in the State Library of NSW (Call numbers HQ 2016/16 and HQ 2015/2318). The photographic recording includes exterior and interior photographs of all significant buildings prior to the refinery's closure, including the three buildings of heritage significance now proposed for demolition. This recording appears to satisfies the requirements of the Heritage NSW guideline, *Photographic Recording of Heritage Items Using Film or Digital Capture* (Heritage Office, 2006). It is therefore considered that no further recording of the items is required prior to their demolition.

In line with approved mitigation measures, stop work procedures are incorporated into the Construction Environmental Management Plan (CEMP). Should any unexpected heritage items be uncovered, a heritage specialist would assess the find and determine the appropriate next steps.

1.0 Introduction

1.1 Overview

The Kurnell Terminal ('the Site') is located on the southern side of Botany Bay, in Kurnell, New South Wales (NSW) (Figure 1-1). In 2012, Ampol Refineries (NSW) Pty Ltd (Ampol) announced that the oil refinery and fuel terminal would be converted to a finished product terminal (the 'approved project'), ceasing refinery operations in 2014.

Development consent was received to complete the approved project under State Significant Development (SSD) application reference 5544 (SSD-5544). Ampol has modified SSD-5544 six times to complete the conversion and demolition works.

Currently, the operational infrastructure is primarily located in the northern part of the Site (Zones 1 and 1A, as shown in Figure 1-1). Other parts of Ampol's landholdings at Kurnell include largely vacant areas of previously developed land (Zones 2 and 3) and areas of undeveloped land containing extensive native vegetation (Zones 4 and 5).

Ampol intends to consolidate operational infrastructure, remove redundant assets, and undertake remediation and grading. Completion of these works (the 'proposed modification', MOD-7) would continue the safe, viable, and reliable operation of the Kurnell Terminal, whilst preparing the land for future uses. The location within the Site that these works would occur is referred to as the 'Project Area.'

A Modification Report has been prepared to support a modification application to SSD-5544. This *Heritage Impact Assessment* is one of a number of technical documents that forms part of the Modification Report. In line with the requirements of Section 4.55 of the *Environmental Planning & Assessment Act 1979* (EP&A Act), the Modification Report provides the information required by Section 100 of the *Environmental Planning and Assessment Regulation 2021* (EP&A Regulation).

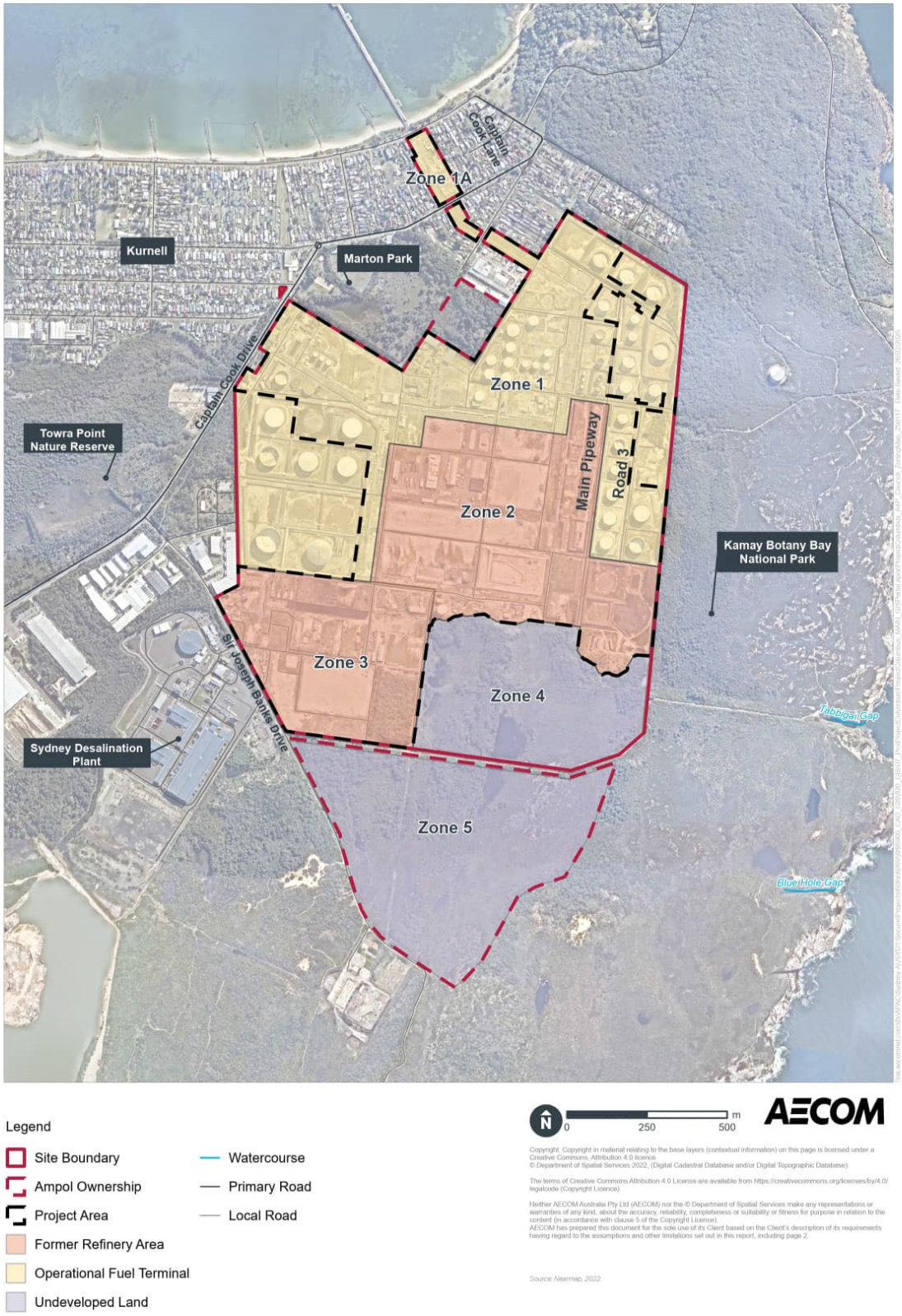

Figure 1-1 Ampol Kurnell Terminal (the Site)

1.2 The proposed modification

1.2.1 Key elements of the proposed modification

To support the continued safe, viable, and reliable operation of the Site and to facilitate the future use of the Site, the proposed modification works involve:

- **Stage 1 – Preparation works**: Preparing the Project Area for proposed modification works
- **Stage 2 – Removal, relocation and/or augmentation of infrastructure**, including:
  - Relocation and/ or augmentation of firewater systems (FWS) and oily water sewer (OWS) systems and construction of new operational facilities, including replacement warehouses
  - Decommissioning and removal of non-operational assets, redundant structures and electrical assets
- **Stage 3 – Remediation**: Addressing legacy ground contamination, including asbestos-contaminated soil (ACS)
- **Stage 4 – Grading**: Landforming the Project Area following removal of infrastructure and ground remediation activities and preparing Zones 2 and 3 for future use
- **Stage 5 – Demobilisation**: Demobilisation of construction and remediation equipment.

These stages may occur sequentially or concurrently, depending on site requirements.

A summary of project elements requiring modification and how they relate to the approved project is provided in Table 1-1. The proposed modification works would be undertaken within the Project Area shown on Figure 1-2. All activities would adhere to the Kurnell Terminal permit to work system to ensure compliance with environmental and safety protocols.

Table 1-1 Modified project summary table

Stage	Element	Approved project	Modified project
Stage 1	Project Area	Project Area delineation	• Prepare the Project Area for the proposed modification works required under Stages 2, 3 and 4 and exclude other parts of the Site from proposed modification works.
Stage 2	Oily water sewer (OWS)	Maintain location in Zones 2 and 3	• Divert surface water runoff from potentially contaminated areas in Zone 2 to Zone 1 via new OWS interception pits/ lines until Stage 3 remediation is complete. • Divert potential leachate from ACS containment cell in Zone 2 to Zone 1 OWS system. • Remove all redundant OWS infrastructure.
	Firewater systems (FWS)	Maintain location in Zone 2 and 3	• Augment or remove FWS infrastructure from Zones 2 and 3. • If removed from Zone 2, augment existing FWS in Zone 1 with a new firewater tank and pipework to service the terminal infrastructure. • Locate the new firewater tank and pumphouse within the FWS Relocation Area (specific siting selected during detailed design).
	Electrical assets	Maintain location in Zone 2 and 3	• Remove redundant electrical assets in Zones 2 and 3, including five substations.

Stage	Element	Approved project	Modified project
	Structures	Maintain location in Zone 2 and 3	• Demolish remaining structures in Zones 2 and 3. • Construct new 'fit for purpose' warehouse and Oil Spill Equipment Storeroom within Zone 1. • Construct new storage shed in Zone 1A.
Stage 3	Remediation	Removal of ACS from pipeways and either containment onsite or offsite disposal	• Remediate land in Zones 2 and 3 as necessary. • Remediate land in Zone 1 where infrastructure is relocated and/ or augmented as necessary. • Conduct remediation to a commercial/ industrial land use under the ASC NEPM (2013).
Stage 4	OWS	Maintain location in Zones 2 and 3	• Disconnect and remove remaining underground OWS lines from Zones 2 and 3, except for lines connecting to the ACS Containment Cell. • Install a new pump adjacent to the ACS Containment Cell. Two site options have been identified (specific siting selected during detailed design).
Stage 4	Grading	Grading following demolition of structures and removal of infrastructure across the Site and relevant Project Areas	• Construct new onsite detention (OSD) basins in Zone 3 to attenuate runoff and maintain pre-construction surface water flow rates. • Grade Zone 2 following Stage 2 and Stage 3 activities to manage stormwater and prepare for future land uses. • Grade Zones 1 and 3 as necessary.
Stage 5	Demobilisation	Demobilisation of construction equipment.	• Demobilisation of construction equipment.

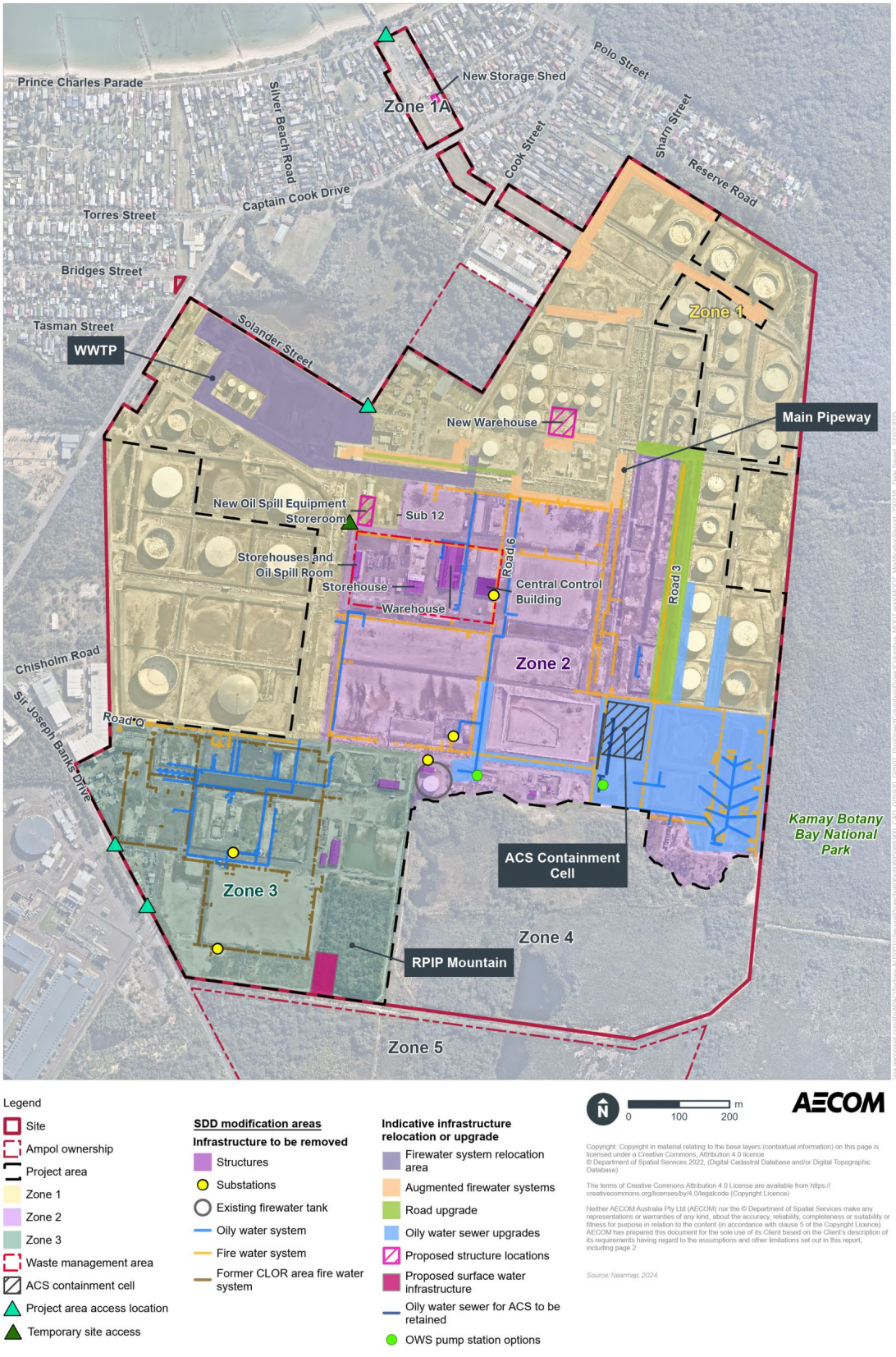

Figure 1-2 The proposed modification

Once the modification works are complete, the Site would continue to operate as described in the approval documentation for the approved project and would be consistent with the development consent for SSD-5544.

In line with Figure 1-2, relocated equipment would operate in their new locations.

1.2.2 Construction timeline and equipment

Works are planned to commence in August 2025 and would continue for about 12 months for infrastructure removal scopes and up to four years for remediation works in accordance with the schedule in Table 1-2.

In line with Condition C18 of SSD-5544, construction works would comply with following hours:

- Monday to Sunday – 7am to 10pm.

High noise generating construction works, including works within the Eastern Right of Way (Zone 1A), would be confined to less sensitive times of the day and not undertaken on Sundays, public holidays, or outside of the hours 7am and 6pm Monday to Saturday (in line with Condition C19).

Construction works outside of the work hours identified above would only be undertaken in the following circumstances (in line with Condition C20):

- Works that are inaudible at nearest sensitive land receivers
- Works that are consistent with Ampol's existing maintenance procedures and are in accordance with the existing Environmental Protection Licence (No. 837) (EPL)
- Works agreed to in writing by the Environment Protection Authority (EPA) or the Department of Planning, Housing, and Infrastructure (DPHI)
- For the delivery of materials required outside these hours by the NSW Police Force or other authorities for safety reasons
- Where it is required in an emergency to avoid the loss of lives, property and/ or to prevent environmental harm.

Table 1-2 Proposed modification program

Stage	Timeframe
Stage 1 – Preparation works	August 2025
Stage 2 – Removal and/or relocation of infrastructure[1]	August 2025 – August 2026
Stage 3 – Remediation	August 2025 – July 2029
Stage 4 – Grading	Zone 2: August 2026 – December 2026 Zone 3: up to July 2029
Stage 5 – Demobilisation	September 2026 (for all works except remediation)
[1] Construction in Zone 1A expected to last 3 months.	

Plant and equipment that would be used to deliver the modification works is shown in Table 1-3.

Table 1-3 Indicative plant and equipment

Plant/ equipment	Maximum number required per day (all stages except Stage 3)	Maximum number required per day (Stage 3)
Front end loader	6	6
20 t excavator	6	6
Dump truck	6	6
Grader (up to 7 m blade)	-	4
Large crane (60 t)	4	-
Elevated work platform	6	-
Franna crane (30 t)	6	-
Cement truck	6	-
Bobcat	6	2
Water cart	6	6
Concrete crusher	2	-
Telehandler	6	-
Truck and dog (offsite disposal)	6	6
Truck and dog (imported fill)	-	12
Generator	2	2
Biopiling blower	-	8

1.3 Purpose of this report

This HIA is one of a number of technical documents that forms part of the Modification Report. The purpose of this report is to understand potential impacts of the proposed modification upon non-Aboriginal heritage values.

2.0 Assessment methodology

2.1 Relevant legislation and guidelines

2.2 State

2.2.1 Heritage Act 1977

The *Heritage Act 1977* was enacted to conserve the environmental heritage of NSW. Under Section 32, places, buildings, works, relics, moveable objects, or precincts of heritage significance are protected by means of either Interim Heritage Orders (IHO) or by listing on the NSW State Heritage Register (SHR). Items that are assessed as having State heritage significance can be listed on the SHR by the Minister on the recommendation of the NSW Heritage Council.

Proposals to alter, damage, move, or destroy places, buildings, works, relics, moveable objects, or precincts protected by an IHO or listed on the SHR require an approval under Section 60 (s60). There are standard exemptions to the requirement for a s60 permit under Section 57 (s57)(1) of the Act. SSD projects do not require permits under the *Heritage Act 1977;* therefore, the proposed modification to SSD-5544 does not require any permits.

Under Section 170 (s170) of the *Heritage Act 1977*, NSW Government agencies are required to maintain a register of heritage assets. The Register places obligations on the agencies, but not on non-government proponents, beyond their responsibility to assess the impact on surrounding heritage items.

2.2.2 Environmental Planning & Assessment Act 1979

The NSW Environmental Planning and Assessment Act 1979 (EP&A Act) and its associated regulations provide the framework for assessing environmental impacts and determining planning approvals for developments and activities in NSW. The EP&A Act also establishes State Environmental Planning Policies (SEPPs) and Local Environmental Plans (LEPs) which may include provisions relevant to the Project.

As noted above, the proposed modification is classified as State Significant Development under Part 4 (SSD-5544).

2.3 Local

2.3.1 Sutherland Shire Local Environmental Plan 2015

Part 5 Section 5.10 of the Sutherland Shire LEP 2015 deals with heritage conservation within the area covered by this LEP. All heritage items listed on the LEP are included in Schedule 5 of the document. The LEP states:

"*(1) Objectives. The objectives of this clause are as follows—*

(a) to conserve the environmental heritage of Sutherland Shire Local Government Area (LGA),

(b) to conserve the heritage significance of heritage items and heritage conservation areas, including associated fabric, settings, and views,

(c) to conserve archaeological sites,

(d) to conserve Aboriginal objects and Aboriginal places of heritage significance.

(2) Requirement for consent. Development consent is required for any of the following—

(a) demolishing or moving any of the following or altering the exterior of any of the following (including, in the case of a building, making changes to its detail, fabric, finish or appearance)—

(i) a heritage item,

(ii) an Aboriginal object,

(iii) a building, work, relic or tree within a heritage conservation area,

(b) altering a heritage item that is a building by making structural changes to its interior or by making changes to anything inside the item that is specified in Schedule 5 in relation to the item,

(c) disturbing or excavating an archaeological site while knowing, or having reasonable cause to suspect, that the disturbance or excavation will or is likely to result in a relic being discovered, exposed, moved, damaged or destroyed,

(d) disturbing or excavating an Aboriginal place of heritage significance,

(e) erecting a building on land—

(i) on which a heritage item is located or that is within a heritage conservation area, or

(ii) on which an Aboriginal object is located or that is within an Aboriginal place of heritage significance,

(f) subdividing land—

(i) on which a heritage item is located or that is within a heritage conservation area, or

(ii) *on which an Aboriginal object is located or that is within an Aboriginal place of heritage significance."*

The following subsection relates to archaeological sites specifically:

"(7) The consent authority must before granting consent under this clause to the carrying out of development on an archaeological site (other than land listed on the SHR) or to which an interim heritage order under the Heritage Act 1977 applies) –

(a) notify the Heritage Council of its intention to grant consent, and

(b) take into consideration any response received from the Heritage Council within 28 days after the notice is sent."

This 28-day period to allow for Heritage Council response to any granting of consent on the Australian Oil Refinery archaeological item (A2524) under this subsection would need to be taken into consideration for the overall timing of the proposed modification to SSD-5544.Although SSD consent would supersede these requirements, best practice dictates that, if there is no conflict, that it would be appropriate to inform Heritage Council and seek a response, as per this subsection.

2.3.2 Statutory database searches

Searches of the following statutory databases were undertaken on 19 February 2024:

- Australian Heritage Database (World, National, Commonwealth heritage lists)
- NSW SHR
- Schedule 5 of Sutherland Shire LEP 2015.

No heritage items were identified within or adjacent to the Project Area. However, the following archaeological sites were identified.

Table 2-1 Database search results

Name	Address	Identifier	Database
Australian Oil Refinery	Sir Joseph Banks Drive, Kurnell	A2524	Sutherland Shire LEP 2015
Four-Wheel Drive Track	Captain Cook Drive, Kurnell	A2523	Sutherland Shire LEP 2015

These sites are detailed below and shown in Figure 2-1.

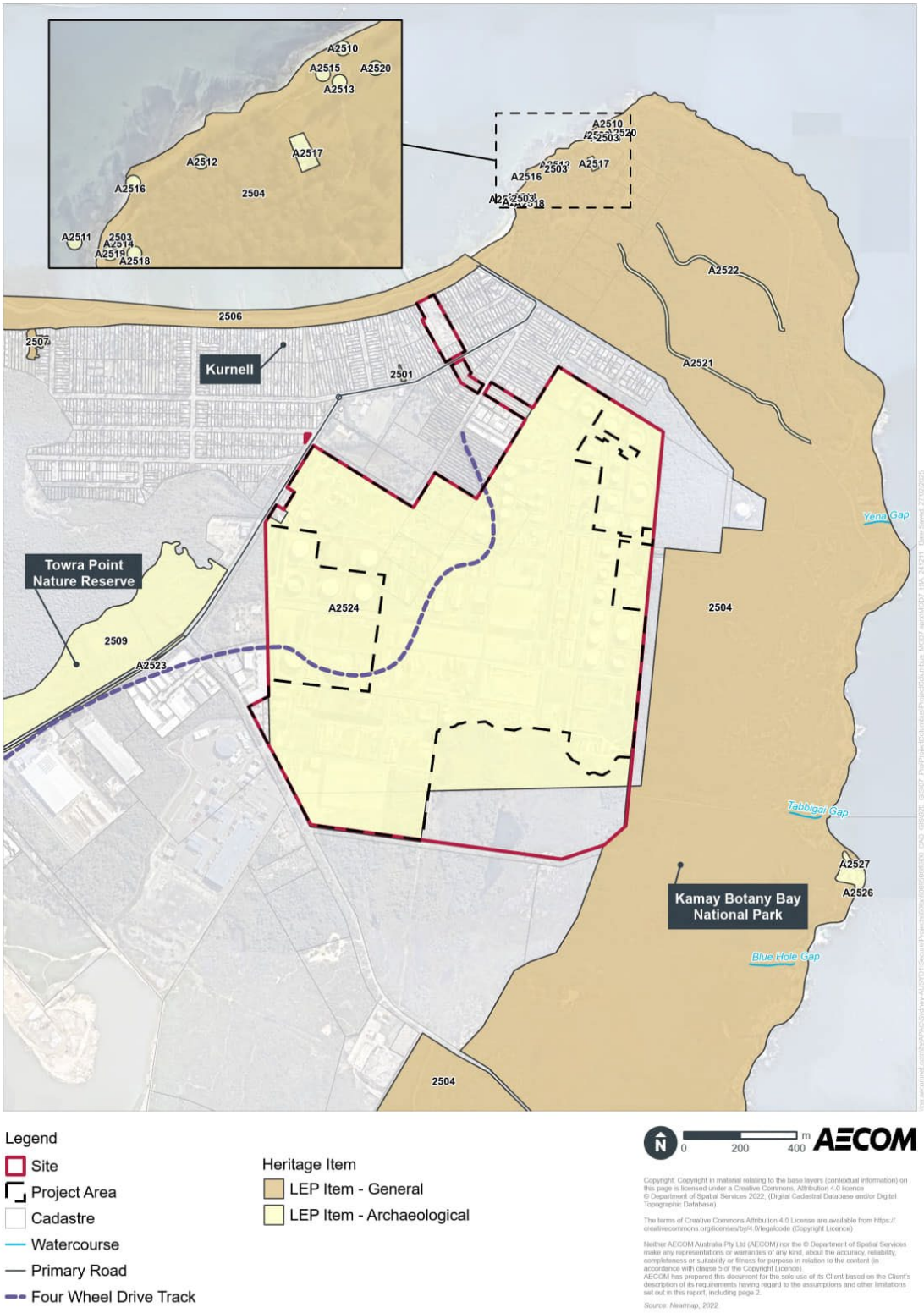

Figure 2-1 Heritage items

Australian Oil Refinery (A2524)

This industrial archaeological site covers the footprint of the former Australian Oil Refinery and is wholly within the Project Area. It should be noted that in the past decade, many of the former buildings and tanks associated with the former refinery have been demolished.

Four-Wheel Drive Track (A2523)

This former track originally along the southern boundary of Captain Cook Drive in the west, runs east through the Australian Oil Refinery archaeological site, then north and terminates in Marton Park. Originally connecting Kurnell village to Cronulla, it was partially covered over in 1953-1956 by the construction of the Kurnell Refinery. While there is no longer any physical evidence of the track within the Australian Oil Refinery, it survives in part along Captain Cook Drive.

2.4 Key assumptions and limitations

The purpose of this report is to identify and assess historic heritage and archaeological potential that might be impacted by the proposed modification. Predictions have been made within this report about the probability of subsurface archaeological materials occurring within the Project Area, based on surface indications and environmental contexts. However, it is possible that materials may occur in areas without surface indications and in any environmental context. Should subsurface archaeological materials be uncovered during construction, these would be addressed in accordance with a stop works procedure and methodology for managing such finds. Further information on recommended mitigation measures is provided in Section 7.0.

This report is based on the initial design provided by AECOM. It is noted that during detailed design, details of the proposed modification may change or be refined. Should the detailed design be substantially different from the current design, further heritage assessment may be required to assess the potential impacts to the heritage values.

A summary of the statutory requirements regarding historical heritage is provided in Sections 2.1 to 2.3. The summary is provided based on the experience of the authors with the heritage system in Australia and does not purport to be legal advice. It should be noted that legislation, regulations, and guidelines change over time and users of the report should satisfy themselves that the statutory requirements have not changed since the report was written.

2.5 Assessment methodology

To understand and describe the non-Aboriginal heritage values and the potential impact on them by the proposed modification, the following methodology is followed:

- Searches of relevant statutory heritage databases, including:
  - World Heritage List (WHL)
  - National Heritage List (NHL)
  - Commonwealth Heritage List (CHL)
  - Register of the National Estate (RNE)
  - NSW SHR
  - State Heritage Inventory (NSW) (SHI)
  - State agency heritage conservation registers under s170 of the *Heritage Act 1977* (s170 registers)
  - Schedule 5 of the Sutherland Shire LEP 2015

- Conducting a desktop review of relevant heritage and archaeological assessments undertaken within and adjacent to the Project Area that can assist in identifying potential non-Aboriginal heritage sites, including:
    - The *Caltex Kurnell Refinery Conversion: Heritage Impact Assessment* (Australian Museum Business Services, 2013) that was prepared to support the Kurnell Refinery Conversion Environmental Impact Statement (EIS) (referred to as the '2013 HIA')
    - The *Caltex Kurnell Refinery Demolition: Heritage Impact Assessment* (Australian Museum Consulting, 2014a) that was prepared to support SSD-5544 MOD-1 (referred to as the '2014 HIA')
    - The *Caltex Kurnell Refinery Heritage Management Strategy* (Australian Museum Consulting, 2014b) (referred to as the 'HMS') that was prepared in response to the conditions in SSD-5544.
- Undertaking primary and secondary historical research to understand the historical uses of the area and identify areas of historical archaeological and heritage significance
- Identifying historic landscapes that may be present in the area
- Undertaking a review of heritage elements that have already been removed and assess if the heritage significance has increased for those structures and features that remain onsite
- Undertake targeted site inspections over one day
- Preparation of this HIA report.

This assessment has been prepared pursuant to the Australia ICOMOS *Burra Charter* (ICOMOS (Australia), 2013) and the NSW Heritage Manual (NSW Heritage Office & NSW Department of Urban Affairs and Planning, 1996).

3.0 Existing environment

3.1 Historical context

To understand the heritage values of the Project Area, this section gives a brief historical background. This historical background gives some context to the heritage values of the area, any heritage items, and their heritage significance.

3.1.1 Chronology

The following table gives a brief historical chronology of the Kurnell area and the Site.

Table 3-1 Chronology of land use and ownership

Year	Event
1770	Captain Cook and the *Endeavour* lands on the southern shores of Botany Bay
1815	Land grant to James Birnie on the Kurnell Peninsula of 700 acres (283 hectares), named “Alpha Farm”, three-roomed cottage for caretaker on the property named “Curnell”
1828	John Birnie declared insane, “Alpha Farm” and “Curnell” sold to neighbour John Connell. Alpha House erected on the site of “Curnell” and occupied by John Connell Jnr
1849	Death of John Connell, land passes to his grandsons, John Connell Laycock and Elias Pearson Laycock
1861	Land purchased from John Connell’s grandsons by Thomas Holt Government resumes eastern side of Kurnell Peninsula
1881-1882	Holt establishes the Holt Sutherland Estate Land Company Limited; commences subdivision for settlement; known as The Maritime Township of Kurnell
1920s-1930s	Increased settlement in Kurnell
1953	Caltex purchases 174 acres (70 hectares) for oil refinery
1956	Oil Refinery begins production
1961	Construction of the Australian Lubricating Oil Refinery (ALOR) (later known as the Caltex Lubricating Oil Refinery (CLOR))
2011	Closure of CLOR
2011-2014	Demolition of CLOR and some tanks
2014	Closure of main refinery Approval of Kurnell Refinery Conversion (SSD-5544)
2015-2017	Demolition of redundant buildings, tanks, and refinery equipment (MOD-1)
c. 2017	Approval for ACS management works (MOD-2)
c. 2019	Demolition of Tank 101 (MOD-3); demolition of butane assets (MOD 4)
2019	Approval for ACS Containment Cell and Cooling Water Outlet (CWO) Pipeline works (MOD-5)
2020	Approval for extension for ACS works (MOD-6).

3.1.2 Historical background

The Site comprises the footprint of the former Caltex Kurnell Refinery. The following historical background of the Site, Kurnell, and the Kurnell Refinery is quoted from the HMS (Australian Museum Consulting, 2014:7-37) and is illustrated in Figure 3-1 to Figure 3-16.

> ***The Meeting Place: First contact between British Explorers & Aboriginal People in Australia***
>
> *The Kurnell Peninsula Headland is famous for being the place where British explorer Lieutenant (later Captain) Cook first set foot on the shore of eastern Australia in April 1770. It is also the place where the crew of the* Endeavour *first encountered the Indigenous occupants of the land, and naturalists Joseph Banks and Daniel Solander collected the first scientific type-specimens of Australian flora and fauna. Cook's favourable description of Botany Bay as being* capacious, safe, and convenient*, along with the impressions recorded by Sir Joseph Banks in his various publications and reports to the British government, greatly influenced the selection of Botany Bay as a suitable location to establish a penal settlement. However, when the First Fleet arrived on 18 January 1788, they found that the bay had a difficult entrance, was exposed to the prevailing easterly winds, and was too shallow to provide suitable anchorage. Captain Arthur Phillip subsequently abandoned Botany Bay in favour of the much more sheltered and suitable deep-water harbour just to the north, which became known as Port Jackson.*
>
> *As the colony developed, the site of Captain Cook's landing place developed a symbolic mystique as a place of natural beauty and scientific discovery. Natural features, such as Cook's stream, were visited and experienced by colonists seeking to 'remember' and make a historical connection with the early explorers. Soon commemorative plaques and other memorials were installed at Kurnell, in recognition of the British explorers and scientists who landed there in 1770 (Salt, 2000:24; Nugent, 2005:36, 67-80).*

Figure 3-1 "Captain Cook's Monument, Botany Bay, N S Wales" by Thomas George Glover, 1878 (Source: National Library of Australia, Call Number PIC Volume 1014#R4205). The Cook Monument was erected in 1870 by Mr Thomas Holt. The obelisk has become a prominent feature in the landscape and can be seen from the opposite headland of the bay

Figure 3-2 Aerial view of Captain Cook's Landing Monument, Kurnell, Botany Bay, NSW, c. 1935 by E W Searle (Source: National Library of Australia, Call number PIC P838/634a LOC Cold store SEA Box 8)

By the end of the nineteenth century, the process of memorialisation became entwined with notions of nationhood and territorial possession, with Captain Cook as founding father of the land. In 1899, as the Australian colonies were moving towards Federation, approximately 250 acres of land at Kurnell Peninsula was resumed by the Government and dedicated as the Captain Cook Landing Place Reserve for the 'use and enjoyment of the public for all time.' The reserve became the focus of numerous commemorative events, including tree planting, picnics, speeches, re-enactments of the landing and flag-raising ceremonies. The relative isolation of the Kurnell Peninsula from residential settlement and development meant that it also attracted visitors in search of natural beauty, and the area was commonly used by Sydneysiders for bush-walking, fishing, hunting, picnicking, and camping (Nugent, 2005:61-84).

With construction of the Kurnell Oil Refinery Road[1] in the 1950s, the number of visitors to the park increased, often coming in large family or social groups. The Captain Cook Landing Place Reserve came under the provisions of the National Parks and Wildlife Service (NPWS) Act in 1967. The NPWS initiated a program of re-vegetation and feral animal control, in an attempted to restore a pre-1770 ecological environment to the area, and camping was no longer permitted on the headland. In 1988, the park was expanded and the Landing Place became part of the Botany Bay National Park (Salt, 2000:52-57; Nugent, 2005:115, 141-143).

In more recent decades, commemorational activities at the headland have sought to recognise other layers of significance, and in particular acknowledge that the place also symbolises the beginnings of dispossession of Aboriginal people from the land. The concept of a 'meeting place' precinct has been developed to address the multi-faceted physical, historical and social implications of that first contact, and to set the groundwork for future reconciliation. In 2002, NPWS adopted a dual Aboriginal-English name for the park: Kamay Botany Bay National Park. On 20 September 2004, the Kurnell Peninsula Headland was included in the National Heritage List (*Nugent, 2005:130-150*).

[1] Since renamed Captain Cook Drive.

European Settlement & Subdivision of the Kurnell Peninsula

When the Parish of Sutherland was proclaimed in 1835, there was very little European settlement on the southern shores of Botany Bay. The soil was considered to be unsuitable for agriculture, and there was little in the way of other resources to attract settlers or investment (Larkin, 1998:10).

The first land grant in the area was made in 1815 by Governor Lachlan Macquarie to James Birnie. Birnie was a merchant and shipowner, involved in the local sealing and whaling industry. He received a grant of 700 acres of land on the western side of the Kurnell Peninsula, where he intended to build a whaling station, along with 160 acres of saltwater marshes. The grant included Captain Cook's landing place. Birnie established a farm, market garden and dairy on the property, which he named 'Alpha Farm.' Birnie never lived on the grant, but he built a three-roomed homestead for a caretaker, named Curnell, *and another smaller cottage for servants. Convicts were assigned to the property to cut down the trees and clear the land (Salt, 2000:25, 37, 77; Nugent, 2005:56).*

Figure 3-3 Kurnell Reserve, from a print by W J Curruthers, c. 1906 (Source: State Library of NSW, Record Identifier 92eJr3xY, Reference Code 176296). The photo shows the ruins of Alpha House.

James Birnie was declared insane in 1828 and his executors sold Curnell *and* Alpha Farm *to John Connell, who also owned land at the south end of Cronulla Beach. Connell likely cut timber and ran cattle on the property, and eventually extended his holding in the area to 3,000 acres. Connell erected* Alpha House *on the foundations of* Curnell*, which was occupied by his son, John Connell Jnr. Following Connell Snr's death in 1849, his land passed to his grandsons John Connell Laycock and Elias Pearson Laycock* (Larkin, 1998:10; Salt, 2000:25).

In the period between Cook's landing and the first European land grants, Aboriginal people continued to live on the Peninsula and maintain a connection to the land, although their numbers were likely reduced by disease and colonial aggression. In 1827, assistant surveyor Robert Dixon surveyed the coast around Botany Bay and Port Hacking, and recorded Aboriginal names for various features on the maps he was making. Local historian, Daphne Salt, has suggested that Birnie named his cottage Curnell *after the Aboriginal name for the area; while other sources suggest that Kurnell was an Aboriginal corruption of the name "Connell"* (Salt, 2000:25*;* Nugent, 2005:47-54, 56-57).

In 1861, Thomas Holt purchased 4,600 acres from John Laycock, who was heavily in debt, including the Birnie estate on the Kurnell peninsula. In the same year, the eastern side of the peninsula was reserved by the Government from settlement.

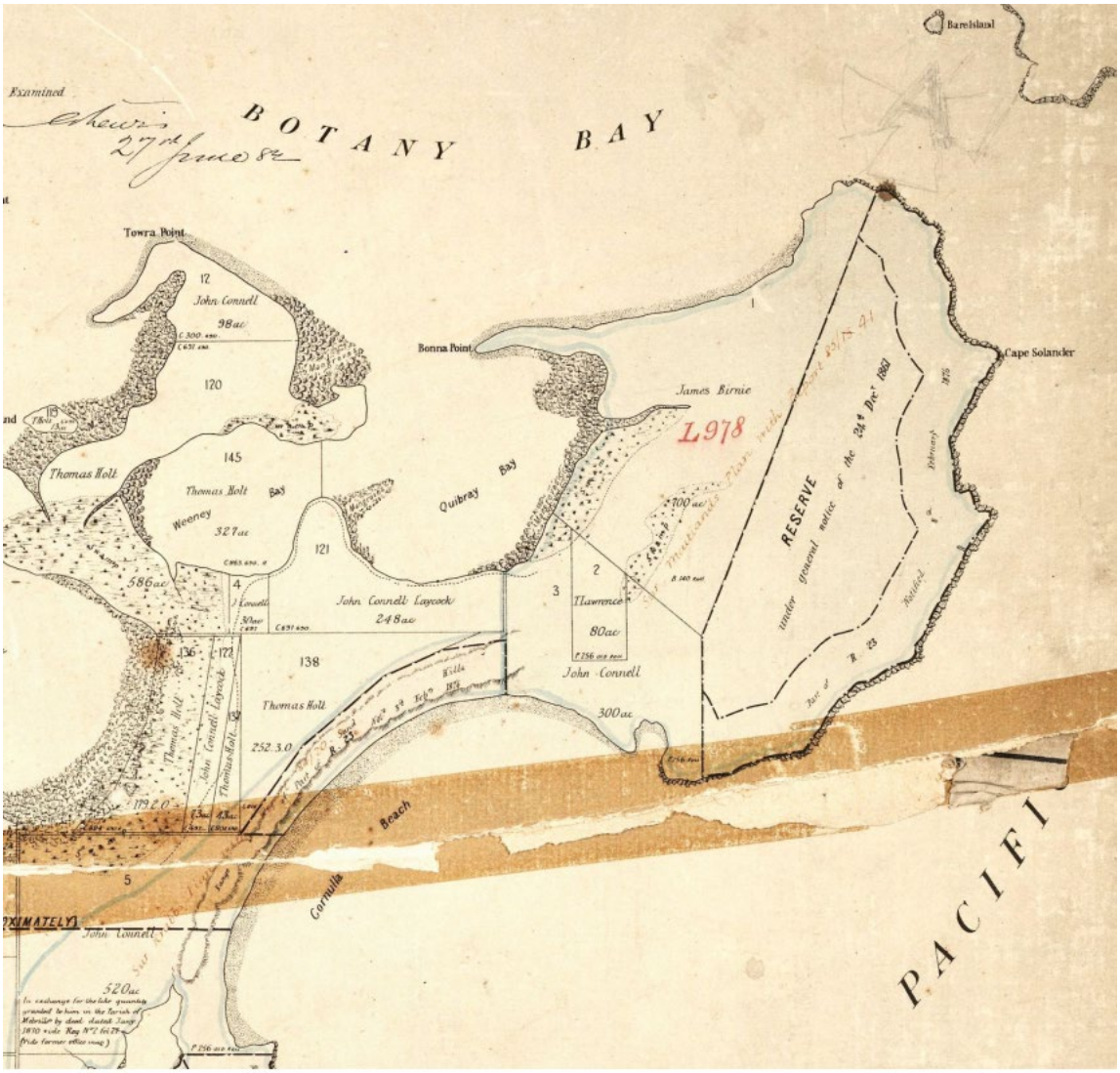

Figure 3-4 Detail of Parish Map of Sutherland, c. 1882 (Source: Historical Land Records Viewer, file Name: 14033901.jp2)

This land, originally known as the South Botany Estate and later the Sutherland Estate, was divided into 11 paddocks and systematically cleared of trees by ringbarking. The trees were sold for timber and the remaining vegetation was burned to encourage grass for sheep and cattle. The land proved to be unsuitable for grazing and by the 1870s, large areas of grassland on the Peninsula had been overtaken by sand dune (Larkin, 1998:10-12; Salt, 2000:27-31).

Holt retained the Connell overseer, Mr Justice, on-site at Kurnell, but also appointed a local Aboriginal man, William Rowley, as his foreman. It is likely that other Aboriginal people lived and worked on Holt's estate in the 1860s and 1870s. However, by the end of the nineteenth century, most had moved away, some to the government reserve at La Perouse on the north shore of Botany Bay and others to a camp at Saltpan Creek on the Georges River (Salt, 2000:29; Nugent, 2005:59-61).

Kurnell township

In 1881, Holt formed the Holt Sutherland Estate Land Company Limited. The objective of the company was to lease land from Holt's Sutherland Estate and prepare it for settlement. The terms of the lease entitled the company to grant subleases to tenants for up to 99 years. In 1882, Richardson & Wrench offered a subdivision of the Sutherland Estate, known as The Maritime Township of Kurnell. The blocks were small and were envisaged as weekender blocks rather than residences. Few people showed interest in the subdivision, and in the early years the village was little more than a fishing camp, with shanties improvised from scrap and local scrub. Other building materials were brought in by boat from La Perouse, Botany or Sans Souci. During the Depression in the late 1920s and 1930s, many out-of-work families also settled in camps in the bush on the southern shore of the peninsula or in little houses set into the cliffs (Salt, 2000:48-50, 123-127).

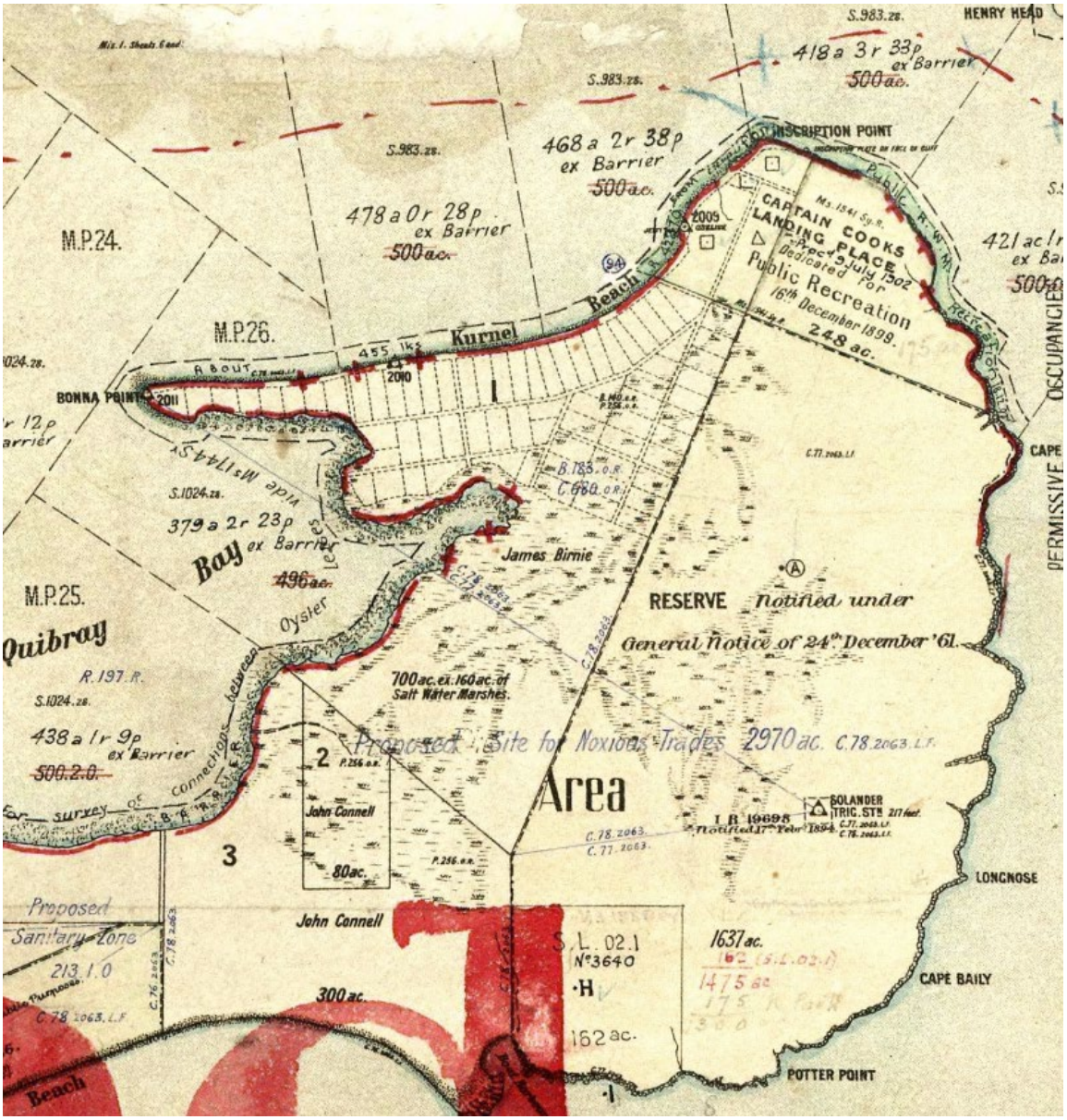

Figure 3-5 Detail of Parish Map of Sutherland, c. 1900-1913, showing the subdivision of the township of Kurnell (Source: Historical Land Records Viewer, File Name: 14039602.jp2)

Kurnell village became more established in the period between WW1 and WW2, continuing to attract out-of-work people and retirees. During the construction of the Kurnell Oil refinery, between 1952 and 1956, a Dutch dredging company brought a team of Dutch workers to operate the dredges. A residential hostel was erected near Bonna Point, Kurnell to house the workers. Following the completion of the refinery, the Dutch company moved on to its next project, but its workers and their families elected to stay and settle permanently in Kurnell. A significant Dutch community remains today. After the road was built from Cronulla to service the Refinery, a large number of inexpensive houses were relocated to the village, trucked into the area from other parts of the Shire (Salt, 200099-100, 125-127).

Transport

Until the mid-twentieth century, the primary means of access to the Kurnell Peninsula was on foot or by boat. The first known wharf was built by Thomas Holt in the 1880s. This wharf was replaced by the Department of Lands in 1902, for the use of visitors to the Captain Cook's Landing Place Reserve. Regular private ferry services ran from Sans Souci and La Perouse to the Captain Cook Landing Place Reserve from at least 1902. These services became intermittent from the 1950s and were finally stopped in 1965. The wharf was continued to be maintained by NPWS but was destroyed by a storm in 1974 (*Salt, 2000:103-107).*

The Kurnell Refinery Wharf and the first main road to the Peninsula were constructed in the period 1953-56 to facilitate construction of the Australian Oil Refinery (see below). Prior to this time, the only road access was a rough track over the sand dunes, which was maintained by local residents with motor vehicles. The new refinery road, now known as Captain Cook Drive, was the first fully sealed road connecting Kurnell to Cronulla. It was constructed by Sutherland Shire Council, but substantially paid for by Caltex, with some assistance from a Federal Aid Grant (Kirkby, 1973:113, 129-133; Salt, 2000:116-117; Hill and Knowlton Pty Ltd, 1956:2).

Australian Oil Refinery

Caltex initially purchased 174 hectares of swampland at Kurnell, and subsidised construction by Sutherland Shire Council of the access road from Cronulla, now known as Captain Cook Drive. Historical film and photographs document the progressive clearing of native vegetation, levelling of sand hills, and reclamation of swampland to prepare the site. Construction of the main refinery began in December 1953 and was completed early in 1956. During the peak of construction in 1955, approximately 3,000 people were employed at the site, with most arriving at work each day by bus from Cronulla.

By February 1956, the refinery had approximately 500 permanent employees and was pumping finished fuel products across Botany Bay via submarine pipelines to the Banksmeadow terminal, where they were transferred to road and rail tankers for further distribution throughout NSW. Fuel products were also shipped out from the Kurnell wharf via a fleet of small Australian flag tankers (Hill and Knowlton Pty Ltd, 1956:2, 24; Caltex, 2006:4-5).

Figure 3-6 Australian Oil Refinery under construction, 1954 (Source: State Library of NSW, Call Number: Australian Photographic Agency – 42956)

Figure 3-7 Australian Oil Refinery under construction, 1954 (Source: State Library of NSW, Call Number: Australian Photographic Agency – 42958)

Figure 3-8 Aerial view of construction of the Australian Oil Refinery, 1955, with wharf in background (Source: State Library of NSW, Call number: Australian Photographic Agency – 00036)

At the time of construction, the Australian Oil Refinery was the largest petroleum installation in NSW, and the largest industrial plant built by a private enterprise in the State. It initially included 56 storage tanks and processed 22,000 barrels or 770,000 imperial gallons (3,500,491 litres) of oil per day. Four crude oil tanks at the northern end of the site held 6,300,000 imperial gallons (28,640,378 litres) each, enough to keep the refinery operating for approximately one month. These tanks were 48 ft (14.63 metres) high, with floating roofs and 164 ft (49.98 metres) in diameter: the largest built in Australia to that date. The other, smaller tanks held a range of intermediate and finished products, including petrol, illuminating kerosene, diesel oil, industrial diesel oil, and bunker fuel oil. Tanks holding the less volatile liquids, such as kerosene, diesel and fuel oil were generally constructed with cone-type roofs, supported by trussed on columns (Hill and Knowlton Pty Ltd, 1956:9).

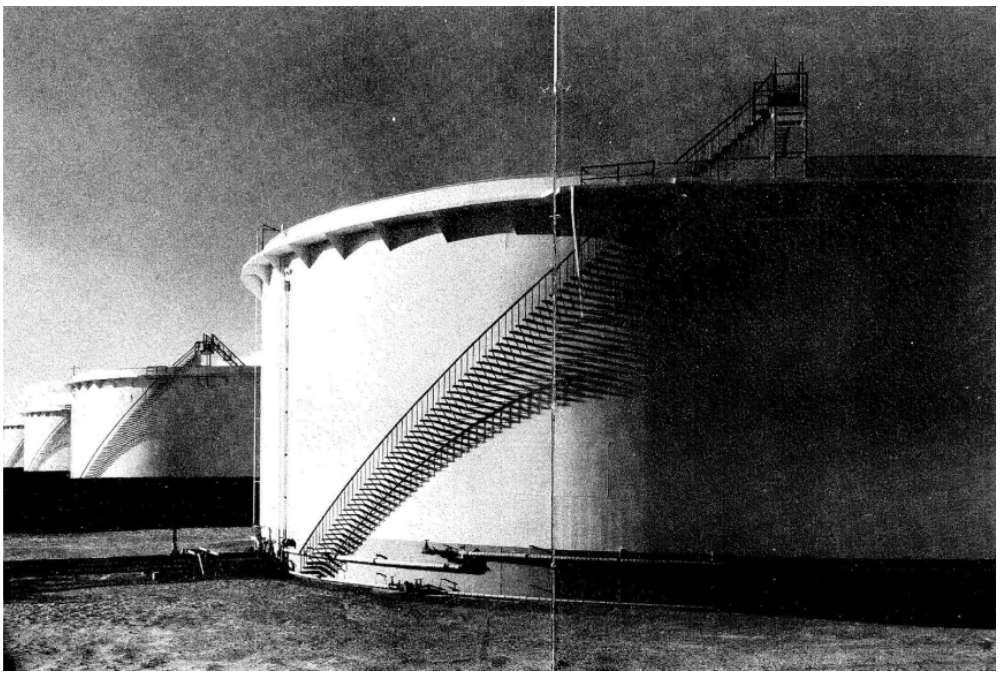

Figure 3-9 Four 6,300,000 gallons crude oil storage tanks, photo by Max Dupain and Kerry Dundas, c. 1956 (Source: Hill and Knowlton, 1956)

Passing from the crude oil storage tanks, the oil was processed through a number of major processing units, including:

- *Crude oil distillation unit, which separated the oil into its various components or fractions;*
- *Propane decarbonisation unit*
- *Fluid catalytic cracking unit, and*
- *Treating, inhibiting, and blending units.*

The fluid catalytic cracking unit was the largest processing unit at the refinery, with a 175 foot high regenerator stack.

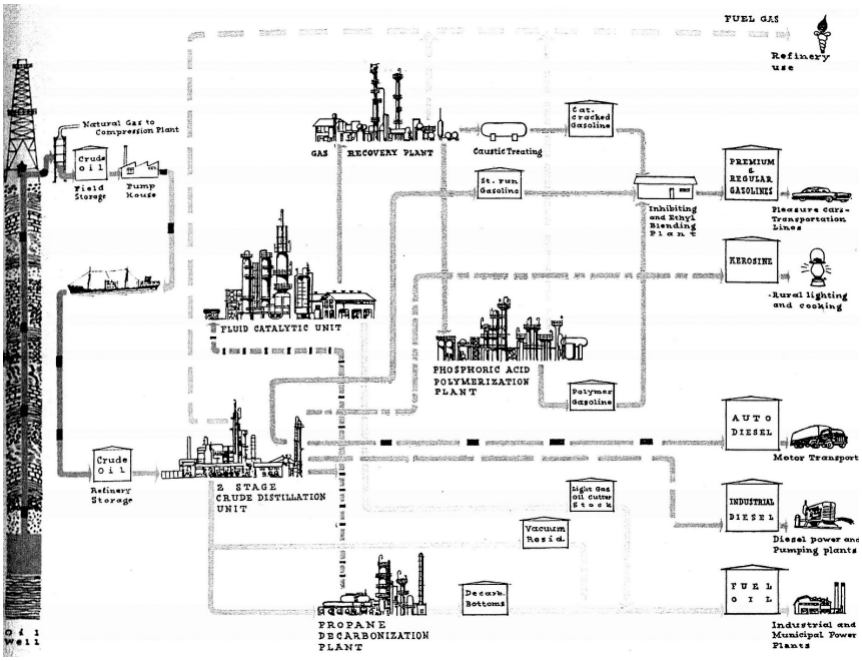

Figure 3-10 Flow diagram for the Australian Oil Refinery, c. 1956 showing the various processes and final products produced at that date (Source: Hill and Knowlton Pty Ltd, 1956:41)

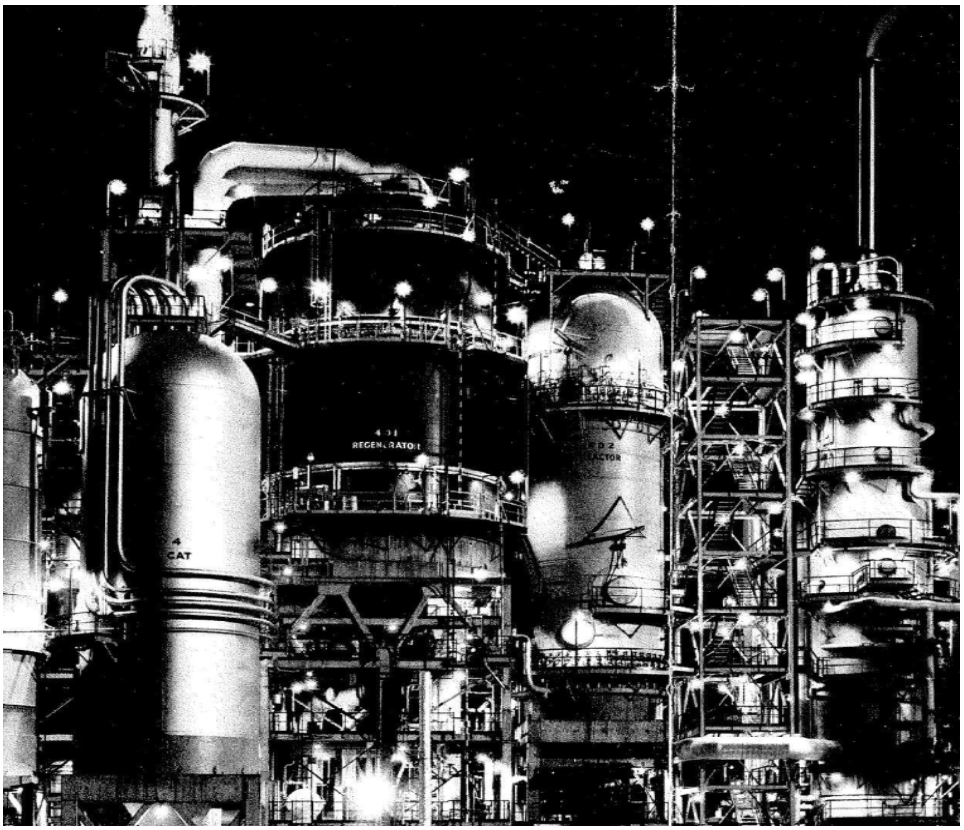

Figure 3-11 Fluid catalytic cracking unit, photo by Max Dupain and Kerry Dundas, c. 1956 (Source: Hill and Knowlton Pty Ltd, 1956:18-19)

Expansion and Development of the Australian Oil Refinery

From the late 1950s through the 1960s and 1970s, Australia had one of the fastest growing petroleum markets in the world, largely due to the rapid increase in popularity of motor cars. The Kurnell refinery was progressively expanded to accommodate the increased demand for petrol and other refinery products. A major period of expansion began in 1961 and by 1964 refinery capacity had been increased by over 400%, to 90,000 barrels of crude per day (Caltex, 1984:6)*. Aerial photographs indicate that additional crude oil distillation and fluid catalytic cracking units as well as an alkylation unit had been added to the process line. Five larger crude oil tanks had also been constructed on the western side of the site.*

The discovery in the 1960s of various viable Australian oil fields changed the nature of the Australian refining industry. In particular, Esso/BHP's offshore wells in Bass Strait came on stream in 1969, prompting the refineries to construct plant to cater to the low sulphur feedstock. At Kurnell, an additional plat to refine the Australian-produced Bass Strait crude oil was completed in 1973. By 1978, [the Australian Oil Refinery (AOR)] *was refining 150,000 barrels per day, with 70% coming from Australian oil fields in Bass Strait and the Cooper Basin in Central Australia. In 1981, the installation of an Isosiv plant enabled AOR to increase the yield of petrol by 5% from every barrel. This was the first Isosiv plant in Australia, and one of only 12 then operating around the world (Caltex, 1984:6; Salt, 2000:101; Caltex, 2006:7).*

From 1961, the Australian Lubricating Oil Refinery (ALOR, later known as the Caltex Lubricating Oil Refinery or CLOR) was also constructed on Crown Land adjacent to the main refinery. ALOR was Australia's first lubricating oil refinery, initially conceived as a joint venture by Caltex (50%), Golden Fleece (25%) and Ampol (25%). The joint venture ensured that the refinery would have sufficient bulk output to make it profitable, and that it would be 50% Australian-owned. ALOR began operating in 1963, importing Arabian crude oil to produce base stocks for lubricants and greases, naphthenic products, and waxes used in waterproofing, building products and cosmetics (Caltex, 1984:3; Caltex, 2006:33).

From the early 1980s, the Kurnell refinery had undergone a number major upgrades, in particular to accommodate new health, safety and environmental standards, consumer pressure for improved engine performance, as well as repairs to aging equipment. Unleaded petrol became mandatory for new vehicles after 1986 (when catalytic converters became compulsory of new cars), and production of low lead and unleaded petrol required changes to the refinery plant. Also in the 1980s, in response to a worldwide issue of contamination of jet fuel by the fungus Cladisporium resinae*, Caltex redesigned its jet fuel storage systems to ensure exacting quality standards for this product. In approximately 1990, refinery operations were switched from manual to computerised systems, and were centralised in a new Central Control Building. In 2000, a serious problem developed in one of the plant's fluidised catalytic cracking units. A faulty 67-metres stack was demolished and replaced with a new one.*

Between 2004 and 2006, Caltex constructed a new Benzene Saturation Plant (BENSAT) and upgraded the existing Diesel Hydro-Treating Unit (DHTU) to reduce benzene in petrol and lower sulphur content in diesel fuels, to comply with new specifications implemented by the Federal Government as part of its clean air program. In the late 2000s, in response to the 2005 BP Texas City explosion, administrators and technical staff housed in buildings at the centre of the site were progressively relocated away from the main plant to new buildings at the periphery of the site, outside the 'blast zone.'

In 2009, Caltex announced that it would close ALOR (by then known as CLOR) due to the fact that the plant was manufacturing outmoded lubricant products and faced declining feedstock sources. The plant closed in 2011 and has been partially demolished.[2] *The closure led to the loss of approximately 70 jobs and the associated closure of a downstream supplier. In July 2012, Caltex announced that it would also close the main refinery, and convert parts of the site to store additional finished fuel so that it would operate wholly as a finished products terminal.*

(Australian Museum Consulting, 2014:7-37)

[2] It has since been fully demolished.

Figure 3-12 Australian Oil Refinery during construction, 1955 (Source: Sutherland Shire Maps)

Figure 3-13 Australian Oil Refinery, 1961 (Source: Sutherland Shire Maps)

Figure 3-14 Australian Oil Refinery (Centre and top right and ALOR (bottom left), 1970 (Source: Sutherland Shire Maps)

Figure 3-15 Australian Oil Refinery and ALOR, 1978 (Source: Sutherland Shire Maps)

Figure 3-16 Site preparation for the ALOR, with the main refinery behind (Source: The Australian Women's Weekly, 20 December 1961 in Australian Museum Business Services, 2013:57)

In January 2014, under SSD-5544, development consent was granted for the conversion works to proceed. In the fourth quarter of 2014, all refinery operations had ceased and by mid-2015, all of the works approved under the initial development consent had been completed, with the exception of some tank conversions, which were completed by the end of 2016.

3.2 Literature review

The approved project was divided into two phases:

- Converting infrastructure to allow the Site to operate as a terminal and shutdown the refinery (the conversion works); and
- Demolition and removal of redundant infrastructure (the demolition works).

For the approved project, two HIAs were prepared:

- The 2013 HIA (Australian Museum Business Services, 2013), prepared to support the Environmental Impact Statement (AECOM, 2013) for the Kurnell Refinery Conversion (SSD-5544)
- The 2014 HIA (Australian Museum Consulting, 2014a), prepared to support the Statement of Environmental Effects (AECOM, 2014) for the SSD-5544 (MOD 1).

As part of the final closure of the refinery at Kurnell, and in response to the conditions under SSD-5544, Australian Museum Consulting (AMS) prepared a HMS (Australian Museum Consulting, 2014b). This document provided a comprehensive history of the Site, and identified the heritage significance of the Site and gradings of its elements, as they were in 2014.

The demolition works (SSD-5544 MOD-1) are shown in Figure 3-17.

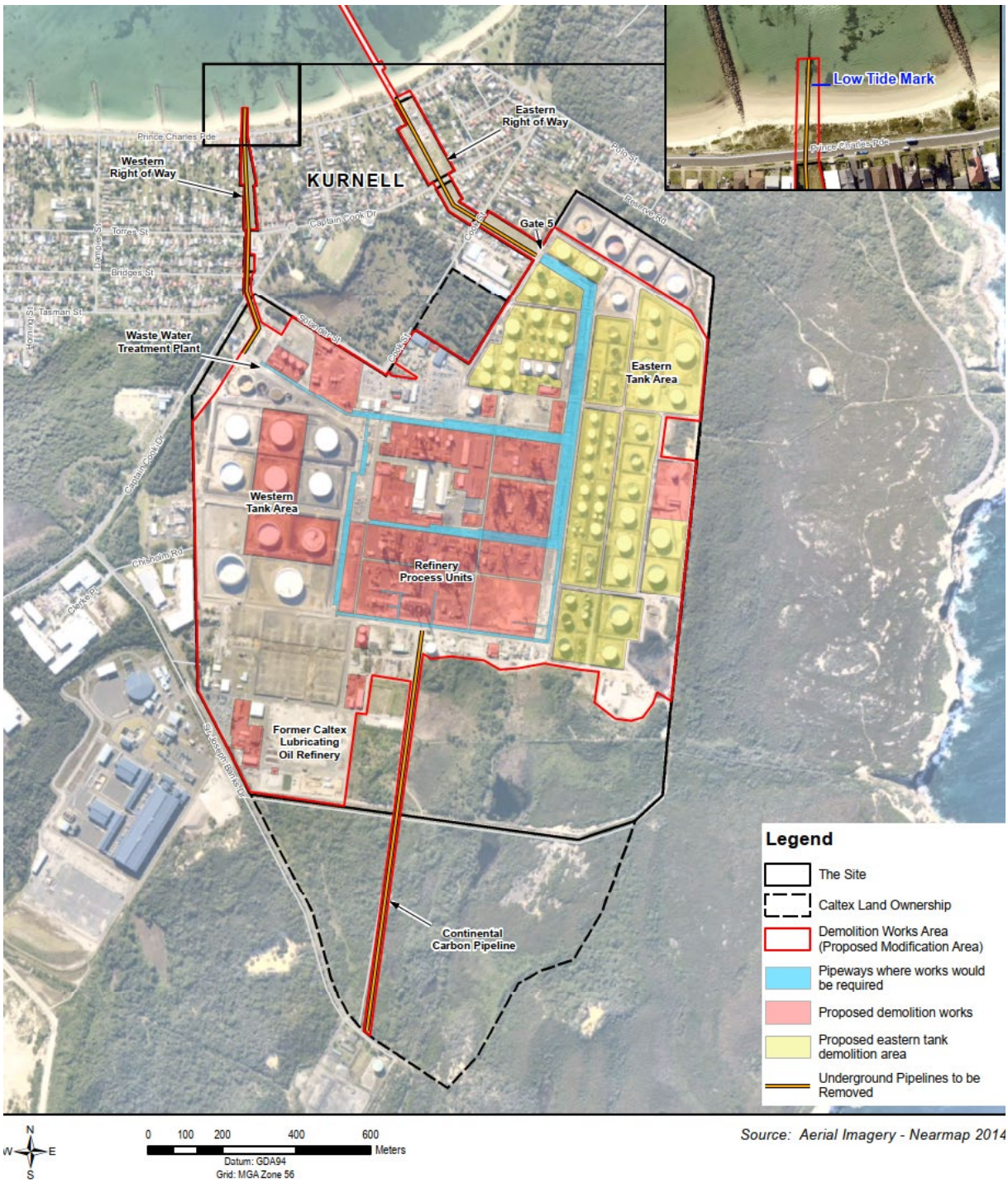

Figure 3-17 2014 Demolition works (shaded in red and yellow) and conversion works (in orange) (Source: Australian Museum Consulting, 2014a: 2)

As can be seen in Figure 3-17, most of the CLOR and some storage tanks had already been removed by this time. The 2014 HIA (Australian Museum Consulting, 2014a) noted that the HMS (Australian Museum Consulting, 2014b) identified that demolition would be part of the conversion process, but some significant buildings and infrastructure were identified for adaptive re-use. Specifically identified buildings and infrastructure were:

- Examples of significant office and amenities buildings designed by architectural firm Bunning and Madden for the Australian Oil Refinery (AOR) and Australian Lubricating Oil Refinery (ALOR) complexes
- The group of six houses designed by architect Harry Seidler
- Examples of original workshop, storage, and control buildings
- Conservation of a representative sample of significant refinery infrastructure in use as part of the fuel import terminal, including original and early tanks, the Firehouse, the Oil Movement Centre (OMC), and Main Change Rooms.

It was also noted that, at the time of the 2014 HIA (Australian Museum Consulting, 2014a), audio-visual and photographic recordings of the refinery while still in operation were being undertaken, as well as the cataloguing of the extensive archive of documents and objects held at the refinery, as conditioned under SSD-5544.

3.2.1 Demolitions in 2014-2017

The following descriptions of the changes to various elements within the Site are quoted from the 2014 HIA (Australian Museum Consulting, 2014a):

> ***Eastern and Western Tank Areas***
>
> *The majority of tanks slated from demolition were installed in the 1950s and 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… up to 76 cylindrical tanks in the Eastern area would be demolished or removed from the site; these would be primarily the small and medium sized tanks. All butane and RPG tanks would also be demolished. Eight tanks would be retained in the eastern area… The only pre-1955 tanks definitely excluded from the potential demolition works in the Eastern Tank area are three of the four large tanks along the northern boundary of the site as well as three small tanks to the west of the Oil Movements Centre (OMC).*
>
> (Australian Museum Consulting, 2014a:32-33)
>
> *Approximately 15 of the 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. Ten cylindrical tanks would be retained as part of the demolition works, including three original tanks between Road O and Road P. Four tanks bound by Roads O, L and 13, as well as two tanks just north of Road Q would be retained and were reconstructed in the 1970s.*
>
> (Australian Museum Consulting, 2014a:34)

Figure 3-18 View along the main pipeway (pipeline easement 1), towards the south, dividing the Eastern Tank Area from the Refinery Process Units, c. 2012 (Source: Australian Museum Consulting, 2014a:36)

Seven pipelines were also removed from the Site during the demolition of the refinery (Australian Museum Consulting, 2014a:36), being:

- Sections of a cooling water outlet running through the Site and along the Western Right-Of-Way (ROW)
- Two cooling water intakes along the Eastern ROW
- Three product lines along the Eastern ROW
- Continental Carbon Pipeline, running south from the Site.

> ***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. 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 beneath the grassed areas of the Eastern ROWs through Kurnell Village to the north. 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 OMC on the west side of the Main Pipeway.*
>
> (Australian Museum Consulting, 2014)

In addition, redundant buildings across the site were also demolished. The following text is quoted from the 2014 HIA (Australian Museum Consulting, 2014a):

> ***Buildings***
>
> *There are approximately 60 industrial and administrative buildings scattered across the site, although office workers are not 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.*
>
> (Australian Museum Consulting, 2014a:39)

However, as discussed in the quote above, fewer than half of the buildings within the Site were retained for adaptive reuse. Some of the buildings retained include the storehouse, warehouse, and Central Control Building (see Sections 3.4 and 4.1 for a discussion of their significance and impact assessments).

3.3 Physical evidence

3.3.1 Overview

Today, the Site consists of a largely developed and fenced area encompassing the Kurnell Terminal and the fenced Rights of Way that pass through the Kurnell Township. Ampol also owns land to the south of the Site and a part of Marton Park along the northern boundary (Figure 1-1). The Site is typically accessed off Solander Street which is accessed from Captain Cook Drive. Access is also available from Sir Joseph Banks Drive, but this access point is typically closed for security reasons unless required. The former refinery Site consists of a large number of allotments.

Under the Sutherland Shire LEP 2015, the whole Site is zoned as E5 Heavy Industrial. The dominant existing land use is the Kurnell Terminal. This use is consented under SSD-5544. It also operates under EPL 837 and a Major Hazard Facility licence. Other development consents are also active at the Site. In additional to the terminal, small parts of the former refinery Site have been leased or are used for other land uses (e.g., CBOX Containers).

Between 1956 and 2014, the Site was used as both an oil refinery and a fuel terminal. Since refining ceased in 2014, the Site has been primarily used as a finished fuel import terminal. The former refinery uses mean that an ongoing program of targeted remediation activities, in line with the NSW Environment Protection Authority (EPA) approved Kurnell Remediation Strategy, are being completed.

When it operated as a refinery, around 900 people were employed. Currently around 45 people work at the Kurnell Terminal. As noted in Section 2.3.2, most of the former refinery Site is listed as an ‘archaeological site’ under Part 2 of Schedule 5 of the *Sutherland Shire LEP 2015 as* “The Australian Oil Refinery” (A2524). The majority of the Project Area is also within the curtilage of the archaeological site designation.

3.3.2 Site inspection

An inspection of the Project Area was undertaken on 6 June 2024 by Dr Darran Jordan. For the site inspection, he was escorted onsite by AECOM field technician, Ryan Xeureb. The inspection included a car survey across the entire Site, as well as pedestrian inspections around any structures proposed for either demolition or relocation. This included the buildings, substations, and pipeways, as well as the currently empty locations where structures are proposed to be constructed, including the proposed locations and the Asbestos Contaminated Soil (ACS) containment cell. No surface expressions of heritage sites were identified in any of the proposed construction areas, which were identified as having been highly disturbed by past impacts.

Photographs were taken and notes made on the current condition and use of all relevant structures, which can be found in Appendix A. It was noted that the buildings appear to have deteriorated in varying degrees when compared to recordings made of them in 2014.

3.4 Heritage Significance

As noted above, there are no items of heritage significance within or adjacent to the Project Area.

There are, however, two archaeological sites, being:

- The Australian Oil Refinery (A2524), and
- The Four-Wheel Drive Track (A2523).

An overview of their heritage significance is provided in this section.

3.4.1 Australian Oil Refinery (A2524)

This industrial archaeological site covers the footprint of the former Australian Oil Refinery, and the Project Area is wholly within the boundary of the archaeological site. It should be noted that in the past decade, many of the former buildings and tanks associated with the former refinery have been demolished, and any subsurface remains of these buildings and infrastructure, including pipeways, contribute to the archaeological resources of the item.

The 2013 HIA (Australian Museum Business Services, 2013) assessed the heritage significance of the former Kurnell Refinery against the heritage significance criteria. It should be noted that the assessment was originally conducted while most of the buildings were still standing. The full assessment is provided in Appendix B and summarised in Table 3-2 with updates from the 2024 site observations.

The Statement of Significance for the item was:

> *The 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-20th century, and more broadly with the rapid expansion of motorised transport and associated industry in the post WWII era. It is only one of three crude oil refineries to have operated in NSW.*
>
> (Australian Museum Business Services, 2013)

Infrastructure and buildings assessed to be of heritage significance in the HMS, that are of relevance to this proposed modification, are summarised in Table 3-2.

Table 3-2 Significance of potentially affected buildings and structures (Source: Australian Museum Consulting, 2014b:Appendix B with updates from 2024 site observations)

Building/ Feature	Heritage values (2014)	Proposed action (2014)	Modifications and observations (2024)
Pipelines	**High significance** Original and early pipe tracks. Alterations do not detract	Majority of pre-existing line systems, including seven underground pipelines to be demolished Some line systems not included in demolition works	OWS and FWS to be removed
Warehouse (Area 2, Road M)	**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	Warehouse currently used for storage. No interior inspection. Exterior appears to have deteriorated since 2013. Proposed for demolition

Building/ Feature	Heritage values (2014)	Proposed action (2014)	Modifications and observations (2024)
Storehouse (Area 2, Road M)	**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	Currently used for storage. No internal inspection. Exterior appears to have deteriorated significantly since 2014. Proposed for demolition
Oil Spill Room (Area 2, Road 9)	Little significance	Not included in demolition works	Proposed for demolition
Central Control Building (Area 2, Road 6)	**Moderate significance** Recent building. Good integrity Provides important evidence of technical change in refinery processes	Not included in demolition works	Significantly deteriorated since 2014. Proposed for demolition
Substations (Area 2)	Little significance	Recent constructions	Proposed for demolition

3.4.2 Four-wheel drive track (A2523)

It is noted that this is an archaeological site and that it is located partially within the Project Area. In the 2013 HIA, AMBS stated that the Sutherland Shire Heritage Study Inventory contains the following Statement of Significance for the Four-Wheel Drive Track:

> *The site represents the theme of transport and its difficulties, and its isolation of some areas within Sutherland Shire until very recently.*
>
> (Sutherland Shire Heritage Study, in Australian Museum Business Services, 2013:88)

4.0 Assessment of construction impacts

The proposed modification includes a series of works to be undertaken in stages (see Figure 1-2). These works may have an impact on the archaeological values of the Australian Oil Refinery site.

Impacts are anticipated as a result of the following activities:

- Demolition of existing structures in Zones 2 and 3, including three buildings identified as having heritage significance. These works would excavation works up to 2 mbgl or deeper depending on the depth of footings (generally focused within 1 mbgl)
- Removal, relocation and/or augmentation of other existing infrastructure
  - Relocation or augmentation of FWS and OWS systems
  - Decommissioning and removal of other non-operational assets and electrical assets.
- Construction of new operational facilities in Zones 1 and 1A, including a warehouse, new oil spill equipment storeroom, new storage shed, and road upgrades. Excavation of up to 1 mbgl would be required for installation of foundations.

These impacts are considered below.

4.1 Demolition of existing structures

4.1.1 Overview

Ten structures are proposed to be demolished as part of the proposed modification. These are listed below, along with their heritage significance, as defined in Table 3-2:

- Storehouse (heritage significance – **High**)
- Warehouse (heritage significance – **High**)
- Oil Spill Room (heritage significance – Little)
- Central Control Building (heritage significance – **Moderate**)
- Three unnamed structures in Zone 2 (none of heritage significance)
- Three unnamed buildings in Zone 3 (none of heritage significance).

Images and descriptions of these structures from 2014 and 2024 are provided in Table 4-1.

Table 4-1 Potentially impacted buildings (Australian Museum Consulting, 2014a: Appendix B)

Building/ feature name and location	Image (2014 and 2024)	Description (2014)
Warehouse	 **Figure 4-1 Warehouse, 2014**	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 the building, with large areas of glazing, including E and I Workshop and CTR along east side, offices along west side. Large

Building/ feature name and location	Image (2014 and 2024)	Description (2014)
	 **Figure 4-2 Warehouse, 2024**	interior overhead 15 tonne crane (T A Borthwick, Sydney) and various smaller interior and exterior hoists. Various items of movable 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. Currently used for storage of Ampol spare parts.
Storehouse (Area 2, Road M)	 **Figure 4-3 Storehouse, 2014**  **Figure 4-4 Storehouse, 2024**	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. As with the [warehouse], it is currently used for storage.

Building/ feature name and location	Image (2014 and 2024)	Description (2014)
Storehouse and Oil Spill Room (Area 2, Road 9)	 **Figure 4-5 Oil spill room, 2014**  **Figure 4-6 Oil spill room, 2024**	Long, rectilinear, single-storey warehouse, low pitched gable roof, corrugated iron walls and roof. 14 bays roller doors along west side (interior not inspected).
Central Control Building (Area 2, Road 6)	 **Figure 4-7 Central Control Building, 2014**  **Figure 4-8 Central Control Building, 2024**	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).

4.1.2 Impact Assessment

The three buildings of heritage significance (the storehouse, workshop, and Central Control Building) were retained in 2014 in fulfilment of Strategy 14 of the HMS (Australian Museum Consulting, 2014b), being the retention of a representative sample of significant original buildings in use across the Site. While the HMS (Australian Museum Consulting, 2014b) acknowledged that the shutdown of the refinery would result in large numbers of highly significant elements becoming obsolete and unable to be retained or adaptively reused, it also recommended that demolition of buildings of exceptional, high, or moderate significance should be a last resort.

The heritage significance of these three buildings is recognised. However, it is considered that their high to moderate heritage significance relates to their intangible characteristics related to their role in the operations of the former refinery, rather than their existing tangible characteristics. Today, these buildings are isolated away from the operational terminal infrastructure and are therefore not in use other than the Workshop and Storehouse, which are used for non-essential storage by Ampol. These buildings are now decontextualised remnants of the former refinery's operation and no longer hold any practical or contemporary heritage significance or value. As most of the infrastructure and other buildings have already been demolished, the significance of the three buildings as crucial elements of the refinery is unavoidably diminished when removed from their original context.

Demolition of these buildings is required to help ensure Ampol's operations are safe, viable, and reliable, and to support future land uses at the Site. The retention of the buildings in their current location and form is inconsistent with Ampol's operational requirements and risks ongoing safety, maintenance, and compliance obligations. The benefits associated with the remediation and future use of the Site outweighs the financial burden and operational challenges of retaining these three heritage buildings.

The retention of the buildings is not considered feasible, owing to the financial burden of renovation and continued maintenance of the buildings, lack of function and inability to be adaptively reused, as well as the inherent limitations of remediation and future use of the land owing to their presence.

Strategy 7 of the HMS (Australian Museum Consulting, 2014b) states that, in this is scenario, demolition of the buildings is justified:

> *Demolition of exceptional, high, or moderately significant buildings and infrastructure would only be considered as a last result where there is no conceivable reuse for the building or structure, and where the financial burden of ongoing maintenance or remediation can be proved to outweigh the benefits of retention.*
>
> (Australian Museum Consulting, 2014b:133)

It is considered that these circumstances demonstrate that the burden of their retention outweigh the benefits of their retention.

4.2 Removal, relocation and/or augmentation of existing infrastructure

Removal, relocation, and/ or augmentation works would include:

- Augmentation or removal of FWS infrastructure in Zones 2 and 3, and if required, relocation in Zone 1 (FWS Relocation Area)
- Removal of redundant OWS systems and installation of new operational facilities in Zone 2
- Decommissioning and removal of electrical assets.

Impacts relating to these works are considered below.

4.2.1 Firewater system

In relation to the augmentation and/or removal of the FWS in Zones 1 and 2, the HMS (Australian Museum Consulting, 2014b) noted that the pipelines of the former AOR are considered to be of heritage significance. However, it is also noted that with the shutdown of the refinery, these pipelines therefore lose their significance and would, over time, present an environmental and safety hazard (Australian Museum Consulting, 2014b). It is considered that these pipelines may be augmented or removed without heritage constraint.

Should the FWS be relocated, this is proposed to be relocated into the FWS Relocation Area in Zone 1 (see Figure 1-2). The new location was formerly used by the Liquefied Petroleum Gas (LPG) storage area during the AORs operations and was not considered to be of heritage significance. The FWS may be relocated without heritage constraint.

The firewater tank proposed to be demolished in the south of Zone 2 is not listed as a heritage item and its removal is not considered to have an impact on the heritage significance of the item.

In relation to the two substations proposed to be demolished in Zone 3, it is noted that the CLOR area was not considered to be part of the former AOR, and therefore has no heritage protection (Australian Museum Consulting, 2014b:154). All infrastructure in this area, including the substations, structures, OWS, and FWS, may be removed without heritage constraint.

The FWS in Zone 1 to be augmented lie either above or belowground in areas of existing or former tanks and/or pipelines, which retain some high heritage significance from the operation of the Terminal. Augmentation would be required for safety reasons, and the works would not detract from any retained heritage significance.

4.2.2 Oily water sewer

As can be seen from Figure 1-2, the proposed locations for the OWS interception pit near the ACS Containment Cell are on the site of eight former tanks and a sludge lagoon, and the proposed new lines would lie along former roadways and a small area between the lines of tanks in the Eastern Tank Area.

As the original tank area within the Kurnell Refinery, the HMS assessed the Eastern Tank Area as being of high heritage significance. By 2014, 14 of the 87 tanks were original, with the remaining tanks constructed at later phases. It was noted by the HMS that the retained tanks would, in an abandoned state, present a potential safety/ environment hazard.

Archaeological deposits associated with these works would comprise the footprints and possibly remains of the eight former tanks, redundant pipeways, and background industrial material. Given the extensive existing knowledge of the refinery and its operations, these types of deposits are not considered to be of any archaeological significance, particularly as the significance of the tanks lay in their operation as part of the refinery, rather than the fabric of the individual tanks.

There are no heritage constraints to these works.

4.2.3 Electrical assets

The two substations proposed to be demolished in the south of Zone 2 are not listed as heritage items and their removal is not considered to have an impact on the heritage significance of the item.

In relation to the two substations proposed to be demolished in Zone 3, it is noted that the CLOR area was not considered to be part of the former AOR, and therefore has no heritage protection (Australian Museum Consulting, 2014b:154). All infrastructure in this area, including the substations, structures, OWS, and FWS, may be removed without heritage constraint.

4.3 Construction of new buildings

Three new buildings would be constructed. These would be fit for purpose to ensure the safe and sustained operation of the Kurnell Terminal.

4.3.1 New warehouse

A new warehouse is proposed to be constructed in Zone 1, on the Road 6 (Figure 1-2). This area was formerly occupied by two tanks that have since been demolished. There are no heritage or archaeological constraints associated with the construction of the new warehouse.

4.3.2 New oil spill equipment storeroom

A new oil spill equipment storeroom is proposed to be constructed in Zone 1, to the north of the existing oil spill room (Figure 1-2). It would be constructed on vacant, disturbed ground which was formerly occupied by an unnamed building to the south of the former fire house. There are no known heritage or archaeological constraints associated with the construction of the new oil spill equipment storeroom.

4.3.3 Storage shed

A new storage shed is proposed to be constructed in Zone 1A (see Figure 1-2), on Road C, to the south of the existing Contractors Facilities. There are no known heritage or archaeological constraints associated with the construction of the new storage shed.

4.4 Road upgrades

Roads 3 and parts of Roads 6 and K would be upgraded as part of the proposed modification (Figure 1-2). The roadways are not identified as being of heritage significance; however, the alignments of these roads are important to interpreting the former layout of the refinery. It is therefore considered that the upgrading and retention of the alignment of these roads represent a minor positive impact to the overall significance of the Site.

4.5 Summary of construction impacts

The following table sets out a summary of the construction impacts of the proposed modification.

Table 4-2 Summary of construction impacts

Proposed work	Impact
Demolition of existing structures in Zones 2 and 3	The demolition of the three buildings of heritage significance represents a moderate impact to the built heritage of the former refinery. In keeping with best heritage practice, the retention of these buildings has been considered. However, the retention of the buildings is not considered feasible, owing to the financial burden of renovation and continued maintenance of the buildings, lack of function and inability to be adaptively reused, as well as the inherent limitations of remediation and future use of the land owing to their presence.
Removal, relocation and/or augmentation of other existing infrastructure	No heritage impacts.
Construction of new operational facilities in Zones 1 and 1A	No heritage impacts.

5.0 Assessment of operational impacts

Once the modification works are complete, the Site would continue to operate as described in the approval documentation for the approved project and would be consistent with the development consent for SSD-5544.

In line with Figure 1-2, relocated equipment would operate in their new locations.

As the Project Area is located within an archaeological site, impacts from an archaeological perspective would occur during the construction of the proposed modification. It is considered that there would be no additional impact from the operational phase of the proposed modification.

6.0 Assessment of cumulative impacts

Cumulative impacts have the potential to occur when benefits or impacts from a project overlap or interact with those of other projects, potentially resulting in a larger overall effect (positive or negative) on the environment or local communities. Cumulative impacts may occur when projects are constructed or operated concurrently or consecutively.

Projects were reviewed against the following screening criteria for this cumulative impact assessment:

- Spatially relevant (i.e., the development or activity overlaps with, is adjacent to or within two kilometres of the Project Area)
- Scale (i.e., large-scale major development or infrastructure projects that have the potential to result in cumulative impacts with the proposed modification, as listed on the NSW Government Major Projects website and on the relevant council websites)
- Timing (i.e., the expected timing of its construction and/or operation overlaps or occurs consecutively to construction and/or operation of the proposed modification)
- Status (i.e., projects in development with sufficient publicly available information to inform this environmental impact statement and with an adequate level of detail to assess the potential cumulative impacts).

Projects identified as contributing to potential cumulative impacts have met these criteria and include:

- Kamay Ferry Wharves
- Breen Resource Recovery Facility
- Kurnell Stormwater Separation Improvement Project
- Woolooware to Kurnell Tower Replacement Project
- Kurnell Planning Proposal.

6.1 Construction

Of the shortlisted projects, the Kurnell Stormwater Separation Improvement Project is proposed to occupy part of the current Site, and the non-Aboriginal heritage values are common to the Project Areas for both projects. Consequently, once the preparatory works have been completed for the proposed modification (i.e. remediation, grading), no additional impacts are expected.

6.2 Operation

As the Australian Oil Refinery is an archaeological item, the expected impacts associated with the proposed modification relate to the construction phase only. Unless there is additional ground disturbance anticipated during the operation phase, there are no known impacts during operation.

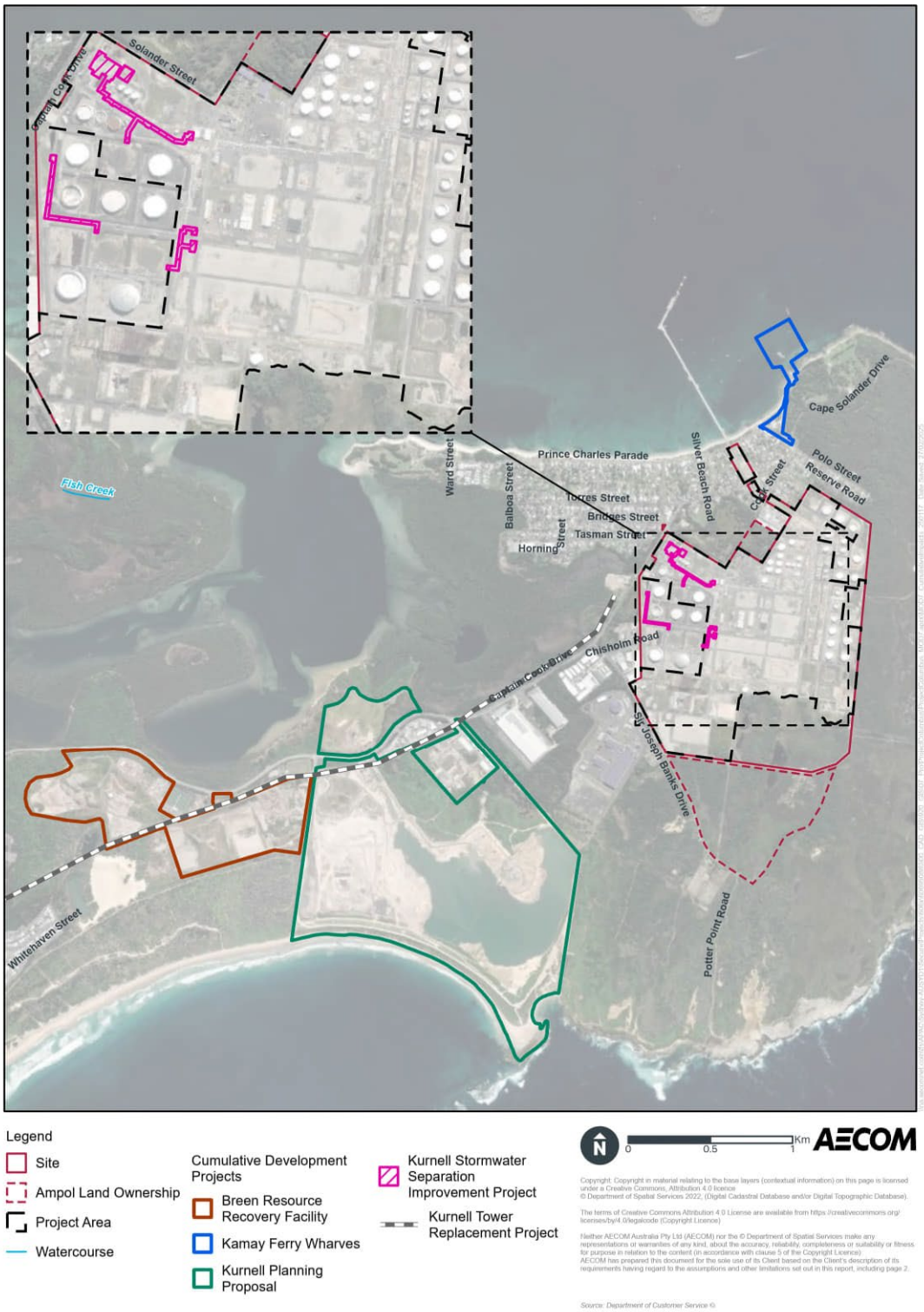

Figure 6-1 Cumulative development projects

7.0 Management of impacts

Mitigation measures to manage potential non-Aboriginal heritage impacts of the proposed modification are outlined in Table 7-1. Additional and/ or modified environmental safeguards and management measures to those presented in the approved SSD-5544 are shown in **bold**. Deleted measures, or parts of measures, have been ~~struck out~~. Where approved measures have been consolidated to reduce duplication, previously agreed text that has been brought into existing or new measures has been underlined.

Table 7-1 Mitigation measures – Non-Aboriginal Heritage

ID	Issue	Mitigation measure
J2	Heritage	If any further heritage items were discovered throughout the **delivery of the** ~~Project~~ **proposed modification**, work would cease until an assessment is carried out by a qualified heritage professional.
J4	Heritage	The Heritage Management Strategy (HMS) and the **relevant** management strategies within it would continue to be implemented.
J6	Heritage	The sculptural panels by Bert Flugelman would be retained and preserved.
J9	Heritage	If historical archaeological relics are unexpectedly found during the ~~demolition~~ **proposed modification** works, works in the area of the relics would cease and the Heritage Council of NSW would be notified.
J10	Heritage	A Stop Works procedure would be implemented should any **unexpected finds of** Aboriginal Heritage **or non-Aboriginal heritage importance** ~~items~~ be found. Works would cease at the vicinity of the item and ~~OEH~~ **Heritage NSW** would be notified as soon as possible
J11	Heritage	If any human remains are disturbed, all work in the vicinity of the remains would stop immediately and the remains would not be further disturbed or moved. Works would cease at the vicinity of the item and ~~OEH~~ **Heritage NSW** and NSW Police would be notified as soon as possible.
J12	Heritage	Prior to works commencing, all personnel and contractors involved in ground disturbance works would be briefed on the procedures to follow if human remains or unexpected heritage items are found.
J13	Heritage	As part of the **CEMP** ~~DEMP~~, a Heritage Management Section ~~will~~ **would** be developed. This ~~will~~ **would** incorporate previous management and mitigation measures that are not already included in the HMS.

8.0 Conclusion

Following a review of the historical context, existing heritage listings, previous heritage literature regarding the former refinery, a site visit, and a review of its heritage significance, it is concluded that the proposed modification works would not cause any additional adverse impacts. It is noted that, following the scale of previous demolitions, the Site is now an archaeological site (A2524) and is listed as an archaeological item rather one of built heritage.

Despite this, the heritage significance of three of the buildings proposed to be demolished are recognised. It is considered that their high to moderate heritage significance relates to their intangible characteristics related to their role in the operations of the former refinery, rather than their existing tangible characteristics.

Previous approvals have included conditions to undertake photographic, audio visual, and archival recordings of all buildings and infrastructure while the refinery was in operation, i.e., prior to demolition. These were undertaken in 2014, and a copy of the 26-volume photographic recording has been viewed by the author in July 2024 in the State Library of NSW (Call numbers HQ 2016/16 and HQ 2015/2318). The photographic recording includes exterior and interior photographs of all significant buildings prior to the refinery's closure, and has satisfied the requirements of the Heritage NSW guideline, *Photographic Recording of Heritage Items Using Film or Digital Capture* (Heritage Office, 2006). It is therefore considered that no further recording of the items is required prior to their demolition.

In line with approved mitigation measures from the approved project, stop work procedures should be included in the Construction Environmental Management Plan (CEMP) for the proposed modification. Should any unexpected finds relating to historic heritage be identified during works these procedures should be followed, with a heritage specialist to assess the find and recommend next steps, as appropriate.

References

Australian Museum Business Services. (2013). *Caltex Kurnell Refinery Conversion: Heritage Impact Assessment*. Unpublished report for Caltex.

Australian Museum Consulting. (2014a). *Caltex Kurnell Refinery Demolition: Heritage Impact Assessment*.

Australian Museum Consulting. (2014b). *Caltex Kurnell Refinery Heritage Management Strategy* (Issue February).

Caltex. (1984). *Boiling the Oil*.

Caltex. (2006). *Kurnell Memories: 50 Years of Refining Fuel for Australia*.

Heritage Office. (2006). *Photographic Recording of Heritage Items Using Film or Digital Capture*. https://www.environment.nsw.gov.au/-/media/OEH/Corporate-Site/Documents/Heritage/photographic-recording-of-heritage-items-using-film-or-digital-capture.pdf

Hill and Knowlton Pty Ltd. (1956). *The Kurnell Story*. Australian Oil Refining Pty Ltd.

ICOMOS (Australia). (2013). *The Burra Charter: The Australia ICOMOS Charter for Places of Cultural Significance*. Australia ICOMOS.

Kirkby, D. (1973). *From Sails to Atoms: First fifty years of Sutherland Shire, 1906-1956*. Sutherland Shire Council.

Larkin, M. (1998). *Sutherland Shire: A History to 1939*. Sutherland History Press.

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

Nugent, M. (2005). *A Contextual History of Botany Bay National Park (Kurnell Section)*.

Salt, D. (2000). *Kurnell: Birthplace of Modern Australia. A Pictorial History*. Clarion House.

Appendix A

Site inspection photos (2024)

Figure A-1 Oil Spill Room, looking south-east (AECOM, 2024)

Figure A-2 Oil Spill Room, looking east (AECOM, 2024)

Figure A-3 Storehouse, looking south west (AECOM, 2024)

Figure A-4 Storehouse, looking southwest (AECOM, 2024)

Figure A-5 Warehouse, looking southeast (AECOM, 2024)

Figure A-6 Warehouse, looking west (AECOM, 2024)

Figure A-7 Warehouse, looking northwest (AECOM, 2024)

Figure A-8 Central control building, looking northwest (AECOM, 2024)

Appendix B

Significance assessments

INTRODUCTION

An assessment of significance is undertaken to explain why a particular item is important and to enable the appropriate site management to be determined. Cultural significance is defined in the Australia ICOMOS Charter for the conservation of places of Cultural Significance (the Burra Charter) as meaning "aesthetic, historic, scientific or social value for past, present or future generations" (Article 1.1). Cultural significance may be derived from a place's fabric, association with a person or event, or for its research potential. The significance of a place is not fixed for all time, and what is of significance to us now may change as similar items are located, more historical research is undertaken, and community tastes change.

The process of linking this assessment with an item's historical context has been developed through the NSW Heritage Management System and is outlined in the guideline Assessing Heritage Significance, which is part of the NSW Heritage Manual (Heritage Branch, Department of Planning). The Assessing Heritage Significance guidelines establish seven evaluation criteria (which reflect four categories of significance and whether a place is rare or representative) under which a place can be evaluated in the context of State or local historical themes. Similarly, a heritage item can be significant at a local level (i.e. to the people living in the vicinity of the site), at a State level (i.e. to all people living within NSW) or be significant to the country as a whole and be of National or Commonwealth significance.

In accordance within the guideline Assessing Heritage Significance (Heritage NSW, 2023a), an item will be considered to be of State heritage significance if it meets two or more of the following criteria at a State level. An item may be of local heritage significance if it meets one or more of the following criteria at a local level:

Table B-1. NSW significance criteria

Criterion	Inclusions/ Exclusions
Criterion (a) – an item is important in the course, or pattern, of NSW's cultural or natural history (or the cultural or natural history of the local area).	**Historical significance** – A place or object is important in the course or pattern of an area's history if it: • Is the product of • Is an example of • Was influenced by • Has influenced • Is associated with • Has a symbolic association with… something that has made a strong contribution to the course or pattern of development of our cultural society or environment.
Criterion (b) – an item has strong or special association with the life or works of a person, or group of persons, of importance in NSW's cultural or natural history (or the cultural or natural history of the local to area).	**Associative significance** – A place or object has special associational value if it is associated with a person, organization or group of people who have made an important or notable contribution to the course, pattern and development of our cultural and/or physical environment. In this context, a special association may relate not only to the 'great' and well-known, but also to the influential, the exemplary and the innovative.

Criterion	Inclusions/ Exclusions
Criterion (c) – an item is important in demonstrating aesthetic characteristics and/or a high degree of creative or technical achievement in NSW (or the local area).	**Aesthetic, creative or technical significance** – A place or object is important because of its aesthetic significance if that place or object exhibits sensual qualities that can be judged to be of significance against various ideals including beauty, picturesqueness, evocativeness, expressiveness, landmark presence, streetscape contribution, symbolist or some other quality of nature or human endeavour. Alternatively, a place is important in demonstrating a high degree of creative or technical achievement at a particular period if that place illustrates artistic or technical excellence, innovation, accomplishment, extension or creative adaptation in a variety of fields of human endeavour including but not exclusive to art, engineering, architecture, industrial or scientific design, landscape design, construction, manufacture and craftsmanship or some other technical field.
Criterion (d) – an item has strong or special association with a particular community or cultural group in NSW (or the local area) for social, cultural or spiritual reasons.	**Social significance** – A place or object is important for its strong or special association with a particular community or cultural group. This could be for social, cultural or spiritual reasons that have a perceived meaning or symbolic, spiritual or moral value that is important to them and which generates a strong sense of attachment. Alternatively, a place is important when the community exhibits strong or special feelings or attaches community identity to it, or the community gathers especially for spiritual reasons, recreation or resort. The place may be Aboriginal or non-Aboriginal or a natural environment. The natural place or object does not have to be a built/constructed/modified (culturally created) place and could be in an unmodified, natural form or format.
Criterion (e) – an item has potential to yield information that will contribute to an understanding of NSW's cultural or natural history (or the cultural or natural history of the local area). Significance under this criterion must have the potential to yield new or further substantial information.	**Research potential** – A place or object has potential to yield information that will contribute to an understanding of an area's history if it can be demonstrated that with further examination or research, it may reveal information that will contribute to our understanding of the past. The potential to contribute to our understanding of the past may be found in archaeological deposits, complexes, buildings and structures, gardens and plantings.
Criterion (f) – an item possesses uncommon, rare or endangered aspects of NSW's cultural or natural history (or the cultural or natural history of the local area).	**Rarity** – A place or object demonstrates rare, uncommon or endangered aspects of an area's cultural or natural heritage. The place or object illustrates past human activities or achievements that are at risk of being lost, and/or are of exceptional interest. Past human activities and achievements can include a way of life, custom, process, function, land use, design or some other activity or achievement that is no longer practiced.

Criterion	Inclusions/ Exclusions
Criterion (g) – an item is important in demonstrating the principal characteristics of a class of NSW's (or local area's): cultural or natural places cultural or natural environments.	**Representativeness** – A place or object is important in demonstrating the principal characteristics of a particular class of cultural or natural places or objects if it displays: • The defining features, qualities or attributes of a type • Variation within a type • Evolution of a type • Transition of a type. And where the type or class of cultural or natural places illustrates a range of human or environmental activities including: • A way of life • A custom • An ideology or philosophy • A process, land use, function, form, design, style or technique • Some other activity or achievement.

Significance assessment – Australian Oil Refinery

The following significance assessment for the Australian Oil Refinery is based on the assessment contained in the Heritage Management Strategy for Kurnell Refinery (Australian Museum Consulting, 2014:110-112).

Table B-2. Significance assessment of Australian Oil Refinery

Criterion	Assessment
Historical significance	The Australian Oil Refinery 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 was 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. Its closure in 2014 signalled the end of operational crude oil refineries in NSW. Throughout its history, the refinery made important contributions to the economic development of NSW, providing a significant proportion of all transport fuels used within the State. It began operating in 1956 as the Australian Oil Refinery, the largest facility on the Kurnell Peninsula. The refinery underwent several major periods of expansion in the 1960s and 70s, responding to increasing consumer demand for fuel, better motor engine performance, and the inception of locally produced crude from new oil fields in the Bass Strait. Other later upgrades responded to health, safety and environmental standards, and associated government regulations. **Level of significance: State**
Historical associations	The Australian Oil Refinery has a strong association with the Caltex brand of petroleum products, and the philanthropic activities of the Caltex Company in the local area. The group of six staff houses within the original Australian Oil Refinery complex are associated with the work of architect Harry Seidler, who is generally regarded as Australian's best-known modernist architect in the post-World War II (WWII) era. **Level of significance: Local**

Criterion	Assessment
Aesthetic/ Technical significance	The refinery is important in demonstrating key elements of oil refining technology introduced to Australia in the post WWII era. The refinery operated using a combination or 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. The refinery site also retains its original layout and some elements of original supporting 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 character, representative of the technologically expertise and optimistic social outlook of the 1950s and the post-WWII era. Administrative and amenities buildings within the original Australian Oil Refinery complex and the late Australian Lubricating Oil Refinery were designed by notable post-WWII architectural firm Bunning and Madden. The overall grouping of administrative and amenities buildings designed by Bunning and Madden 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 progressive nature of the Caltex company when the refinery was established. The ALOR cafeteria and amenities buildings also incorporate sculptural panels with significant aesthetic value, representative of a desire to introduce a human element to the otherwise austere, machine-age character of the modernist buildings. A group of six houses within the original Australian Oil Refinery complex were designed by major Australian post-WWII architect, Harry Seidler. The houses have aesthetic significance as a local example of Seidler's group housing project, designed to ensure modern economies through mass-production. Seidler introduced variety and privacy to the group by reversing the plan of some of the houses, and by the subtle placement of solid and pierced brick screen walls around and garages between the buildings. **Level of significance: State**
Social significance	The Kurnell Refinery site, and individual work areas within the site, has strong or special associations for former employees. The physical appearance, smell and sounds of the site are commonly associated with the development of individual and collective skills and life histories. The physical appearance of the place can trigger memories of special people or events, such as the installation of new technologies, personal advancement to a new job or level of skill, or the discovery and repair of a fault at the plant. Historic images and documents regarding the history of the site can also have strong or special associations for former employees. The Kurnell Refinery Library contained staff-collected images and magazines, which provided an important social document of the people who worked at the plant, their social experiences, and the refinery's social and philanthropic initiatives in the broader community. Some of this (or similar) information is now with Sutherland Shire Library. The Kurnell Refinery has strong associations with the Kurnell community and was one of the largest employers in the local area. During its tenure of operation at the refinery, Caltex took active steps to support the health and well-being of its employees and many employees worked their whole working lives on the site. Caltex was also a regular sponsor of other social initiatives in the broader community. **Level of significance: Local**

Criterion	Assessment
Research potential	While operational, the physical evidence of the Kurnell Refinery plant and the knowledge and experience of the operational staff had the potential to yield information about the technology which was not available from other sources. Following closure of the plant, any remaining machinery, equipment, signage and other ephemera may provide an important industrial heritage reference collection, which could contribute to future interpretation and/or understanding of the refining technology used at the sign. There is little to no potential for sub-surface archaeological relics which predate the operation of the refinery to be present on the site. **Level of significance: State**
Rarity	Following the closure of Shell's Clyde refinery in 2012, the Kurnell refinery was the only operational oil refinery in NSW. Following its closure in 2014, there are no operational refinery sites in NSW. Since the closure and removal of drawings, photographs and other memorabilia, there is therefore no rarity value remaining on the site. The item therefore does not fulfil this criterion.
Representative value	While standing, the Kurnell Refinery was important in demonstrating the principal characteristics of a mid-20th century Australian oil refinery. However, since its demolition, the item does not fulfil this criterion.
Intactness and integrity	The Kurnell Refinery was mostly demolished in 2014, removing most of the physical evidence. The Australian Oil Refinery site is now classified as an archaeological site on the Sutherland Shire LEP 2015.
STATEMENT OF SIGNIFICANCE	The 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-20th century, and more broadly with the rapid expansion of motorised transport and associated industry in the post WWII era. It is only one of three crude oil refineries to have operated in NSW.